1889.

NEW SOUTH WALES.

VOTES

AND

PROCEEDINGS

OF THE

LEGISLATIVE ASSEMBLY

DURING THE SESSION

OF

1889,

WITH THE VARIOUS DOCUMENTS CONNECTED THEREWITH.

IN SIX VOLUMES.
VOL. IV.

SYDNEY:
CHARLES POTTER, GOVERNMENT PRINTER, PHILLIP-STREET.
1889.

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LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

VOTES AND PROCEEDINGS.

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1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CROWN LANDS.

(RETURN SHOWING BUSINESS TRANSACTED IN THE TAMWORTH LAND BOARD DISTRICT.)

[*Laid upon the Table of the House in accordance with promise made by the Honorable the Secretary for Lands, in answer to Question No.* 2, *on Votes and Proceedings, No.* 17, *of the* 25*th April*, 1889.]

RETURN exhibiting the relative amount of Business transacted at each Land District within the Land Board District of Tamworth.

Land Districts.	Places of holding meetings.	Number of meetings held.					Number of applications received under Crown Lands Act of 1884.																												Number of repeated Act cases dealt with.	Amount of Revenue collected.				
							Conditional Purchases.					Conditional Leases.					Annual Leases.					Miscellaneous applications for I.P's., V.L.O., Special Pur. and Lease, Scrub Lease.					Miscellaneous applications (other than for land.)					Applications made to convert Pre-leases into C.L's., 52 section.					Amount of Revenue derived from Auction Sales.									
		1885.	1886.	1887.	1888.	Total.	1885.	1886.	1887.	1888.	Total.	1885.	1886.	1887.	1888.	Total.	1885.	1886.	1887.	1888.	Total.	1885.	1886.	1887.	1888.	Total.	1885.	1886.	1887.	1888.	Total.	1885.	1886.	1887.	1888.	Total.		1885.	1886.	1887.	1888.	Total.
																																						£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Coonabarabran	Coonabarabran	5	5	4	4	18	32	33	49	56	170	13	13	38	46	110	15	..	..	4	19	..	5	2	..	7	5	166	14	80	265	81	..	..	..	..	81	106 10 0	710 17 7	810 6 1	1563 11 1	3191 5 7	187	4497 6 11	3800 16 11	4535 5 1	4605 9 8	17438 18 7
Gunnedah	Gunnedah	3	7	5	4	24	39	59	34	46	178	73	32	20	28	153	2	..	..	..	2	2	2	5	5	14	31	30	79	100	240	102	..	..	..	..	102	3273 17 8	1549 3 9	2431 10 7	2852 4 2	10106 16 2	320	11514 4 7	13743 16 11	12593 9 3	13652 5 5	51503 16 2
	Boggabri	..	..	..	2	2																																							
Murrurundi	Murrurundi	6	5	4	4	19	51	72	28	37	188	22	35	13	23	93	33	5	1	7	96	..	1	..	1	2	18	14	43	92	167	65	..	..	..	..	65	229 0 0	3867 15 5	3712 5 6	1934 10 11	9743 11 10	175	12348 12 7	13171 2 8	10080 1 2	11084 5 3	47284 1 8
	Quirindi	4	5	3	3	15																																							
Narrabri	Narrabri	9	7	8	7	31	45	46	49	114	254	43	32	36	79	190	1	..	..	..	1	3	6	4	7	20	16	207	72	159	454	210	..	..	..	..	210	443 5 0	6370 4 7	4122 10 1	6345 6 8	17281 6 4	408	13776 17 11	13659 10 6	16227 12 1	16146 7 9	59810 8 3
	Wee Waa	2	3	3	3	11																																							
	Pilliga	2	2	1	3	8																																							
Tamworth	Tamworth	13	8	9	5	35	93	157	99	65	414	64	89	66	45	264	10	..	..	3	13	2	5	10	7	24	83	90	150	235	558	192	..	..	..	..	192	333 3 9	526 5 0	2095 2 2	2024 4 11	4954 12 1	570	15842 3 1	18419 8 0	18357 7 11	18402 0 5	71020 19 5
	Manilla	1	4	3	2	10																																							
	Barraba	1	4	3	2	10																																							

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1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CROWN LANDS.

(NUMBER AND RENTS OF HOMESTEAD AND PASTORAL LEASES IN CENTRAL AND WESTERN DIVISIONS.)

Ordered by the Legislative Assembly to be printed, 25 April, 1889.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 10th April, 1889, That there be laid upon the Table of this House,—

"A Return showing the number of homestead and pastoral leases held in the Central "and Western Divisions of the Colony, together with the rent paid in each "respective case."

(*Mr. Wall.*)

HOMESTEAD LEASES.

No. of Lease.	Land District.	Area.	Rent.	No. of Lease.	Land District.	Area.	Rent.
		Acres.	£ s. d.			Acres.	£ s. d.
49	Balranald	10,240	74 13 4	13	Bourke	10,240	85 6 8
105	Do	10,240	58 13 4	15	Do	10,240	74 13 4
106	Do	10,240	74 13 4	18	Do	10,240	85 6 8
108	Do	10,240	74 13 4	20	Do	10,240	85 6 8
109	Do	10,240	61 6 8	21	Do	10,240	85 6 8
110	Do	10,240	74 13 4	22	Do	10,240	85 6 8
111	Do	10,240	61 6 8	23	Do	10,240	53 6 8
112	Do	10,240	74 13 4	24	Do	10,240	53 6 8
114	Do	10,240	61 6 8	25	Do	10,240	85 6 8
115	Do	5,760	45 0 0	26	Do	10,240	53 6 8
116	Do	10,240	74 13 4	27	Do	10 240	74 13 4
117	Do	10,240	74 13 4	28	Do	10,240	85 6 8
118	Do	10,240	74 13 4	29	Do	10,240	85 6 8
292	Do	9,025	75 4 2	34	Do	10,240	64 0 0
294	Do	7,523	75 4 8	35	Do	10,240	85 6 8
295	Do	10,240	72 10 8	42	Do	10,240	53 6 8
310	Do	8,000	63 6 8	43	Do	10,240	85 6 8
316	Do	6,270	44 8 3	44	Do	10,240	53 6 8
342	Do	10,240	85 6 8	45	Do	10,240	85 6 8
375	Do	10,240	102 8 0	46	Do	10,240	53 6 8
376	Do	10,240	102 8 0	47	Do	5,773	48 2 2
377	Do	10,240	42 13 4	48	Do	10,240	85 6 8
378	Do	10,240	42 13 4	52	Do	10,240	48 15 3
379	Do	9,720	68 17 0	53	Do	10,240	53 6 8
380	Do	10,240	85 6 8	54	Do	10,240	42 13 4
388	Do	10,240	85 6 8	61	Do	8,135	59 6 4
397	Do	10,157	42 6 5	66	Do	10,240	85 6 8
398	Do	10,240	102 8 0	75	Do	10,240	85 6 8
411	Do	5,939	43 6 2	77	Do	10,240	85 6 8
423	Do	10,240	85 6 8	80	Do	10,240	53 6 8
429	Do	10,240	42 13 4	81	Do	10,240	64 0 0
496	Do	10,240	42 13 4	82	Do	10,240	85 6 8
497	Do	10,015	70 18 10	120	Do	10,240	53 6 8
498	Do	10,240	85 6 8	121	Do	10,240	64 0 0
522	Do	10,240	85 6 8	122	Do	10,240	48 0 0
524	Do	5,760	45 0 0	126	Do	10,240	53 6 8
525	Do	10,240	72 10 8	193	Do	10,240	53 6 8
1	Bourke	10,240	74 13 4	291	Do	5,760	24 0 0
2	Do	10,240	42 13 4	308	Do	10,240	42 13 4
4	Do	10,240	64 0 0	324	Do	10,240	59 14 8
7	Do	10,240	85 6 8	327	Do	10,240	85 6 8
9	Do	10,240	85 6 8	328	Do	10,240	56 17 10
12	Do	10,240	85 6 8	335	Do	10,240	85 6 8

[870 copies—Approximate Cost of Printing (labour and material), £20 1s. 11d.]

HOMESTEAD LEASES—*continued.*

No of Lease	Land District	Area	Rent	No of Lease	Land District	Area	Rent
		Acres	£ s. d			Acres.	£ s. d.
337	Bourke	10,240	74 13 4	254	Brewarrina	7,712	40 3 4
344	Do	10,240	56 17 10	258	Do	5,760	42 0 0
350	Do	5,760	36 0 0	259	Do	10,240	74 13 4
361	Do	10,240	85 6 8	288	Do	10,240	74 13 4
363	Do	10.240	85 6 8	289	Do	10,240	74 13 4
365	Do	10,240	85 6 8	290	Do	10,010	62 11 3
381	Do	10,240	59 14 8	306	Do	8,217	59 18 4
417	Do	8,764	73 0 8	317	Do	10,240	74 13 4
418	Do	5,764	42 0 7	319	Do	10,240	68 5 4
419	Do	7,000	40 16 8	320	Do	10,128	63 6 0
421	Do	10,240	49 15 7	336	Do	10,240	85 6 8
430	Do	10,240	53 6 8	345	Do	6,800	56 13 4
431	Do	10,240	85 6 8	348	Do	10.240	85 6 8
448	Do	10,240	42 13 4	349	Do	10,240	64 0 0
449	Do	10,240	42 13 4	360	Do	8,000	66 13 4
456	Do	10,240	85 6 8	367	Do	10,240	74 13 4
457	Do	5,760	30 0 0	370	Do	10,240	74 13 4
463	Do	10,240	42 13 4	371	Do	10,240	68 5 4
464	Do	10,240	42 13 4	372	Do	10,240	64 0 0
465	De	10,240	64 0 0	373	Do	10,240	85 6 8
488	Do	10,240	42 13 4	385	Do	10,030	83 11 8
503	Do	10,240	42 13 4	401	Do	10,210	85 1 8
504	Do	5,760	48 0 0	407	Do	8,099	67 9 10
505	Do	10,240	42 13 4	408	Do	10,230	74 11 11
506	Do	10,240	42 13 4	412	Do	10,240	64 0 0
512	Do	5,760	48 0 0	422	Do	10,240	74 13 4
513	Do	10,240	85 6 8	425	Do	8,089	58 19 8
514	Do	10,240	74 13 4	426	Do	10,240	85 6 8
518	Do	10,192	53 1 8	432	Do	10,240	85 6 8
519	Do	10,240	42 13 4	433	Do	10,240	85 6 8
520	Do	10,231	42 12 10	435	Do	8,554	62 7 6
521	Do	10,240	74 13 4	446	Do	10,240	85 6 8
526	Do	10,240	42 13 4	458	Do	10 220	85 3 4
527	Do	10,240	64 0 0	459	Do	10,240	74 13 4
528	Do	10,210	74 13 4	460	Do	10,240	42 13 4
529	Do	10,240	64 0 0	461	Do	6,000	50 0 0
5	Brewarrina	10,240	85 6 8	462	Do	10,240	74 13 4
6	Do	10,240	85 6 8	467	Do	10,240	74 13 4
10	Do	10,075	83 19 2	472	Do	10,240	74 13 4
11	Do	10,240	64 0 0	477	Do	10 240	74 13 4
14	Do	10,240	85 6 8	478	Do	10,240	64 0 0
16	Do	8 582	71 10 4	479	Do	7,745	56 9 6
32	Do	10,240	85 6 8	480	Do	5,760	42 0 0
33	Do	10,240	85 6 8	481	Do	10,198	67 19 9
36	Do	10,240	68 5 4	489	Do	5,766	42 0 0
37	Do	10,240	74 13 4	490	Do	8,126	50 15 9
39	Do	10,240	85 6 8	491	Do	7,396	46 4 6
40	Do	10,240	85 6 8	492	Do	8,023	82 4 0
50	Do	10,240	68 5 4	530	Do	6,792	49 10 6
56	Do	9,017	75 2 10	531	Do	5,760	48 0 0
57	Do	10,240	85 6 8	532	Do	10,240	85 6 8
58	Do	10 240	85 6 8	90	Cobar	10,240	42 13 4
59	Do	10,240	85 6 8	233	Do	5,760	24 0 0
64	Do	10,240	85 6 8	374	Do	10,240	42 13 4
65	Do	10,160	84 13 4	409	Do	10,240	42 13 4
67	Do	10,240	85 6 8	410	Do	5,760	24 0 0
68	Do	10,240	85 6 8	482	Do	10,240	42 13 4
69	Do	10,240	85 6 8	483	Do	8,047	33 10 7
70	Do	10,240	85 6 8	510	Do	10,240	42 13 4
71	Do	10,240	85 6 8	511	Do	10,240	42 13 4
72	Do	10,240	64 0 0	129	Hay, North	10,240	74 13 4
73	Do	10,240	85 6 8	130	Do	9,185	76 10 10
74	Do	9,773	61 1 7	131	Do	10,240	106 13 4
76	Do	10,240	68 5 4	132	Do	10,233	117 5 1
89	Do	10,240	85 6 8	133	Do	10,079	115 9 9
91	Do	10,240	74 13 4	134	Do	10,214	127 13 6
97	Do	9,000	65 12 6	135	Do	10,228	74 11 7
98	Do	9,000	65 12 6	136	Do	10,240	61 6 8
99	Do	10,240	74 13 4	137	Do	10,240	74 13 4
102	Do	10,240	85 6 8	138	Do	10,240	61 6 8
127	Do	10,240	68 5 4	139	Do	10,240	74 13 4
128	Do	10,240	68 5 4	140	Do	6,401	53 6 10
158	Do	10,228	47 18 11	141	Do	6,641	41 10 2
159	Do	10,240	58 13 4	142	Do	10,240	74 13 4
160	Do	10,240	68 5 4	146	Do	10,240	74 13 4
169	Do	10,240	74 13 4	147	Do	10,240	74 13 4
170	Do	10,240	85 6 8	148	Do	10,000	59 17 11
173	Do	10,240	85 6 8	149	Do	9,855	71 17 2
189	Do	6,000	43 15 0	150	Do	10,240	74 13 4
191	Do	10,240	85 6 8	152	Do	10,240	74 13 4
232	Do	10,237½	85 6 3	153	Do	10,000	72 18 4
234	Do	8,284	51 15 6	154	Do	10 240	74 13 4
235	Do	5,760	42 0 0	155	Do	10,240	74 13 4
243	Do	10,100	68 7 9	156	Do	10,240	74 13 4
244	Do	5,760	30 0 0	157	Do	10,005	72 19 1
246	Do	6,515	33 18 8	190	Do	10,240	85 6 8
249	Do	8,981	65 9 9	200	Do	10 240	128 0 0

HOMESTEAD LEASES—*continued.*

No. of Lease.	Land District.	Area.	Rent.	No. of Lease.	Land District.	Area.	Rent.
		Acres.	£ s. d.			Acres.	£ s. d.
262	Hay, North	10,240	102 8 0	420	Hillston, North	8,963	74 13 10
263	Do	5,819	58 3 10	424	Do	10,240	68 5 4
265	Do	10,240	102 8 0	469	Do	10,235	68 4 8
266	Do	10,240	93 17 4	493	Do	9,864	82 4 0
267	Do	9,974	70 13 0	507	Do	6,000	37 10 0
269	Do	10,240	102 8 0	515	Do	9,515	79 5 10
270	Do	10,240	102 8 0	92	Walgett	10,240	74 13 4
271	Do	10,240	102 8 0	93	Do	10,240	74 13 4
272	Do	10,240	102 8 0	104	Do	10,214	63 16 9
273	Do	10,240	102 8 0	161	Do	10,240	53 6 8
274	Do	10,240	102 8 0	162	Do	10,240	64 0 0
275	Do	10,240	102 8 0	163	Do	10,240	48 0 0
276	Do	10,240	102 8 0	164	Do	10,240	53 6 8
277	Do	9,600	90 0 0	165	Do	10,240	64 0 0
286	Do	10,240	96 0 0	166	Do	10,240	64 0 0
287	Do	10,240	96 0 0	167	Do	10,124	63 5 6
305	Do	7,087	64 19 4	168	Do	7,828	48 18 6
322	Do	10,240	128 0 0	171	Do	10,240	64 0 0
368	Do	8,894	92 12 11	172	Do	10,240	53 6 8
369	Do	7,448	74 9 8	174	Do	10,240	64 0 0
382	Do	10,240	98 2 8	192	Do	10,240	53 6 8
402	Do	7,138	89 4 6	248	Do	10,240	74 13 4
453	Do	10,240	55 9 4	251	Do	10,240	53 6 8
454	Do	10,240	64 0 0	279	Do	10,240	85 6 8
455	Do	10,240	102 8 0	280	Do	10,240	64 0 0
468	Do	10,240	64 0 0	302	Do	10,240	64 0 0
487	Do	10,240	126 0 0	321	Do	8,401	52 10 2
509	Do	10,240	64 0 0	325	Do	10,240	64 0 0
197	Hillston, North	10,240	69 6 8	347	Do	10,240	64 0 0
198	Do	10,240	58 13 4	351	Do	10,240	74 13 4
200	Do	10,240	42 13 4	353	Do	10,240	64 0 0
201	Do	10,240	58 13 4	362	Do	10,240	85 6 8
202	Do	10,240	69 6 8	508	Do	10,240	85 6 8
203	Do	10,208	69 2 4	516	Do	10,240	74 13 4
204	Do	10,200	69 1 3	523	Do	10,240	64 0 0
205	Do	5,760	39 0 0	175	Wentworth	10,240	48 0 0
206	Do	9,502	49 9 10	177	Do	10,205	63 15 8
207	Do	10,240	58 13 4	178	Do	10,240	42 13 4
208	Do	10,240	69 6 8	179	Do	10,215	47 17 8
209	Do	10,240	42 13 4	185	Do	10,240	69 6 8
212	Do	10,240	58 13 4	186	Do	10,155	68 15 2
214	Do	10,240	69 6 8	281	Do	10,240	42 13 4
215	Do	10,240	48 0 0	404	Do	5,760	48 0 0
216	Do	9,166	38 3 10	427	Do	10,240	85 6 8
221	Do	10,240	42 13 4	428	Do	10,240	42 13 4
222	Do	8,600	39 8 4	443	Do	10,240	64 0 0
223	Do	10,240	59 14 8	447	Do	10,240	64 0 0
225	Do	5,972	40 8 9	484	Do	10,240	106 13 4
226	Do	10,240	69 6 8	485	Do	10,240	42 13 4
228	Do	6,167	41 15 2	83	Wilcannia	10,240	64 0 0
238	Do	7,950	66 5 0	86	Do	10,240	64 0 0
239	Do	10,240	74 13 4	94	Do	5,760	48 0 0
240	Do	10,240	64 0 0	95	Do	10,240	42 13 4
250	Do	10,240	51 4 0	123	Do	10,064	62 18 0
297	Do	10,240	85 6 8	124	Do	10,240	64 0 0
298	Do	10,210	85 1 8	229	Do	10,240	42 13 4
301	Do	10,240	85 6 8	230	Do	10,188	42 9 0
307	Do	10,240	85 6 8	247	Do	10,240	53 6 8
326	Do	10,240	85 6 8	252	Do	5,760	25 0 0
354	Do	8,896	74 2 8	303	Do	6,720	19 12 0
356	Do	10,240	85 6 8	340	Do	10,240	48 0 0
357	Do	9,084	75 14 0	386	Do	10,240	48 15 3
359	Do	5,760	36 0 0	406	Do	10,240	56 17 10
383	Do	6,493	40 11 8	437	Do	5,760	24 0 0
389	Do	6,150	35 17 6	439	Do	5,858	36 12 3
391	Do	10,240	85 6 8	445	Do	5,760	24 0 0
392	Do	9,845	82 0 10	486	Do	10,240	42 13 4
393	Do	10,240	85 6 8	494	Do	6,358	26 9 10
394	Do	8,710	72 11 8	495	Do	10,240	64 0 0
395	Do	10,240	68 5 4	499	Do	10,240	64 0 0
396	Do	10,240	59 14 8	500	Do	10,240	42 13 4
403	Do	9,556	51 15 3	501	Do	5,760	30 0 0
413	Do	10,060	83 16 8	502	Do	6,078	37 19 9
414	Do	10,000	62 10 0	517	Do	10,185	42 8 9

PASTORAL LEASES—CENTRAL DIVISION.

No.	Name.	Area.	Rent.	No.	Name.	Area.	Rent.
		Acres.	£ s. d.			Acres.	£ s. d.
1	Urombong	11,660	38 17 4	29	Keri Keri	37,575	391 8 2
2	Botheroe	37,540	117 6 3	30	Oregon	15,572	162 4 1
3	Wagingoberemby	5,626	105 9 9	31	Boomanoomana	10,615	398 1 3
4	Poon Boon	31,725	172 8 4	32	Bullenbong	8,497	238 19 7
5	Binnia	8,002	100 0 6	33	Kiacatoo	51,206	453 7 9
6	Gurley	56,227	937 2 4	34	Bogamildi	138,704	1,300 7 0
7	Combadello and Nepickalina	26,531	331 12 9	35	Bundulla	5,578	63 18 4
8	Weetaliba	24,771	77 8 2	36	Caigan	30,365	221 8 3
9	Gournama	26,616	332 14 0	37	Upper Wyalong No. 3	19,915	51 17 3
10	Calga	52,023	677 7 8	38	Kialgara	9,282	116 0 6
11	Eurie Eurie	40,182	272 1 4	39	Puckawidgee	15,565	259 8 4
12	Kunopia	47,301	394 3 6	40	Telleraga	15,850	198 2 6
13	Benerembah	36,237	558 13 1	41	Balgay	33,484	226 14 4
14	Mulwala and Savernake	9,460	236 10 0	42	Mullengudgery	8,602	107 10 6
15	Caragabal	14,000	102 1 8	43	Nyingay	6,351	79 7 9
16	Marrar	5,640	105 15 0	44	Gorian	36,551	475 18 6
17	Womboin	37,627	313 11 2	45	Youngee Plain	12,444	103 14 0
18	Belaringar	37,773	550 17 2	46	Eli Elwah	28,705	358 16 3
19	Coonabarrabran	3,740	15 11 8	47	Ballaree	12,800	106 13 4
20	Euratha	18,594	77 9 6	48	Bland	20,065	177 13 2
21	Wandary	4,300	77 18 9	49	Gumin Gumin	35,015	291 15 10
22	Peter Duffity	14,556	197 2 3	50	Gundare	15,371	192 2 9
23	Benduck	25,709	321 7 3	51	Coradgery	57,467	419 0 7
24	South Condoublin	9,010	103 4 10	52	Tyreel	30,371	411 5 6
25	Campbell's Island	2,440	61 0 0	53	Yarragrin	70,590	609 5 2
26	Narrandara	28,618	298 2 1	54	West Mandamah	25,770	322 2 6
27	Dennykymine	10,750	35 16 8	55	East Billabong	33,359	83 7 11
28	Cadow	19,500	172 13 2	56	South Balladoran	8,688	45 5 0

PASTORAL HOLDINGS—CENTRAL DIVISION.

57	Polly Brewan	33,093	206 16 8	101	Kildary	25,560	266 5 0
58	Dobikin	17,403	217 10 9	102	Tootal	2,892	81 6 9
59	Gralgumbone	17,220	251 2 6	103	Merri Merrigal	110,270	689 3 9
60	Bone and Premer	15,652	171 3 11	104	Wangamong Plains	1,919	63 19 4
61	Billabong	41,874	305 6 8	105	Cocopara East	34,800	217 10 0
62	Yerringerry	10,460	65 7 6	106	Bugilbone	59,697	870 11 8
63	Four Bob Camp	11,900	86 15 5	107	Welbendungah	46,060	583 5 0
64	Native Dog	8,694	63 7 10	108	Nyang	37,673	580 15 10
65	Weelong	19,652	129 13 0	109	Boonook	13,627	181 13 10
66	Blue Nobby	20,110	251 7 6	110	North Gogelderie	7,492	70 4 9
67	Belubula	6,581	123 7 11	111	Wargambegal	12,750	53 2 6
68	Nap Nap	115,198	959 19 8	112	Colliburl	6,466	53 17 8
69	Spicer's Creek	21,077	263 9 3	113	Yarraldool	50,195	366 0 1
70	North Malonga	17,500	116 13 4	114	Bundiila	5,682	82 17 3
71	Berida	48,724	710 11 2	115	Milby	17,565	128 1 7
72	Pevensey	40,748	509 7 0	116	Tonderburine	56,404	616 18 5
73	Uabba	43,061	287 1 6	117	Toogimbie	78,544	654 10 8
74	Boyd	14,281	89 5 2	113	Killarney	40,680	169 10 0
75	Tregalana	12,547	117 12 7	119	Warry	8,619	143 13 6
76	Yanga	89,253	557 17 3	120	Illiliwa	96,926	1,292 6 11
77	Chah Sing	26,869	335 17 3	121	Willewa	10,930	91 9 8
79	Ulimambri	75,570	314 17 6	122	Wingenbah	7,300	45 12 6
80	Weebollabolla	12,952	161 18 0	123	Moolpa	17,172	135 18 11
81	Wondoobar	20,061	167 4 0	124	Booabula	11,466	149 5 11
82	Merool Creek	17,180	71 11 8	125	Barmedman	29,311	244 5 2
83	Wollongough	23,400	156 0 0	126	Bolagamy	16,240	118 8 4
84	Brogan Plains	8,211	68 8 6	127	Bulgandramine	90,092	844 12 3
85	Mumblebone	26,149	326 17 3	128	Wolla Wolla	6,083	69 14 1
86	West Gungalman	8,120	50 15 0	129	Quambone	19,170	159 15 0
87	Tugland	8,579	35 14 11	130	Flagstone Creek	23,100	192 10 0
88	Goonal	26,050	325 12 6	131	Moroco	13,513	197 1 4
89	Mooloomoon	6,795	84 18 9	132	Egan Creek	3,297	72 2 6
90	Wargam	14,460	162 13 6	133	Ungaree	34,650	202 2 6
91	Burdenda	19,678	143 9 9	134	Borambil	34,518	359 11 3
92	Gillendoon	26,740	362 2 1	135	Belgoreen	12,067	175 19 7
93	Nebea	56,113	701 8 3	136	Upper Merry Merry	15,868	198 7 0
94	Weelah or Gradgery	9,395	117 8 9	138	Warragan	11,915	124 2 4
95	Garrawilla	38,884	486 1 0	139	Haddon Rigg	102,490	1,494 12 11
96	Ganmain	70,341	879 5 3	140	Gineroi	39,350	409 17 11
97	Therribri	30,193	188 14 2	141	Bogewong	21,927	182 14 6
98	Buddabadah	9,560	69 14 2	142	North Yanco	26,100	435 0 0
99	Mungranby and Bourbeen	10,797	67 9 8	143	Back Esperance	8,100	75 18 9
100	Esperance	5,630	46 18 4				

PASTORAL LEASES—CENTRAL DIVISION.

144	Liewah	16,480	206 0 0	152	Bull Plain	4,342	149 5 2
145	Nyngan East	5,200	65 0 0	153	Colane	19,027	218 0 4
146	Minna Minane	6,560	82 0 0	154	Colombo Creek	3,115	64 17 11
147	Junee	2,670	66 15 0	156	Murrulebale	5,751	119 16 3
148	Gunningbland	41,670	260 8 9	157	Tregalana East	3,808	39 13 4
149	Geeron or Derangibal	2,680	33 10 0	155	Merkadool	99,194	671 12 7
150	Ellengerah	27,002	365 13 1	158	South Yathong	4,500	112 10 0
151	Boreegerry	900	28 2 6	159	The Brigalows	22,500	187 10 0

PASTORAL LEASES—CENTRAL DIVISION—*continued.*

No and Name of Leasehold Area.		Area	Rent			No and Name of Leasehold Area.		Area.	Rent.		
No.	Name.					No	Name.				
		Acres.	£	s.	d.			Acres.	£	s.	d.
160	Tuppal	11,968	299	4	0	166	Cremorne	20,722	323	15	8
161	Quambone	51,773	674	2	7	167	Tala	40,928	341	1	4
162	Lake Cowal	11,453	127	5	2	168	Warrowie	2,081	21	13	7
163	North Yathong	2,318	38	12	8	169	Haddon Riggs	16,368	85	5	0
164	Tarramia	9,114	341	15	6	170	Gorman's Hill West	6,680	55	13	4
165	Cocketgedong	13,720	371	11	8	171	Toganmain	41,632	745	18	2

PASTORAL HOLDINGS—CENTRAL DIVISION.

172	Drildool	13,676	545	19	0	247	Melrose (Block D)	32,602	271	13	8
173	Carwell	32,406	421	19	1	248	Weemabah	69,435	1,012	11	11
174	Wingadee	111,620	1,278	19	7	249	Spring Creek	6,696	83	14	0
175	Panjee	135,104	562	18	8	250	Terramumgamine	54,935	457	15	10
176	Pomingalarna	9,980	332	13	4	251	Oreel	147,450	1,535	18	9
177	Nelgowrie	13,866	180	10	11	252	Buttabone	21,330	311	1	3
178	Yanko Block A	4,521	47	1	11	253	Warran Downs	41,554	281	7	1
179	Merebone	6,258	84	14	11	254	Coonimbia	12,106	157	12	7
180	Milbey West	18,200	85	6	3	255	Mungyer	109,354	1,196	1	2
181	Warroo	22,601	235	8	7	256	Canoon Point	48,485	606	1	3
182	Ford's Creek	12,720	79	10	0	257	Caroonboon	18,107	188	12	4
183	Yallaroi	55,410	808	1	3	258	Buckyinguy	60,890	697	14	0
184	Boronga	45,412	378	8	8	259	Cryon	24,780	180	13	9
185	Bomera	93,430	583	18	9	260	Tabratong	36,027	600	9	0
186	Boolooroo	16,757	235	13	0	261	Waterloo	14,572	212	10	2
187	The Overflow	152,690	742	4	11	262	Tucklan and Yarrow Creek	16,920	141	0	0
188	Centre Block No. 3	9,717	121	9	3	263	Momalong	8,167	221	3	10
189	Book Book	3,980	74	12	6	264	Binya	41,405	603	16	6
190	Burran	8 200	102	10	0	265	Blowclear West	13,342	55	11	10
191	Malaraway and Millie North	35,155	476	1	2	266	Mowablaa	33,300	138	15	0
192	Barbigal	4,973	51	16	1	267	Yaddra	15,360	192	0	0
193	Derri Derri	39,920	499	0	0	268	Narrow Plains	2,029	67	12	8
194	Oakey Creek	2 880	24	0	0	269	Waidry	12,427	129	9	0
195	Urawilkey	27 564	287	2	6	271	Gennaren	4,900	51	0	10
196	Conapaira	129,160	807	5	0	272	Tharambone	9,830	122	17	6
197	Werrina	79,600	663	6	8	273	Merrigal Back	5,470	68	7	6
198	Carabost	20,660	172	3	4	274	Mount Harris	16,140	218	11	3
199	Wallamgambone	23,759	296	19	9	275	Butherwah	10,580	99	3	9
200	Widgiewa	12,000	300	0	0	276	Carinda	7,970	74	14	5
201	Caidmurra	62,530	586	4	5	277	Cobbadah	21,552	179	12	0
202	Tyrie	29,160	364	10	9	278	Toorawandi	6,525	27	3	9
203	Gibbican	9,600	20	0	0	279	Merrybone	11,725	170	19	10
204	Berrembed	5,696	142	8	0	280	Moulmain	18,900	157	10	0
205	Woodlands	42,275	308	5	1	281	Derra Derra	13,032	122	3	6
206	Kucargo or Tory Wee Waa	14,525	151	6	1	282	Werai	16,996	283	5	4
207	Bomely	7,910	65	18	4	283	Burren	43,970	641	4	7
208	Goorianawa	51,926	436	16	2	284	Thellangering East	23,755	296	18	9
209	Nariah	76,001	475	0	2	285	Trialgara	8,400	78	15	0
210	Jerilderie	8,513	177	7	1	286	Upper Daroobalgie	2,221	27	15	3
211	Meroe	17,418	154	9	9	287	West Bland Plains	5,915	49	5	10
212	Milkengowrie	5,775	81	16	3	288	Emu Plains	4,559	75	19	8
213	Gewrie	10,391	129	17	9	289	Wentworth Gully	21,973	160	4	5
214	Bando	40,182	1,025	9	7	290	Kiambir	13,760	28	13	4
215	Yamma	4,680	48	15	0	291	Mimosa West	21,189	187	10	8
216	Gulgo (South)	4,691	58	12	9	292	Bent's Hill	2,800	23	6	8
217	Oxley	27,529	344	2	3	293	Coolah	16,758	139	13	0
218	The Troffs	65,520	546	0	0	294	Murgah	7,270	124	3	11
219	Goangra	42,889	279	4	6	295	Ulumbarella	21,130	176	1	8
220	Bygoo	23,136	192	16	0	296	Yagaba	18,176	151	9	4
221	Bundalla	8,500	106	5	0	297	Come by Chance and Jimalong Josey	12,260	114	18	9
222	Conbail	15,992	199	18	0	298	Ballandry	56,624	471	17	4
223	New Wyregall	6,575	95	17	9	299	Murray Downs	16,472	283	2	3
224	Colombo Plain	5,529	69	2	3	300	Wooloondool	23,425	292	16	3
225	Balagula	5,733	59	14	5	301	Wirrah	59,875	561	6	7
226	Orange Plains	110,140	803	2	1	302	Crown Camp	9,980	72	15	5
227	Hanging Rock	3,285	20	10	8	303	Mourabie	22,010	149	4	7
228	Gelam	19,097	238	14	3	304	Bolaro	4,550	18	19	2
229	Gorah	10,691	89	1	10	305	Bunarba	25,881	229	3	1
230	Gillenbine and Gobondry	8,466	52	18	3	306	Billeroy	6,035	69	3	1
231	Singoramba (Block A)	5,518	98	17	3	307	Goobang	37,366	272	9	3
232	Carlginda	5,563	46	7	2	308	Coppymurrumbil	45,368	567	2	0
233	Berembed North	8,616	80	15	6	309	Tourable	13,010	149	1	6
234	Ulinda	19,405	161	14	2	310	Burrel or Gunnible	5,690	65	4	0
235	Beremegad	26,005	379	4	10	311	Mickygunnegal	8,200	34	3	4
236	Neinby (Upper)	7,797	81	4	5	312	Queensborough	23,624	159	19	1
237	Armatree	9,313	135	16	4	313	Booma West	38,122	277	19	6
238	North Goonambil	6,384	159	12	0	314	Calimo	11,253	234	8	9
239	Boyong	2,529	32	13	4	315	Uardry	14,639	219	11	8
240	Warraberry and St Giles	7,400	18	10	0	316	New Babinda	26,215	109	4	7
241	Sandy Creek and Wagga Wagga	8,630	287	13	4	317	Welbon	129,536	1,619	4	0
242	Barooga	4,500	150	0	0	318	Pullingawarina	26,400	330	0	0
243	Coolatai	43,320	541	10	0	319	Gillinghall	2,712	33	18	0
244	Nowley	20,082	309	12	0	320	New Kirban	1,208	17	12	4
245	Quilbone	18,357	152	19	6	321	Upper Boomley	9,274	67	12	6
246	Bokemer	6,440	87	4	2	322	Erinnganering	13,625	85	3	2

PASTORAL HOLDINGS—CENTRAL DIVISION—*continued.*

No.	Name.	Area	Rent		
		Acres.	£	s	d.
323	Armitree	6,050	75	12	6
324	Sandy Camp	15,380	128	3	4
325	Sandholes	14,380	149	15	10
326	Gunningbar	39,803	539	0	0
327	Glen Quin	9,610	60	5	0
328	Pine Ridge	10,390	86	11	8
329	Brewarrina	13,180	329	10	0
330	Bimguy	9,794	71	8	4
331	Yarrowah	49,903	519	16	6
332	Carlisle	17,500	72	18	4
333	Gidgenboyne	5,400	22	10	0
334	Pullanming	17,490	154	17	2
335	Burrowgong	5,273	131	16	6
336	Terry-Hie Hie	118,174	984	15	8
337	Gunnibong	4,895	61	3	9
338	Myall Plains	880	11	0	0
339	Gogeldrie	9,300	232	10	0
340	Wowingiagong	3,152	35	0	5
341	Marthaguy Creek	5,120	64	0	0
342	Coonong	4,776	119	8	0
343	Perricoota	18,223	569	9	5
344	Collymongool	67,449	632	6	8
345	Brewon	86,838	723	13	0
346	O'Brien's Creek	12,039	87	15	9
347	Burrabogie	47,394	691	3	3
348	Bingara	25,310	35	3	1
349	Bulgandra	1,708	24	18	2
350	Aratula	9,700	161	13	3
351	Murray	5,250	175	0	0
352	Pier Pier	6,560	85	8	4
353	Beanbah	22,136	299	12	6
354	North Wakool	2,605	37	19	10
355	South Merrowie	6,425	20	1	7
356	Cobra	6,207	25	17	3
357	Collindina	5,233	196	4	9
358	South Urana	4,765	59	11	3
359	Bimble	4,935	64	5	2
360	Malonga	43,580	408	11	3
361	Geramy	825	10	6	3
362	Merrigal	5,937	86	11	8
364	Grawhey	10,000	130	4	2
365	Euglo	53,989	463	19	4
366	Quabothoo	42,133	526	13	3
367	Bundy	13,816	179	17	11
368	Kerriwah	17,380	117	13	7
369	Ringwood	760	33	5	0
370	Wangen	66,887	167	4	4
372	Molly	21,644	101	9	1
373	Sandridge	23,356	340	12	2
374	The Boebung Swamp	5,295	68	18	11
375	Howlong	540	22	10	0
376	Coree	17,640	551	5	0
377	Half-moon Plain	1,824	30	8	0
378	Medway and Gamber Gamber West	10,867	113	4	0
379	Cowel Murryan	3,288	38	7	2
380	Murrumbogie	18,225	75	8	9
381	Buraja	3,750	140	12	6
382	Eugeldry	5,260	87	13	4
383	Narromine	69,066	863	6	6
384	Back Tenandra	6,320	92	3	4
385	Thorndale	49,885	207	17	1
386	Merryanbone	8,250	103	2	6
387	Pallal	40,857	383	0	9
388	Buckingbong	33,037	412	19	3
389	New Breelong	17,000	61	19	7
390	Youendah	46,356	313	17	5
391	Cullengally	8,250	111	14	5
392	Wee Waa South	34,180	284	16	8
393	Zaia	8,000	133	6	8
394	Bodangora	11,941	149	5	3
395	Bangheet	34,866	363	3	9
396	Wongagong	3,390	62	3	0
397	Bearbong	22,500	75	0	0
398	Bartley's Creek	13,110	136	11	3
399	Parmidman	26,082	326	0	6
400	Old Harbour	9,440	29	10	0
401	Cornalla	22,909	334	1	10
402	Ganber Ganber (East)	4,513	16	9	1
403	Moonbria	8,177	129	9	5
404	Tarulari	20,183	273	6	3
405	Huntawang	116,780	364	18	9
406	Barratta	17,002	247	18	11
407	Bunna Bunna	54,786	741	17	11
408	Toole's Creek	1,770	42	8	2
409	Hartwood	8,757	164	3	11
410	Upper Wyalong	50,880	212	0	0
411	Grahweed	42,349	352	18	2
412	Murrill Creek	20,118	314	6	11
413	Curraburrama	7,159	74	11	6
414	Tulloona	99,277	1,240	19	3
415	Moonagee	21,343	311	5	1
416	Bulbodney	34,480	251	8	4
417	Cocopara	7,620	23	16	3
418	Yamma	1,960	32	13	4
419	Houlaghan's Creek (North)	6,820	85	5	0
420	Cowl Cowl	153,704	640	8	8
421	Yanko	8,600	232	18	4
422	Berry Jerry and Arajoel	15,207	285	2	8
423	Cumboogle Cumbong	25,655	213	15	10
424	South Thononga	61,059	763	4	9
425	Tooloon	18,872	235	18	0
426	Opposite Coonamble or Euramie	8,706	108	16	6
428	Quonmoona or Geanmoney	7,225	67	14	8
429	Lalatee (South)	636	18	11	0
430	Groongal	21,080	439	3	4
431	Kulki	1,600	46	13	4
432	Willan	13,106	163	16	6
433	Middle Field	8,860	73	16	8
434	Cathundril, No 2.	17,310	162	5	8
435	West Bogan, Nos. 2 and 3	51,047	425	7	10
436	Lower Ningear	7,521	97	18	8
437	Canonbar	308,540	2,571	3	4
438	Umutbee and Toonga	21,565	247	2	0
439	Back Run	15,200	47	10	0
440	Quandary (North)	6,060	37	17	6
441	Bullerawa	129,722	540	10	2
443	Greenbar Creek	19,546	61	1	8
444	Geweroe	31,933	133	1	1
445	Minore	11,582	42	4	6
446	Bundaburrah	4,644	58	1	0
447	Nevertire	44,892	607	18	3
449	Youlbung	22,920	119	7	6
450	Cambara	5,820	72	15	0
451	Warregal	11,265	46	18	9
452	Kentucky	1,900	71	5	0
453	North-East Mangoplah	2,871	35	17	9
454	Gorce	8,110	270	6	8
455	Willurah	19,830	256	2	9
456	Kyeamba	6,580	54	16	8
457	Tin Pot Alley	16,009	116	14	8
458	Midkin	132,740	1,935	15	10
459	Nangerybone	38,640	322	0	0
460	Back Gilgandra	7,600	47	10	0
461	Honeybugle	24,500	103	9	3
462	Mangoplah	1,942	48	11	0
463	Ganambil	14,218	177	14	6
464	Gandymungydel	20,934	218	1	3
465	Denliquin	13,925	330	14	5
466	Eunonyhareenyha	1,420	29	11	8
467	Burburgate	88,606	664	10	11
468	Merrigal Marthaguy	12,429	161	16	9
469	Albert Waterhole	9,302	58	2	9
470	Bundyulumblah	20,666	344	8	8
471	West Bogan, No 7	22,956	191	6	0
472	Pilliga	51,337	427	16	2
473	Brooknong	48,650	1,114	17	11
474	East Breelong	11,620	24	4	2
475	Bourbah	10,255	117	10	1
476	Upper Bugaldi	6,200	19	7	6
477	Callubri	6,960	50	15	0
478	Derribong	72,689	1,060	1	1
479	Mittagong	12,014	175	4	1
480	Tabratong West	5,080	37	0	10
481	Youie	13,015	169	9	4
482	Bundidgery	4,570	76	3	4
483	Micabil	12,840	133	15	0
484	Success	4,917	40	19	6
485	Barellan	46,762	438	7	11
486	Gunning East	4,460	18	11	8
487	Back Wardry	19,100	139	5	5
488	Brue Plains	15,900	53	0	0
489	Ooma	7,602	65	19	10
490	The Meadows	11,925	99	7	6
492	Warrie	7,185	97	5	11
493	Booloola	4,964	72	7	10
494	Morago	12,400	180	16	8
495	Gregadoo	1,400	26	5	0
496	Burrandoon	27,374	256	12	8
497	West Bogan, No. 1	25,135	209	9	2
498	Barrawang	196,695	1,662	10	10

PASTORAL HOLDINGS—CENTRAL DIVISION—*continued.*

No and Name of Leasehold Area.		Area.	Rent			No and Name of Leasehold Area.		Area	Rent.		
No.	Name					No	Name.				
		Acres.	£	s.	d			Acres.	£	s.	d.
499	Palisthon	31,580	263	3	4	587	Buddigower	85,297	710	16	2
500	Colli	7,393	100	2	3	588	Coghill	59,400	185	12	6
501	Bungle Gully	42,313	352	12	4	589	Merriwa	14,140	188	10	8
502	Mimosa	54,470	397	3	7	591	Towyal	21,123	308	0	11
503	Sandy Creek	18,760	97	14	2	592	Budgeon	4,776	59	14	0
504	Terembone	32,681	340	8	7	593	Nanima	6,714	62	18	11
505	Bogo Bogolong	41,853	305	3	7	594	Burroway	56,341	704	5	3
506	Slaughterhouse Plains	8,457	70	9	6	596	Terrangan	4,820	80	6	8
507	Coreen	8,135	271	3	4	597	Bygaloree	61,082	509	0	4
508	Kookaburragong	7,275	53	1	0	598	Bundemar	34,140	426	15	0
509	Arramagong West	1,029	10	14	5	599	Wonbobbie	45,182	564	15	6
510	New Geralgambone	5,381	61	13	2	601	Mundawaddera	8,589	143	3	0
511	Gunnegaldra	2,305	28	16	3	602	Cooma	17,730	110	16	3
512	Monument Flats	6,580	47	19	7	603	Mathoura	6,600	82	10	0
513	Genanagie	73,240	534	0	10	604	Bundure	9,950	310	18	9
514	Bimble	25,400	79	7	6	605	Warrana	44,044	504	13	5
515	Mungary West	85,192	1,153	12	10	606	Buddabudah	34,300	250	2	1
516	Mungiebundie	16,373	204	13	3	607	Wallenamme	25,440	106	0	0
517	Lower Mithul Creek	4,768	69	10	8	609	Boolcarrol	35,605	593	8	4
518	Moomboldool	42,270	352	5	0	610	Embie	6,522	74	14	8
519	Mulga or Glenariff, Block B	21,423	133	17	11	611	Tenandra	9,697	131	6	4
520	Hermitage Plains, Block M	14,600	91	5	0	612	Wyabray	70,815	590	2	6
521	Back Yamma	7,961	66	6	10	613	Opposite Derribong	6,267	71	16	2
522	Old Bramble	6,880	50	3	4	615	Millool	14,387	239	15	8
524	Ulumbie	16,410	102	15	0	616	Boonal	17,958	224	9	6
525	Goolgumbla	7,300	182	10	0	617	Tycannah	4,820	80	6	8
526	Quamong	3,159	59	4	8	618	Curra Curraw inna	18,100	60	6	8
527	The Springs	11,740	97	16	8	619	Moira	26,075	407	8	5
528	Coombogolong	30,191	377	7	9	620	Tubbo	23,519	587	19	6
529	Yalgogrin South	61,422	255	18	6	621	Wathagar	2,961	37	0	3
530	Narraway	7,961	66	7	4	622	Grong Grong	4,167	208	7	0
531	New Wyregall	11,000	45	16	8	623	Merringreen	23,347	243	4	0
532	More Devil	5,133	74	17	2	624	Humula	22,272	185	12	0
533	Wangrewally	20,833	141	1	10	625	Eenaweena	38,133	476	13	3
534	Merri Merri	7,629	95	7	3	626	Woorooma	14,650	238	1	3
535	Gobbagombalin and Tooyal	26,300	273	19	2	627	Ariah	24,667	411	2	4
536	Yalcogrin	8,309	121	3	6	628	Baan Baa South	11,745	73	8	2
537	Carroll	5,327	49	18	10	629	Myall Downs	12,266	102	4	4
538	Ginghet	16,861	122	18	10	630	Yarrabee	4,260	71	0	0
539	Naradhan	97,118	404	13	2	631	Euroka	62,069	387	18	8
540	Gunyer Warildi	30,162	377	0	6	632	Back Daronbalgie	9,300	77	10	0
541	Mandamah	20,975	152	18	11	633	Milton Vale	3,693	50	0	3
542	Moonbi or Bogandillon	37,382	327	1	10	634	Kooba	44,313	692	7	10
543	Youngara Creek	13,917	115	19	6	635	Nangunia and Warmatta	1,093	40	19	9
544	Tarriaro	71,020	517	17	1	636	Bumbaldry	5,682	35	10	3
545	Trowell Creek Station	28.153	175	19	2	637	Ghoolendoodi	95,875	898	16	7
546	Burra Burra	64,200	468	2	6	638	Bourke's Creek	6,970	101	12	11
547	Bolero, Block A North	14,880	93	0	0	639	Bunarbra	17,610	201	15	7
548	Borec Creek	9,791	81	11	10	640	Breeza	37,747	511	3	2
549	Bocabigal	3,821	47	15	3	641	Triangular Plain	810	27	0	0
550	Biambil	6,423	40	2	11	642	West Breelong	3,640	22	15	0
551	Dandaloo	9,259	125	7	8	644	Houlaghan's Creek (South)	12,962	108	0	4
552	Lower Willie East	6,294	52	9	0	645	Illumurgalia East	5,080	66	2	11
553	Rocky Creek	109,822	114	8	0	646	Bengalla	48,767	355	11	11
554	Walla Walla	4,771	39	15	2	647	Bandon	1,834	15	5	8
555	Lower Balabla	7,463	54	8	4	648	Condobolin	41,867	305	5	7
556	Balladoran	37,460	312	3	4	649	Morangarell and Narraburra Creek	13,744	114	10	8
557	Oura	2,970	49	10	0	650	Cubbo and Dunwerian	21,400	66	17	6
558	Euroka	11,654	87	8	1	651	Barham	37,425	662	14	8
560	Tucka Tucka	17,776	148	2	8	652	Mungerbumbone	19,464	182	9	6
561	Mingadal	11,510	148	13	5	653	Tomanbil	6,868	115	5	9
562	Whalan	48,662	608	5	6	654	Wooyeo	159,876	1,165	15	3
563	Edgeroi	83,217	1,126	18	0	656	Eugoura	20,052	125	6	6
564	Binda	7,910	32	19	2	657	Lindsay	66,414	276	14	6
565	Carnerney	2,463	51	6	3	658	Pullitop	16,640	138	13	4
566	Tchelery	18,918	244	7	2	659	Howlong	22,017	330	5	1
567	Carbucky	48,284	603	11	0	660	Narran	6,278	52	6	4
568	Lower Dronbalgie	1 849	15	8	2	661	Mullah	40,597	608	19	1
569	Trinkey	27,500	286	9	2	662	North Junee	3,802	63	7	4
570	Walla Walla and Carangatell	3,139	39	4	9	663	Tulcumbah	28,040	233	13	4
571	Galargambone	2,987	38	17	11	664	Monga	119,760	1,247	10	0
572	Egelabra	17,079	231	5	7	665	Dundullamel	5,000	52	1	8
573	Bald Ridge	8,600	26	17	6	666	Mereyula	2,484	10	7	0
574	Bongeabong	23,160	241	5	0	668	Billabong (West)	4,718	39	6	4
575	Cowabee	14,509	151	2	9	669	New Gradgery	1,444	10	10	7
576	Timtemybungan	36,343	530	0	1	671	Big River	25,814	53	15	7
577	Grubten Plains	1,884	19	12	6	672	Cobran	17,133	539	1	10
578	Canonbar	9,953	228	1	10	673	Noweronie	18,060	376	5	0
579	Boranda	5,000	20	16	8	674	Torgamba	20,645	258	1	3
580	Belar	33,587	122	9	1	675	Gunbar	101,382	1,013	16	4
582	Keiabury	16,550	551	13	4	676	Bumbaldry (Upper)	6,486	40	10	9
583	Quat Quatta	2,800	105	0	0	677	Hermitage Plains Block A 2	31,130	129	14	2
584	Dinby	9,100	22	15	0	678	Narrawin	30,861	257	3	6
585	Jandra	4,603	38	8	0	*682	South Mahonga Forest	1,018	40	5	11
586	Gulgo	9,415	44	5	6	683	Mahonga	11,000	286	9	2

PASTORAL HOLDINGS—CENTRAL DIVISION—*continued.*

No and Name of Leasehold Area.		Area.	Rent			No and Name of Leasehold Area.		Area.	Rent		
No.	Name.					No.	Name.				
		Acres.	£	s.	d			Acres.	£	s.	d.
684	Yalgogoring (North)	22,680	141	15	0	712	Upper Wyalong, No. 2	21,168	88	4	0
685	Holkibertoo (North)	15,560	145	17	6	714	Enrombedah	52,121	434	6	10
686	Merah	95,707	797	11	2	715	Elong Elong	1,900	15	16	8
687	Yerrinan	29,264	60	19	4	718	Back Creek and Nobby's Lagoon	22,235	162	2	7
688	Warwillah	10,616	132	14	0	719	Cobranraguy	7,795	56	16	10
689	Melrose	280,020	2,333	10	0	721	Borah	39,200	81	13	4
690	Willeroon	69,777	581	9	6	722	Piedmont	25,440	212	0	0
691	Wallangra	53,120	664	0	0	723	West Bogan, No. 6	24,252	202	2	0
692	Wallandoon	4,194	69	18	0	724	Borambola	9,320	174	15	0
693	Goolhi	36,645	305	7	6	725	Dundoo Hills	32,800	128	2	6
694	Bald Hill and Warrderry	13,824	103	13	7	726	Nelungaloo	5,523	46	0	6
695	Wanganella	10,720	156	6	8	727	Pinnacle	16,873	105	9	2
696	Gowang	11,914	99	10	8	728	Gonn	26,454	440	18	0
698	Budgery	32,200	134	3	4	729	Norrong	20,168	252	0	0
699	Kindra Creek	8,480	79	10	0	730	Tannabar	8,600	26	17	6
700	Willie	58,976	675	15	4	731	Bungebar	6,960	43	10	0
701	Lake Cowal	78,879	591	11	10	734	Bundybundally	15,600	65	0	0
702	Wilgar Downs	153,060	717	9	4	735	Mogong	5,400	22	10	0
706	Myall Creek	62,066	517	4	4	736	Coombogolong	24,172	302	3	0
707	Oberne	24,737	257	13	7	737	Culmier	6,019	75	4	9
*680	Murrungundy	17,450	163	11	11	738	Brundah	3,475	22	0	8
681	Gragen and Gramen	43,704	546	6	0	739	Brundah North	10,630	66	8	9
708	Keera	75,400	235	12	6	740	Wallanbillan East	8,500	106	5	0
709	Obella	33,736	281	2	8	741	Wallanbillan	7,523	94	0	9
710	Wandao Wondong	34,769	289	14	10						

PASTORAL LEASES—WESTERN DIVISION.

1	Wangaroa	15,280	70	0	8	59	Gunniguldrie	37,160	38	14	2
2	Tarella	357,874	1,118	7	2	60	Boomaricool	32,592	67	18	0
3	Wellmoringle	212,495	1,180	10	7	61	Marma	44,800	93	6	8
4	Innesowen	93,000	348	15	0	62	Maranoa	311,000	1,295	16	8
6	Beemery	199,575	1,330	10	0	63	Redan	31,100	129	11	8
7	Wilga	64,700	278	0	2	64	Tinapagee	404,120	1,515	9	0
8	Fort Grey	222,900	464	7	6	65	Connulpie Downs	208,260	578	10	0
9	Buckanbee	87,730	465	4	9	66	Gnomery	103,800	865	0	0
10	Moolah	95,360	158	18	8	67	Buckalow	199,300	622	16	3
11	Ticehurst	86,901	362	2	0	68	Neckarboo	121,250	378	18	2
12	Meadows	63,960	239	17	0	69	Molten Plains	118,400	493	6	8
13	Nelyambo	424,870	2,434	3	1	70	Nullawa	24,100	150	12	6
14	Turlee	117,920	122	16	8	71	Moira Plains	48,100	200	8	4
15	Noonthorungee	184,416	576	0	0	72	Willara	95,100	396	5	0
16	Coulpataro	58,840	269	13	8	73	Wilgha Downs	48,220	200	18	4
17	Dumble	44,008	366	14	8	74	The Priory	64,280	200	17	6
18	Buckwaroon	56,000	233	6	8	75	East Bogan, No. 15	20,550	171	5	0
19	Tiltagara	83,460	260	16	3	76	Collywarry	38,000	263	17	10
20	Mount Gipps	418,471	1,307	14	6	77	Budda	20,480	170	13	4
21	Cobham Lake	225,320	704	2	6	78	Moothumbil	59,400	371	5	0
22	Kallara	491,280	2,456	8	0	79	Keewong	122,660	127	15	5
23	Mallara	55,044	114	13	6	80	Brindingabba	143,520	598	0	0
24	Coan Downs	229,980	1,078	0	8	81	Springfield	63,960	239	17	0
25	Kilfera	411,398	857	1	7	82	Bulla	64,000	160	0	0
26	Tarcoola	180,401	375	16	9	83	Yarrawin	79,077	658	19	6
28	Panban	66,560	173	6	8	84	Baden Park	63,560	264	16	8
29	Terrawynia	463,908	2,029	12	0	85	Gidgee	97,400	324	13	4
30	Nymagee	61,613	154	0	8	86	Bulgoo	62,360	207	17	4
31	Moquilamba	23,351	97	6	2	87	Mokely	95,960	199	18	4
32	Corella	120,704	628	13	4	83	Talyeale	127,560	531	10	0
33	Compton Downs	25,382	105	15	2	89	Weinteriga	337,222	1,522	3	8
34	Langawirra	228,250	951	0	10	90	Lissington	159,022	662	11	10
35	Wapwella	60,600	252	10	0	91	Mallee Cliffs	143,410	298	16	8
36	Culpawlin	84,530	528	6	3	92	Salisbury Downs	498,000	1,245	0	0
37	Restdown	49,900	103	19	2	93	Yantara	231,250	642	7	3
38	Gurrera	32 000	150	0	0	94	Kenilworth	92,730	386	7	6
39	Til Til	189,597	1,181	19	8	95	Mundi Mundi	173,580	482	3	4
40	Frome's Creek	110,200	306	2	3	96	Paddington	301,040	1,033	9	4
41	Wyuna Downs	31,200	130	0	0	97	Burtundy	60,172	253	11	1
42	Magenta	174,820	364	4	2	98	Mullingawarrina	119,795	623	18	8
43	Elsmora	125,900	262	5	10	99	Wallandra	31,859	265	9	10
44	Quantambone	202,983	1,691	10	6	100	Wyadra	41,893	349	2	2
45	Mootwingee	38,660	120	16	3	101	Bundabulla	80,348	669	11	4
46	Fort Bourke	177,722	999	13	9	102	Tapio	266,900	556	4	7
47	Lachlan Downs	84,880	265	5	0	103	Marra	229,940	1,628	14	10
48	Delalah Downs	110,300	183	16	8	104	Yanda	135,970	721	1	1
49	Cuthowarra	55,400	184	13	4	105	Milrea	32,145	200	18	2
50	Bogeira East	21,763	181	7	2	106	Tapalin	249,403	519	11	10
51	Clare	222,736	923	1	4	107	Wilkie Plains	12,060	75	7	6
52	Tarcoon	67,535	386	18	5	108	Marooba	30,111	94	2	0
53	Pinlie	110,498	460	8	2	109	Bogeira Back	22,420	140	2	6
54	Tuda	137,480	572	16	8	110	Bangheet	107,314	891	5	8
55	Momba	1,085,148	6,103	19	2	111	Sussex	64,240	294	8	8
56	Coronga Downs	60,662	252	15	2	112	Boondaria	68,142	567	17	0
57	Pulpulla	64,500	201	11	3	113	Glenlyon	115,400	432	15	0
58	Tolarno	479,349	1,997	5	9	114	Bootia	95,180	297	8	9

PASTORAL LEASES—WESTERN DIVISION—*continued.*

No and Name of Leasehold Area		Area	Rent			No and Name of Leasehold Area		Area	Rent		
No	Name.					No	Name				
		Acres.	£	s.	d.			Acres.	£	s.	d.
115	Roto	152,800	477	10	0	202	Moorna	63,172	210	11	6
116	Murrin	69,287	324	15	8	203	Netley	453,836	1,418	4	9
117	Mondadoo	14,468	120	11	4	204	Monolon, No. 5	36,000	112	10	0
118	Brenda	37,728	314	8	0	205	Meryula	247,188	823	19	3
119	Tupra	321,102	2,809	12	10	206	Belalie	172,092	896	6	3
121	Muckewerawa	35,091	292	8	6	207	Thurloo Downs	201,000	502	10	0
122	Warraweena	212,730	1,373	17	8	208	Gingie	136,590	853	13	9
123	Balowra	24,930	103	17	6	209	Curraweena	68,939	287	4	11
124	Bunneringee	140,700	604	11	5	210	Coronga Peak	128,640	536	0	0
125	Milroy	155,160	1,293	0	0	211	Wiltagoona	108,740	453	1	8
126	Boulka	125,800	393	2	6	212	Conoble	154,470	965	8	9
127	Delalah	161,750	269	11	8	213	Morden	154,410	482	10	8
128	Toulby	40,360	269	17	11	214	Cuthro	561,273	2,375	3	7
129	Wilgaroon	63,500	264	11	8	215	Byerock	34,340	143	1	8
130	Burta	107,500	358	6	8	216	Bundimbarrina	169,874	1,061	14	3
131	Grasmere	108,120	337	17	6	217	Menamurtie	203,833	849	6	1
132	Nillera, or Canyanboon	61,260	268	0	3	218	Mulgah	21,157	96	19	5
133	Rookery	32,520	81	6	0	219	Moolbong	55,054	516	2	8
134	Florida	30,325	128	17	8	220	Olive Downs	46,300	96	9	2
135	Wonominta	147,600	621	3	0	221	Euston	17,601	36	13	5
136	Arumpo	85,460	284	17	4	222	Eremeran	87,880	411	18	9
137	Boorooma	270,696	1,691	17	0	223	Onepar	56,780	157	14	5
138	Alma	72,116	600	19	4	224	North Merrowie	34,070	283	18	4
139	Waverley Downs	64,100	200	6	3	225	Berawinnia Downs	157,000	392	10	0
140	Wirchulleba	78,532	368	2	5	226	Goondublui	196,701	1,024	9	8
141	Sturt's Meadows	109,900	366	6	8	227	Tintinallogy	116,980	609	5	5
142	Wangaron	15,500	32	5	10	228	Multagoona	93,853	391	1	1
143	Mount Manara	108,460	451	18	4	229	Billilla	225,890	1,019	12	10
144	Uranaway	67,500	281	5	0	230	Wirlong	94,110	294	1	11
145	Yallock	128,280	133	12	6	231	Boolegal	21,068	245	15	11
146	Roto North-East	32,840	34	4	2	232	Bedooba	61,200	267	15	0
147	Booroomugga	64,000	272	0	0	233	Yathong	121,230	126	5	8
148	Golgol	171,327	785	5	0	234	Jandra	109,548	912	18	0
149	Merri Merriwa	13,080	54	10	0	235	Lerida	78,320	293	14	0
150	Tibora	44,450	46	6	1	236	Charlton	98,627	821	17	10
151	Mount Arrowsmith	123,320	385	7	6	237	Manfred	279,186	581	12	9
152	Angledool	87,596	547	9	6	238	Hartwood	31,110	77	15	6
153	Booroondara Downs	55,924	233	0	4	239	Mount Poole	206,800	430	16	8
154	Marfield	238,420	993	8	4	240	Dunlop	440,592	2,360	6	3
155	Goonalgaa	26,484	66	4	3	241	Paika	168,754	703	2	10
156	Yancannia	544 304	2,267	18	8	242	Llanillo	108,287	676	15	11
157	Garnpung	99,840	208	0	0	243	Thule	45,495	75	16	6
158	Central Block C	29,780	74	9	0	244	Kinchega	645,491	2,689	10	11
159	Mount Wood	202,800	563	6	8	245	Willandra	189,216	1,576	16	0
160	Urisino	317,500	992	3	9	246	Mossgiel	131,551	1,096	5	2
161	Packsaddle	159,978	499	18	8	247	Lila Springs	152,331	634	14	3
162	Dine Dine	116,620	546	13	2	248	Glenariff	137,187	571	12	3
163	Coombie	64,080	200	5	0	249	Boulka Lake	368,900	1,152	16	3
164	Yandama	63,950	133	4	7	250	Wanaaring	188,710	786	5	10
165	North Abbotsford	30,080	188	0	0	251	Mulga, No. 1	29,500	122	18	4
167	Kaleno	64,400	214	13	4	252	Albermarle and Victoria Lake	382,940	1,675	7	3
168	Outer Netallie	97,616	240	1	4	253	Murrawombie	115,417	1,082	0	9
169	Kajuligah	78,580	327	8	4	254	Wamell	27,201	170	0	2
170	Lake Victoria	698,952	2,329	16	10	255	Mourabilla	45,437	378	12	10
171	Doradilla	30,700	127	18	4	256	Tara	60,579	283	19	4
172	Tongo	104,200	325	12	6	257	Toorale and Dunlop	615,484	2,949	3	11
173	Poolamacca	174,300	363	2	6	258	Corrong	303,343	2,654	5	1
174	Avoca	354,963	1,525	4	8	259	Waratta	32,000	100	0	0
175	Torrens Creek	33,700	140	8	4	260	Winbar	278,648	1,451	5	10
176	Teltagoonah	66,560	249	12	0	261	Para	176,912	810	16	11
177	Gundabooka	162,570	846	14	5	262	Whittabranah	52,900	110	4	2
178	Cultowa	204,671	930	6	6	263	Canally	305,433	636	6	5
179	Booberoi	61,785	321	15	11	264	Coolabah	38,608	170	18	5
180	Dungalear	118,652	741	11	6	265	Tambria	64,000	213	6	8
181	Belford	60,840	177	9	0	266	Billybingbone	15,910	99	8	9
182	Mount Grenfell, No. 2	23,880	99	10	0	267	East Bogan, No. 17	13,051	115	11	2
183	Wanga Mana	77,358	322	6	6	268	Mogil Mogil	21,380	44	10	10
184	Curranyalpa	104,188	596	18	3	269	Eribendery	16,473	137	5	6
185	Nocoleche	345,900	1,297	2	6	270	Tom's Lake	42,600	355	0	0
186	Gnalta	325,329	704	3	1	271	Burrandown	28,820	120	1	8
187	Merungle	92,096	805	16	10	272	Willawillin gbah	15,780	131	10	0
188	Talawanta	133,138	1,109	9	8	273	Denman	14,810	123	8	4
189	Keribree	169,640	706	16	8	274	Kayrunnera	34,167	143	15	9
190	Thackaringa	60,720	253	0	0	275	Arlington Plains	18,100	75	8	4
191	Topar	157,000	523	6	8	276	Mulga Downs	64,168	213	17	10
192	Fulham	98,380	307	8	9	277	Wirra Warra	11,232	93	12	0
193	Amphitheatre	87,680	324	14	10	278	Berawinna Downs, No. 3	40,800	102	0	0
194	Moorara	511,968	533	6	0	279	Ophara	54,800	228	6	8
195	Corona	829,820	2,593	3	9	280	Murruman and Dural	29,620	246	16	8
196	Murtee	170,330	798	8	5	281	Lower Weeli West	16,500	137	10	0
198	Lower Lila	66,331	276	7	7	282	East Bogan, No. 16	28,996	256	14	9
199	Yeranbah	112,548	492	8	0	283	Mount Stuart	64,000	200	0	0
200	Nundoro	218,500	682	16	3	284	Caryapundy Swamp, No. 1	54,200	112	18	4
201	Tindayrey	169,956	708	3	0	285	North Euabalong	25,460	35	7	3

PASTORAL LEASES—WESTERN DIVISION—*continued.*

No. and Name of Leasehold Area.		Area.	Rent.			No. and Name of Leasehold Area.		Area.	Rent.		
No.	Name.					No.	Name.				
		Acres.	£	s.	d.			Acres.	£	s.	d.
286	Huaba	31,800	185	10	0	301	Yandembah	31,509	262	11	6
287	Darling Block D	38,480	192	8	0	302	Lower Nilgie	10,000	48	12	3
288	Osaca	64,050	200	3	2	303	Grawin South	25,000	156	5	0
289	Newfoundland, No. 1	23,460	195	10	0	304	East Bogan, No. 14	25,640	240	7	6
290	Nardoo	70,000	291	13	4	305	Oberwells	29,482	24	11	5
291	Tankerook North	6,380	53	3	4	306	Upper Bundabulla East	23,094	192	9	0
292	Coobung	18,100	150	16	8	307	Mount Boorithumble	26,968	56	3	8
293	Willoh	22,698	189	3	0	308	Moongulla West	40,400	171	14	0
294	Willybingbone	15,600	146	5	0	309	Mount Sturt	63,960	133	5	0
295	Pinegobla	32,692	187	6	0	310	Mulurulu	73,340	61	2	4
296	Gumanaldry	24,356	103	10	4	311	Euabalong	25,624	186	16	10
297	Kew	64,700	269	11	8	312	North Peak	29,904	74	15	3
298	Turkey Creek	43,151	143	16	9	315	Mooculta	74,768	467	6	0
300	Waverley, No. 1	38,400	160	0	0	316	Boundary	10,200	42	10	0

Sydney: Charles Potter, Government Printer.—1889.

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1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CROWN LANDS.

(PASTORAL LEASE RENTS AND OCCUPATION LICENSE FEES REDUCED UNDER 100TH SECTION OF THE CROWN LANDS ACT OF 1884.

Ordered by the Legislative Assembly to be printed, 11 *April*, 1889.

RETURN showing Pastoral Lease Rents and Occupation License Fees reduced under the 100th section of the Crown Lands Act of 1884.

LEASEHOLD AREAS.

No. and Name of Holding.	Minimum Rent as recommended by the Local Land Board in the first instance.	Rent finally determined on appeal.	Difference caused by reduction.
EASTERN DIVISION.			
	£ s. d.	£ s. d.	£ s. d.
295 Wellingrove	104 14 6	78 10 11	
408 Cowar	123 1 5	61 10 9	
478 Runnemede	79 4 9	59 8 7	
485 Cunglebung	203 15 0	89 2 10	
563 Paddy's Land	100 0 0	31 5 0	
	610 15 8	319 18 1	290 17 7
CENTRAL DIVISION.			
529 Yalgogrin South	383 17 9	255 18 6	
721 Borah	245 0 0	81 13 4	
725 Dundoo Hills	205 0 0	128 2 6	
	833 17 9	465 14 4	368 3 5

SUMMARY.

Division.	Minimum Rent as recommended by the Local Land Board in the first instance.	Rent finally determined on appeal.	Difference caused by reduction.
	£ s. d.	£ s. d.	£ s. d.
Eastern	610 15 8	319 18 1	290 17 7
Central	833 17 9	465 14 4	368 3 5
Totals £	1,444 13 5	785 12 5	659 1 0

OCCUPATION

OCCUPATION LICENSES.

No. and Name of Holding.	Minimum License Fee as recommended by the Local Land Board in the first instance.	License Fee finally determined on appeal.	Difference caused by reduction.
	Eastern Division.		
	£ s. d.	£ s. d.	£ s. d.
568 Paddy's Land	87 10 0	32 16 3	54 13 9
	Central Division.		
529 Yalgogrin South	196 2 6	16 6 11	
725 Dundoo Hills	101 11 3	33 17 1	
	297 13 9	50 4 0	247 9 9

SUMMARY.

Division.	Minimum License Fee recommended by the Local Land Board in the first instance.	License Fee finally determined on appeal.	Difference caused by reduction.
	£ s. d.	£ s. d.	£ s. d.
Eastern	87 10 0	32 16 3	54 13 9
Central	297 13 9	50 4 0	247 9 9
Totals £	385 3 9	83 0 3	302 3 6

Sydney: Charles Potter, Government Printer.—1889.

[3*d*.]

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CROWN LANDS.

(SPECIAL AREAS MADE UNDER THE ACT OF 1884.)

Ordered by the Legislative Assembly to be printed, 6 *August*, 1889.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 16th April, 1889, That there be laid upon the Table of this House,—

"A Return showing the Special Areas made under the Land Act of 1884, "specifying each the date on which it was made, the locality, the area, "the upset price for residence selections, the area selected, the date when "offered at auction, the auction upset price, the area purchased at auction, "with the price realized, and the balance remaining unsold."

(Mr. Barbour.)

535—A

[920 copies—Approximate Cost of Printing (labour and material), £17 5s. 9d.]

Special Areas.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Land District.	No.	Date.	County.	Parish.	Area.	Price.	Area selected.	Offered at Auction.	Date.	Area sold.	Upset price.	Price realized.	Unalienated.
					a. r. p.	£ s. d.	a. r. p.	Acres.		Acres.	£ s. d.	£ s. d.	a. r. p.
Albury	2,991	5 Feb., 1887	Hume	Walla Walla	88 0 0	2 0 0	Revoked 19/12/88	.....	.....	.....	.. ...	.....	88 0 0
	6,968	1 Sept., 1888	Goulburn	Jerra Jerra	220 3 0	2 0 0	160 0 0	.....	.....	.....	.....	.....	60 3 0
	6,977	30 June, 1888	Selwyn	Glenken	660 0 0	2 0 0	660 0 0	.....	.....	.....	.....	.....	.....
	7,144	25 Aug., 1888	,,	,,	320 0 0	1 10 0	.....	.....	.....	.....	.....	.....	320 0 0
	7,883	15 Dec., 1888	Goulburn	Jergyle	330 3 0	2 0 0	319 3 0	.....	.....	.....	.....	.....	11 0 0
	7,882	15 ,, 1888	,,	,,	576 0 0	1 10 0	200 0 0	.....	.....	.....	.....	.....	376 0 0
Armidale	1	26 June, 1886	Sandon	Exmouth	284 0 0	1 10 0	160 0 0	.....	.....	.....	.....	.....	125 0 0
	2,481	16 Oct., 1886	,,	Gyra	800 0 0	2 0 0	.....	.....	.....	.....	.....	.....	800 0 0
	7,178	6 ,, 1888	Hardinge and Clarke	Ryanda, Mackenza, &c.	1,800 0 0	3 0 0	.....	.....	.....	.....	.....	.....	1,800 0 0
	7,183	1 Sept., 1888	Sandon	Exmouth	73 0 0	2 0 0	.....	.....	.....	.....	.....	.....	73 0 0
	7,315	6 Oct., 1888	Hardinge	Elderbury	100 0 0	5 0 0	.....	.....	.....	.....	.....	.....	100 0 0
	7,316	6 ,, 1888	,,	,,	590 0 0	5 0 0	.....	.....	.....	.....	.....	.....	590 0 0
Berrima	2,432	7 Sept., 1886	Camden	Yarrawa	920 0 0	2 0 0	142 0 0	.....	.....	.....	.....	.....	778 0 0
Bingara	2,033	24 July, 1886	Murchison	Dinoga	160 0 0	3 0 0	100 1 0	$49\frac{3}{4}$ / $50\frac{1}{2}$	24 Feb., 1887 / 23 June, 1887	.....	.....	.....	59 3 0
	7,170	.....	,,	Wyndham	68 2 0	1 15 0	.....	.....	.....	.....	.....	.....	68 2 0
Bombala	3,134	19 Mar., 1887	Wellesley	Gunning Grach	282 0 0	2 0 0	250 0 0	(Volunteer Land Order)		.....	.....	.....	9 a. (balance absorbed in access roads.)
	6,985	30 July, 1888	,,	Burnima	109 2 0	2 10 0	50 0 0 (Volunteer Land Order) / 40 0 0 (Conditional Purchase)			.....	.....	.....	19 2 0
Boorowa	6,976	30 ,, 1888	Harden	Illalong	640 0 0	2 0 0	.....	640	10 Oct., 1888	640	2 1 0	2 1 0	.....
	6,996	30 ,, 1888	,,	Galong	40 0 0	1 10 0	.....	40	10 ,, 1888	40	1 10 0	1 10 0	.....
	6,997	30 ,, 1888	,,	,,	145 0 0	2 0 0	147 2 0	.....	.....	.....	.....	.....	.....
	6,998	30 ,, 1888	,,	,,	250 0 0	2 5 0	208 0 0	.....	.....	.....	.....	.....	.....
	6,999	30 ,, 1888	,,	,,	480 0 0	2 10 0	440 0 0	50	10 Oct., 1888	50	2 10 0	2 10 0	.....
	7,000	30 ,, 1888	,,	,,	160 0 0	2 15 0	160 0 0	.....	.....	.....	.....	.....	.....
	7,001	30 ,, 1888	,,	,,	60 0 0	3 0 0	60 0 0	.....	.....	.....	.....	.....	.....
	7,002	30 ,, 1888	,,	,,	40 0 0	3 5 0	40 0 0	.....	.....	.....	.....	.....	.....
	7,003	30 ,, 1888	,,	,,	40 0 0	3 10 0	40 0 0	.....	.....	.....	.....	.....	.....
	7,004	30 ,, 1888	,,	,,	60 0 0	4 0 0	60 0 0	.....	.....	.....	.....	.....	.....
Bourke	1	10 April, 1886	Cowper	Barton	3,265 2 0	2 0 0	.....	.....	.....	.....	.....	.....	3,265 2 0
	2	10 ,, 1886	,,	Banga	1,117 0 0	2 0 0	.....	.....	.....	.....	.....	.....	1,117 0 0
	3	10 ,, 1886	,,	East Bourke	100 1 0	2 0 0	.....	.....	.....	.....	.....	.....	100 1 0
	4	10 ,, 1886	,,	,,	390 3 0	2 0 0	402 0 0	.....	.....	.....	.....	.....	.....
	5	10 ,, 1886	,,	,,	1,159 2 0	2 0 0	320 0 0	.....	.....	.....	.....	.....	839 2 0
	7,077	18 Aug., 1888	,,	Davidson	106 0 0	1 10 0	106 0 0	.....	.....	.....	.....	.....	.....
	7,681	17 Nov., 1888	,,	,,	2,434 0 0	1 10 0	.....	.....	.....	.....	.....	.....	2,434 0 0
	7,682	17 ,, 1888	,,	,,	1,392 0 0	1 10 0	.....	.....	.....	.....	.....	.....	1,392 0 0
Casino	2,151	18 Aug., 1886	Rous	Jasper	82 0 0	2 0 0	82 0 0	.....	.....	.....	.. ...	.....	.....
	2,817	11 Dec., 1886	,,	Tomki	171 0 0	3 10 0	171 0 0	.....	.....	.....	.....	.....	.....
	6,979	30 July, 1888	,,	North Casino	2,084 2 0	2 0 0	197 1 0	.....	.....	.....	.....	.....	1,887 1 0
Cassilis	7,071	1 Sept., 1888	Bligh	Borambil	286 0 0	2 10 0	100 0 0	(Volunteer Land Order)		.....	.....	.....	186 0 0
Campbelltown	6,969	1 ,, 1888	Cumberland	Heathcote	229 3 0	2 0 0	144 0 0	.....	.....	.....	.....	.....	85 3 0
Cobar	1	29 May, 1886	Mouramba	Priory Plains and Roset	2,880 0 0	1 10 0	.....	.....	.....	.....	.....	.....	2,880 0 0
Condobolin	3,210	26 Mar., 1887	Gipps	South Gulgo	1,882 0 0	2 0 0	.....	.....	.....	.....	.....	.....	1,882 0 0

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Land District.	No.	Date.	County.	Parish.	Area.	Price.	Area selected.	Offered at Auction.	Date.	Area sold.	Upset price.	Price realized.	Unalienated.
					a. r. p.	£ s. d.	a. r. p.	acres.		acres.	£ s. d.	£ s. d.	a. r. p.
Condobolin	7,176	22 Sept., 1888	Gipps	South Condobolin	2,730 0 0	1 10 0	480 0 0	.....	.....	.....	.....	.....	2,250 0 0
	7,340	22 ,, 1888	,,	Goobothery	2,523 1 0	1 10 0	.....	.....	.....	.....	.....	.....	2,523 1 0
Coonabarabran	7,025	25 Aug., 1888	Gowen	Cullabulloo	480 0 0	1 10 0	....	480	18 Feb., 1889	314	1 10 0	1 10 0	166 0 0
	7,027	18 ,, 1888	,,	Orandelbinia	1,217 0 0	1 10 0	160 0 0	1,217	18 ,, 1889	.....	.....	.....	1,057 0 0
Cooma	7,192	12 Sept., 1888	Wellesley	Wellington	91 1 0	1 15 0	.....	.....	.....	.....	.....	.....	91 1 0
Cootamundra	7,341	29 ,, 1888	Bland	Wallundry	1,918 1 0	1 10 0	.....	.....	.....	.....	.....	.....	1,918 1 0
	7,529	20 Oct., 1888	,,	Narraburra	674 0 0	1 10 0	514 0 0	.....	.....	.....	.....	.....	160 0 0
	7,695	17 Nov., 1888	,,	Tumbleton	93 3 0	3 0 0	.....	.....	Now in Land District, Young.			.....	.....
	8,736	2 Mar., 1889	,,	Wallundry	165 1 0	1 10 0	.....	.....	.....	.....	.....	.....	165 1 0
Corowa	2,385	16 Oct., 1886	Denison	Mulwala and Wahgunyah	3,035 0 0	2 0 0	3,035 0 0	.....	.....	.....	.....	.....	.....
	2,448	25 Sept., 1886	,,	Finlay, &c.	1,500 0 0	2 0 0	1,424 0 0	.....	.....	.....	.....	.....	76 0 0
	2,570	30 Oct., 1886	Hume	Richmond and Goombargana	1,700 0 0	2 0 0	611 0 0	712¾	30 Mar., 1887	712¾	2 10 0	*	376 1 0
	2,774	27 Nov., 1886	,,	Sandy Ridges	163 1 0	2 0 0	160 0 0	.....	.....	.....	.....	.....	3 1 0
	3,027	30 July, 1888	Denison	Boomanoomana	2,379 2 0	2 0 0	2,365 1 0	.....	.....	.....	.....	.....	14 1 0
	7,013	30 ,, 1888	Hume	Burraga	125 2 10	2 10 0	125 2 10	.....	.....	.....	.....	.....	.....
	7,078	1 Sept., 1888	Denison	Denison and Wahgunyah	1,280 0 0	2 0 0	1,280 0 0	.....	.....	.....	.....	.....	.....
	7,270	22 ,, 1888	Hume	Burraga	545 0 0	2 0 0	493 2 0	.....	.....	.....	.....	.....	51 2 0
	7,289	1 ,, 1888	,,	Boomanoomana	462 2 0	2 0 0	462 2 0	.....	.....	.....	.....	.....	.....
	7,291	1 ,, 1888	,,	Carlyle	1,479 3 0	2 0 0	1,479 3 0	.....	.....	.....	.....	.....	.....
	7,294	6 Oct., 1888	,,	Langunya	410 0 0	2 0 0	Revoked.	.....	5 Dec., 1888	Same land as special area.			8,133 0 0
	7,725	20 ,, 1888	,,	Burraga, &c.	890 0 0	3 10 0	530 0 0	.....	230 sold under Improvement Purchase.				129 0 0
	7,750	27 ,, 1888	Denison	Mulwala	2,494 1 0	4 0 0	2,242 1 0	.....	.....	.....	.....	.....	252 0 0
	7,909	14 Jan., 1889	,,	Boomanoomana	600 0 0	3 10 0	600 0 0	.....	.....	.....	.....	.....	.....
	8,043	1 Dec., 1888	,,	,,	640 0 0	4 0 0	640 0 0	.....	.....	.....	.....	.....	.....
	8,133	5 ,, 1888	,,	Langunya	410 0 0	4 0 0	.....	Same land as special area, 7,294. Revoked 5 Dec., 1888.					410 0 0
Cowra	1,344	17 Feb., 1886	Forbes	Wattamondara	1,920 0 0	2 10 0	.....	.....	.....	.....	.....	.....	1,920 0 0
	2	30 Mar., 1886	,,	Morongla	412 0 0	2 0 0	.....	.....	.....	.....	.....	.....	411 2 0
	3	30 ,, 1886	,,	Wattamondara	640 0 0	2 10 0	.....	.....	.....	.....	.....	.....	640 0 0
	7,079	1 Sept., 1888	Bathurst	Kenilworth	1,483 2 0	1 10 0	1,440 2 0	.....	.....	.....	.....	.....	43 0 0
Deniliquin	1,756	29 May, 1886	Wakool	Woorooma	224 0 0	2 0 0	.....	224	17 Dec., 1886	132¼	2 0 0	2 0 0	91 3 0
	2,031	17 July, 1886	Townsend	Narrama	2,759 2 0	2 10 0	.....	2,759½	2 Sept., 1886	2,759½	2 10 0	2 10 0	.....
	2,433	11 Sept., 1886	,,	Purdanima	72 3 0	2 0 0	.....	.....	.....	.....	.....	.....	72 3 0
	2,930	22 Dec., 1886	,,	Quiamong	847 3 0	2 0 0	.....	847¾	13 April, 1887	847¾	2 0 0	2 0 0	.....
	7,020	18 Aug., 1888	,,	South Deniliquin	40 0 0	1 15 0	40 0 0	.....	.....	.....	.....	.....	.....
	7,021	30 July, 1888	Wakool	Mallan	1,326 1 0	2 5 0	.....	1,326¼	5 Oct., 1888	.....	.....	.....	1,326 1 0
	7,067	1 Sept., 1888	,,	Whymoul	1,165 0 0	1 15 0	.....	1,165	20 Feb., 1889	†1,165	.....	.....	1,165 0 0
	7,448	22 ,, 1888	,,	Cobwell	1,095 0 0	2 0 0	.....	1,095	10 Oct., 1888	.....	.....	.....	1,095 0 0
	7,692	17 Nov., 1888	,,	Bookit, &c.	8,300 0 0	2 0 0	.....	.....	.....	.....	.....	.....	8,300 0 0
	7,693	17 ,, 1888	,,	Bookit	220 0 0	2 0 0	.....	.....	.....	.....	.....	.....	220 0 0
	8,118	12 Jan., 1889	,,	Jimaringle	1,813 1 0	1 10 0	.....	.....	.....	.....	.....	.....	1,813 1 0
	8,176	12 ,, 1889	,,	Chowar	2,420 0 0	2 0 0	.....	.....	.....	.....	.....	.....	2,420 3 0
	7,638	13 Oct., 1888	,,	,,	720 0 0	2 0 0	.....	.....	.....	.....	.....	.....	720 0 0
Dubbo	2,032	24 July, 1886	Gordon	Colema	52 0 0	2 0 0	.....	52	13 July, 1887	.....	1 10 0	.....	52 0 0
	4,017	10 Aug., 1887	Ewenmar	Carrigan	50 0 0	2 10 0	.....	.....	.....	.....	.....	.....	50 0 0
	7,019	30 July, 1888	Gregory	Ninia	1,739 3 0	1 10 0	.....	1,739¾	10 Oct., 1888	.....	1 10 0	.....	1,739 3 0
	7,173	30 ,, 1888	Lincoln	Dubbo	120 0 0	2 0 0	120 0 0	.....	.....	.....	.....	.....	.....

* Portions 169 and 191, £2 10s.; portion 171 £2 10s. 6d. † Withdrawn.

SPECIAL AREAS—*continued.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Land District	No	Date	County	Parish	Area	Price	Area selected	Offered at Auction	Date	Area sold	Upset price	Price realized	Unalienated
					a r p	£ s d	a r p	acres		acres	£ s d	£ s d	a r p
Dungog	3,282	23 Mar , 1887	Gloucester	Tillegra	336 0 0	2 0 0	160 0 0	176	21 Dec , 1888		2 0 0		176 0 0
Eden	7,080	1 Sept , 1888	Auckland	Burragate	776 1 0	2 10 0	363 1 0	413	5 Nov , 1888	413	2 10 0	2 10 0	
Forbes	2,916	22 Jan , 1887	Forbes	Cumbijowa	1,102 0 0	1 10 0	1,102 0 0						
	6,982	26 Sept , 1888	,,	Wangajong	4,676 2 0	1 10 0	4,614 2 0						62 0 0
	7,169	10 Nov , 1888	,,	,,	537 3 0	1 10 0	Reproclaimed as 7,746						
	7,746	10 ,, 1888	,,	,,	549 3 0	1 10 0	549 3 0						
Glen Innes	2	10 April, 1886	Gough	Stonehenge ...	210 0 0	2 0 0	Embraced in conditional lease 4,911						
	3	10 ,, 1886	,,	Clifton	270 0 0	2 0 0	,, ,, 2,583						
	4	10 ,, 1886	,,	Rusden	400 0 0	2 0 0							400 0 0
	5	10 ,, 1886	,,	Fletcher	500 0 0	2 0 0	235 1 0						301 3 0
	6	10 ,, 1886	,,	Rusden	650 0 0	2 0 0	420 0 0						193 1 0
	2,375	28 Aug , 1886	,	Yarraford and Boyd	1,000 0 0	1 10 0	160 0 0						840 0 0
	2,470	16 Oct , 1886	,,	Rusden	320 0 0	1 10 0	309 2 0						10 2 0
	2,815	11 Dec , 1886	,,	Stonehenge	152 2 0	3 10 0	131 1 0						1 1 0
Gosford	6,687	20 June, 1886	Northumberland	Stowe	200 0 0	2 0 0	Proclaimed void						
	7,179	6 Oct , 1888	,,	Wallarah	100 0 0	2 0 0							100 0 0
	7,604	10 Nov , 1888	,,	Tuggerah	195 0 0	2 10 0		40					155 0 0
	7,605	10 ,, 1888	,,	,,	200 0 0	4 0 0	124 3 15						75 0 25
	7,606	10 ,, 1888	,,	,,	118 0 0	4 0 0							118 0 0
	8,132	19 Jan , 1889	,,	Wyong	50 0 0	2 0 0							50 0 0
Goulburn	1	10 April, 1886	Argyle	Tarago	43 3 0	1 10 0	43 3 0						
Grafton	2	5 Aug , 1885	Fitzroy	Sherwood	40 0 0	2 0 0	40 0 0						
	3	5 ,, 1885	,,	Tallawudjah	102 0 0	2 0 0	102 0 0						
	4	5 ,, 1885	,,	Kremnos	40 0 0	2 0 0							40 0 0
	1,571	10 April, 1886	,,	Cormdi	106 0 0	1 10 0	106 0 0						
	2,374	28 Aug , 1886	,,	Bagawa	500 0 0	1 10 0	60 0 0						440 0 0
	3,054	5 Mar , 1887	Clarence	Calamia	78 3 0	2 0 0	78 3 0						
Grafton and Kempsey	3,283	30 ,, 1887	Fitzroy	Comlaroi and Moonee	1,448 0 0	1 10 0	812 0 0						636 0 0
	3,284	30 ,, 1887	,,	Comlaroi	81 2 0	1 10 0							81 2 0
	3,285	30 ,, 1887	,,	Moonee Coff, &c	7,250 0 0	1 10 0	1,661 0 0						5,597 0 0
Grafton	7,030	18 Aug , 1888	,,	Toothill	80 0 0	2 0 0	80 0 0						
	7,312	29 Sept , 1888	Clarence	Coldstream	1,026 0 0	1 10 0	489 0 0	478	Revoked, 2 March, 1889				59 2 0
	7,818	15 Dec , 1888	Fitzroy	Moonee	1,543 2 0	1 10 0	331 0 0						1,212 2 0
Grenfell	3,200	15 ,, 1888	Forbes	Nanima	1,120 0 0	1 10 0	1,120 0 0						
	6,981	30 June, 1888	Bland	Barmedman	4,103 2 0	2 0 0	320 0 0						3,783 2 0
	7,449	20 Oct , 1888	Monteagle	Brundah, &c	4,129 0 30	2 0 0	2,160 1 30						1,968 3 0
	7,685	17 Nov , 1888	Forbes	Kangarooby	470 2 0	1 10 0							470 2 0
	7,697	17 ,, 1888	,,	Warraderry	606 1 0	1 10 0							606 1 0
	7,748	24 Oct , 1888	,,	Kangarooby	218 0 0	2 0 0							218 0 0
	7,749	24 ,, 1888	,,	WallahWallah.	980 0 0	2 0 0	320 0 0						668 0 0
	8,846	20 Mar , 1889	,,	Eualdrie	160 0 0	2 10 0							160 0 0
Gundagai	7,450	20 Oct , 1888	Harden	Bongongalong	216 1 0	1 15 0	216 1 0						
	7,451	20 ,, 1888	,,	,,	320 0 0	3 0 0	320 0 0						
	8,130	12 Jan , 1889	Wynyard	Calafal	157 0 0	1 10 0	157 0 0						
	8,131	12 ,, 1889	,,	,,	105 3 0	2 0 0	105 3 0						

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Land District.	No.	Date.	County.	Parish.	Area	Price.	Area selected.	Offered at Auction.	Date.	Area sold.	Upset price.	Price realized.	Unalienated.
					a. r. p.	£ s. d.	a. r. p.	acres.		acres.	£ s. d.	£ s. d.	a. r. p.
Gundagai	8,180	12 Jan., 1889	Wynyard	Mundarlo	202 1 0	5 0 0	202 1 0	.....	.....	.....	.....	.....	.....
	8,181	12 ,, 1889	,,	,,	488 0 0	1 10 0	488 0 0	.....	.....	.....	.....	.....	.....
Gunnedah	2	10 April, 1886	Buckland	Wallala	280 0 0	2 0 0	260 0 0	.....	.....	.....	.....	.....	20 0 0
	2	5 May, 1886	Pottinger	Breeza	260 0 0	2 0 0	.....	.....	.....	.....	.....	.....	260 0 0
	3	5 ,, 1886	Pottinger and Buckland	Breeza and Mooki	1,300 0 0	2 0 0	480 0 0	.....	.....	.....	.....	.....	820 0 0
	4	5 ,, 1886	Buckland	Mooki	230 3 0	2 0 0	.....	230¾	3 Nov., 1886	100	.....	.....	130 3 0
	2,943	5 Feb., 1887	Nandewar	Boggabri	625 3 0	1 10 0	210 0 0	.....	.....	.....	.....	.....	415 3 0
	3,473	7 May, 1887	,,	Brentry	286 0 0	3 0 0	.....	.....	.....	.....	.....	.....	278 0 0
	6,846	4 July, 1888	Pottinger	Boggabri	2,200 0 0	1 10 0	496 3 0	.....	.....	.....	.....	.....	1,703 1 0
	6,978	30 Sept., 1888	Buckland	Ferrier	940 0 0	2 0 0	.....	864¾	10 Oct., 1888	725½	.....	.....	139 1 0
	6,987	30 ,, 1888	Nandewar	Tulcumbah	313 0 16	1 10 0	.....	.....	.....	.....	.....	.....	313 1 0
	7,344	22 ,, 1888	,,	,,	320 2 0	1 10 0	.....	.....	.....	.....	.....	.....	320 2 0
	7,345	22 ,, 1888	,,	,,	741 0 0	1 10 0	.....	.....	.....	.....	.....	.....	741 0 0
	7,346	22 ,, 1888	,,	Yarrara	634 3 0	1 10 0	.....	.....	.....	.....	.....	.....	634 3 0
Gunning	7,727	20 Oct., 1888	King	Buntin and Kildare	19,200 0 0	1 10 0	210 0 0	.....	.....	.....	.....	.....	18,990 0 0
Hay	2,434	4 Sept., 1886	Sturt	Howlong	640 0 0	2 0 0	.....	.....	.....	.....	.....	.....	640 0 0
	2,435	4 ,, 1886	,,	,,	1,690 0 0	2 0 0	.....	.....	.....	.....	.....	.....	1,690 0 0
	3,436	4 ,, 1886	,,	,,	4,240 0 0	2 0 0	.....	.....	.....	.....	.....	.....	4,240 0 0
	2,540	9 Oct., 1886	Waradgery	Boyong	640 0 0	1 15 0	.....	640	1 June, 1887	640	1 15 0	1 15 0	.....
	3,124	19 Feb., 1886	Boyd	Mulburruga	316 2 0	2 10 0	316 2 0	.....	.....	.....	.....	.....	.....
	3,125	19 ,, 1886	,,	,,	2,148 1 0	2 0 0	294 1 0	2,148¼	8 June, 1887	432¾	2 0 0	2 0 0	1,521 1 0
	3,126	19 ,, 1886	,,	Eilgimbah	4,496 2 0	1 15 0	.....	4,496½	8 ,, 1887	640	1 15 0	1 15 0	3,856 2 0
	3,127	19 ,, 1886	,,	Macleay	1,593 2 0	1 15 0	.....	1,593½	8 ,, 1887	.....	.....	.....	1,593 2 0
	6,988	30 July, 1888	,,	Toganmain	3,161 0 0	1 10 0	.....	3,161	24 Oct., 1888	3,161	1 10 0	1 10 0	.....
	6,989	30 ,, 1888	,,	Puckinevvy	2,746 1 0	1 10 0	.....	2,746¼	24 ,, 1888	2,746¼	1 10 0	1 10 0	.....
	6,990	30 ,, 1888	,,	Gundadaline, &c.	4,055 0 0	1 10 0	.....	4,055	24 ,, 1888	4,055	1 10 0	1 10 0	.....
	7,171	22 Sept., 1888	Waradgery	Pevensey	232 0 0	2 10 0	.....	.....	.....	.....	.....	.....	232 0 0
	7,172	22 ,, 1888	,,	,,	760 2 0	1 10 0	.....	.....	.....	.....	.....	.....	760 2 0
	7,180	29 ,, 1888	Sturt	Lethington	527 0 0	1 10 0	100 0 0	.....	.....	.....	.....	.....	427 0 0
	7,549	6 Oct., 1888	Wakool	Miranda	307 2 0	1 10 0	.....	307¼	28 Jan., 1889	307¼	1 10 0	1 10 0	.....
Hillston	7,416	6 ,, 1888	Dowling	Lachlan	4,841 0 0	1 10 0	.....	.....	.....	.....	.....	.....	484 1 0
Inverell	1	10 April, 1886	Gough	Waterloo	(By Survey, 187.)	2 0 0	187 0 0	(In Glen Innes Land District.)			.....	.....	.....
	7,596	6 Oct., 1888	Arrawatta	Wyndham, &c.	220 0 0	2 0 0	166 0 0	.....	.....	.....	.....	.....	54 0 0
	8,195	12 Jan., 1889	Burnett	Burnett	384 1 0	2 0 0	154 3 0	.....	.....	.....	.....	.....	229 2 0
Kempsey	1,915	26 June, 1886	Fitzroy } Sec 3,283-4-5, Grafton and Kempsey.	Comleroi and Moonee	1,657 0 0	3 0 0	209 0 0	Balance proclaimed special area, No. 3,283.			.....	.....	.....
	1,916	26 ,, 1886	,, }	Comleroi	81 2 0	3 0 0	.....	,,		,,	No. 3,284.	.....	.....
	1,917	26 ,, 1886	,, }	Comleroi, Moonee, Coff, &c.	7,546 0 0	3 0 0	730 0 0	,,		,,	No. 3,285.	.....	.....
	2,445	2 Oct., 1886	Raleigh	Belmore	107 0 0	1 10 0	.....	.....	.....	.....	.....	.....	107 0 0
	2,446	2 ,, 1886	,,	,,	126 0 0	1 10 0	56 0 0	.....	.....	.....	.....	.....	70 0 0
	2,538	25 Sept., 1886	Fitzroy	Coff	500 0 0	1 10 0	343 3 0	.....	.....	.....	.....	.....	*100 0 0
	7,074	22 ,, 1888	Raleigh	Never Never	236 0 0	1 10 0	236 0 0	.....	.....	.....	.....	.....	.....
	7,307	6 Oct., 1888	,,	North Bellinger	136 0 0	2 0 0	136 0 0	.....	.....	.....	.....	.....	.....
	8,753	16 Mar., 1889	,,	Congarini	40 0 0	2 0 0	.....	.....	.....	.....	.....	.....	40 0 0
Lismore	1	14 July, 1885	Rous	Clunes	85 0 0	2 0 0	88 0 0	.....	.....	.....	.....	.....	.....
	5	5 Aug., 1885	,,	Teven	120 0 0	2 0 0	120 0 0	.....	.....	.....	.....	.....	.....
	6	5 ,, 1885	Richmond	Donaldson	200 0 0	2 0 0	200 0 0	.....	.....	.....	.....	.....	.....

* Exclusive of Road.

SPECIAL AREAS—*continued.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Land District.	No.	Date.	County.	Parish.	Area.	Price.	Area selected.	Offered at Auction.	Date.	Area sold.	Upset price.	Price realized.	Unalienated.
					a. r. p.	£ s. d.	a. r. p.	acres.		acres.	£ s. d.	£ s. d.	a r. p.
Lismore	6	29 May, 1886	Rous	Teven	69 1 0	1 10 0	69 1 0	.....	.....	.....	.....	.....	.....
	7	29 ,, 1886	,,	Broadwater	120 0 0	1 10 0	.....	.....	.....	.....	.....	.....	120 0 0
	2,468	16 Oct., 1886	,,	Dunoon	80 0 0	2 0 0	80 0 0	.....	.....	.....	.....	.....	.....
	3,133	9 Feb., 1887	,,	North Lismore	40 0 0	2 0 0	40 0 0	.....	.....	.....	.....	.....	.....
	3,135	9 ,, 1887	,,	Tunstall	40 0 0	2 0 0	40 0 0	.....	.....	.....	.....	.....	.....
	3,209	26 Mar., 1887	,,	,,	131 0 0	1 10 0	131 0 0	.....	.....	.....	.....	.....	.....
	6,818	14 July, 1888	,,	Dunoon	520 2 0	2 0 0	416 3 0	.....	.....	.....	.....	.....	103 2 0
	7,035	18 Aug., 1888	,,	Brunswick	100 0 0	1 10 0	100 0 0	.....	.....	.....	.....	.....	.....
	7,069	1 Sept., 1888	,,	Broadwater	460 2 0	2 10 0	362 2 0	.....	.....	.....	.....	.....	98 0 0
	7,072	1 ,, 1888	,,	Bexhill	194 0 0	2 0 0	131 0 0	.....	.....	.....	.....	.....	63 0 0
	7,155	1 ,, 1888	,,	,,	40 0 0	2 0 0	40 0 0	.....	.....	.....	.....	.....	.....
	7,153	1 ,, 1888	,,	,,	176 3 0	2 0 0	102 1 0	.....	.....	.....	.....	.....	74 2 0
	7,154	1 ,, 1888	,,	,,	125 0 0	2 0 0	125 0 0	.....	.....	.....	.....	.....	.....
	7,184	1 ,, 1888	,,	Tuckerimba	692 1 0	2 0 0	692 1 0	.....	.....	.....	.....	.....	.....
	7,272	22 ,, 1888	,,	Pimlico	13 1 3	1 10 0	137 3 0	.....	.....	.....	.....	.....	.....
	7,338	22 ,, 1888	,,	Byron	68 0 0	1 10 0	68 0 0	.....	.....	.....	.....	.....	.....
	7,342	22 ,, 1888	,,	Dunoon	783 1 0	2 10 0	74 1 0	.....	.....	.....	.....	.....	.....
	7,347	22 ,, 1888	,,	Ballina	197 3 0	1 10 0	.....	.....	.....	.....	.....	.....	553 2 0
	7,348	22 ,, 1888	,,	Dunoon	82 3 0	1 10 0	82 3 0	.....	.....	.....	.....	.....	197 3 0
	7,349	22 ,, 1888	,,	,,	83 0 0	1 10 0	83 0 0	.....	.....	.....	.....	.....	.....
	7,417	6 Oct., 1888	,,	,,	71 0 0	2 10 0	.....	.....	.....	.....	.....	.....	.....
	7,418	6 ,, 1888	,,	,,	88 0 0	2 10 0	88 0 0	.....	.....	.....	.....	.....	71 0 0
	7,527	20 ,, 1888	,,	Meerschaum	401 0 0	2 0 0	401 0 0	.....	.....	.....	.....	.....	.....
	7,613	10 Nov., 1888	,,	Byron	172 0 0	2 0 0	172 0 0	.....	.....	.....	.....	.....	.....
	7,614	10 ,, 1888	,,	Jasper	284 0 0	2 10 0	284 0 0	.....	.....	.....	.....	.....	.....
	7,718	17 ,, 1888	.....	Dunoon	259 0 0	2 10 0	259 0 0	.....	.....	.....	.....	.....	.....
	7,719	17 ,, 1888	.....	,,	1,773 0 0	2 10 0	1,017 3 0	.....	.....	.....	.....	.....	755 1 0
	7,747	27 Oct., 1888	Richmond	Riley	767 0 0	1 10 0	190 0 0	.....	.....	.....	.....	.....	577 0 0
	7,790	8 Dec., 1888	Rous	Jasper	413 0 0	2 0 0	.....	.....	.....	.....	.....	.....	413 0 0
	8,798	16 Mar., 1889	,,	Gundarimba	45 0 0	2 0 0	.....	.....	.....	.....	.....	.....	45 0 0
	8,880	13 April, 1889	,,	Whean Whean	351 0 0	2 10 0	.....	.....	.....	.....	.....	.....	351 0 0
	8,881	13 ,, 1889	,,	Clunes, &c.	731 1 0	2 10 0	68 0 0	.....	.....	.....	.....	.....	663 1 0
	8,882	13 ,, 1889	,,	Dunoon	381 3 0	2 0 0	.....	.....	.....	.....	.....	.....	381 3 0
Lithgow	7	5 Aug., 1885	Cook	Megalong	21,890 0 0	2 0 0	117 0 9	.....	.....	.....	.....	.....	21,773 0 0
	3,910	13 ,, 1887	,,	Blackheath and Jamieson	610 0 0	2 0 0	610 0 0	.....	.....	.....	.....	.....	.....
	8,136	5 Dec., 1888	Westmoreland	Norway	350 1 0	2 0 0	.....	.....	.....	.....	.....	.....	350 1 0
	5,529	18 Jan., 1888	Cook	Lett	80 0 0	3 0 0	.....	.....	.....	.....	.....	.....	80 0 0
Liverpool	8,802	16 Mar., 1889	Cumberland	Eckersley	96 2 0	2 0 0	96 2 0	.....	.....	.....	.....	.....	.....
Maitland	7,785	1 Dec., 1888	Northumberland	Mulbring	1,815 3 0	1 10 0	355 3 0	.....	.....	.....	.....	.....	1,460 0 0
Metropolitan	6,255	11 April, 1888	Cumberland	Narrabeen	260 0 0	3 0 0	Revoked 11 May, 1889.						.....
	8,286	12 Jan., 1889	,,	,,	53 2 0	3 0 0	(Formerly an M.C.P. declared void. Voidance now reversed.)						.....
Milton	8,789	30 Mar., 1889	St. Vincent	Cudmorrah	2,210 0 0	1 10 0	270 0 0	.....	.....	.....	.....	.....	1,940 0 0
Moree	1	10 April, 1886	Courallie	Moree	160 0 0	2 0 0	.....	.....	.....	.....	.....	.....	160 0 0
	2	16 June, 1886	,,	Carore	230 0 0	1 15 0	.....	.....	.....	.....	.....	.....	230 0 0
	2,068	31 July, 1886	,,	Wallonal	480 0 0	1 10 0	464 0 0	160 ac. 160 ,, 144 ,,	21 April, 1887 18 ,, 1889 18 ,, 1889	.....	.....	.....	.....

1		3	4	5	6	7	8	9	10	11	12	13	14
Land District.	No.	Date.	County.	Parish.	Area.	Price.	Area selected.	Offered at Auction.	Date.	Area sold.	Upset price.	Price realized.	Unalienated.
					a. r. p.	£ s. d.	a. r. p.	acres.		acres.	£ s. d.	£ s. d.	a. r. p.
Moree	2,444	2 Oct., 1886	Courallie	Carore	1,180 0 0	1 10 0							1,180 0 0
	2,990	5 Feb., 1887	,,	Moree and Mia Mia	115 0 0	2 0 0	93 0 0		28 July, 1887				22 0 0
	9,122	8 June, 1889	,,	Mungie Bundie	843 3 0	2 5 0							843 3 0
Mudgee	8,121	5 Jan., 1889	Phillip	Wilbertree, &c.	1,826 0 0	1 10 0	577 2 0						1,247 1 0
Murrurundi	1	10 April, 1886	Buckland	Borambil	960 0 0	2 0 0	497 0 0	387¼	10 Oct., 1888	387¼			
	2,771	27 Nov., 1886	Pottinger	Kickerbil	383 0 0	2 0 0		364¾	28 Sept., 1888	364¾			
	2,772	4 Dec., 1886	Brisbane	Lincoln	90 0 0	1 10 0		75	10 Oct., 1888	75			14 3 20
	2,773	4 ,, 1886	,,	,,	40 0 0	1 10 0		40	10 ,, 1888	40			
	2,814	11 ,, 1886	,,	Isis	259 1 0	1 10 0		255¼	5 Dec., 1888				259 1 0
	2,917	22 Sept., 1888	,,	Murrurundi	1,600 0 0	1 10 0	1,441 0 0						159 0 0
	2,986	5 Feb., 1887	Buckland	Borambil	960 0 0	2 0 0		Identical with No. 1.					
Murwillumbah	2,469	16 Oct., 1886	Rous	Terranora	1,140 0 0	1 10 0	820 0 0						320 0 0
	7,028	18 Aug., 1888	,,	Brunswick	80 0 0	1 10 0	80 0 0						
	7,031	18 ,, 1888	,,	Kynnumboon	200 0 0	1 10 0	100 0 0						100 0 0
	7,032	18 ,, 1888	,,	Billinerdgel	120 0 0	1 10 0	120 0 0						
	7,033	18 ,, 1888	,,	Cudgen	40 0 0	2 0 0	40 0 0						
	7,036	18 ,, 1888	,,	Mullumbimby	60 0 0	2 0 0	60 0 0						
	7,317	29 Sept., 1888	,,	Nullum	716 0 0	1 10 0							716 0 0
	7,325	8 Dec., 1888	,,	Brunswick	40 1 0	2 0 0							40 1 0
	7,690	17 Nov., 1888	,,	Terranora	162 2 0	2 0 0							162 2 0
	7,789	8 Dec., 1888	,,	Brunswick	126 3 0	2 0 0							126 3 0
	7,791	8 ,, 1888	,,	Mullumbimby	62 0 0	2 0 0							62 0 0
	7,926	15 ,, 1888	,,	Berwick	689 0 0	1 10 0							689 0 0
	8,799	16 Mar., 1889	,,	Mooball	50 0 0	2 0 0	50 0 0						
	8,800	16 ,, 1889	,,	Cudgen	147 0 0	2 0 0	147 0 0						
Narrabri	7,005	30 July, 1888	Jamison	Myall Hollow	143 2 0	1 10 0		143½	10 Oct., 1888	143½			
	7,006	30 ,, 1888	,,	Dangar	1,555 1 0	1 10 0		1,555¼	21 Jan., 1889				1,555 1 0
	7,007	30 ,, 1888	,,	,,	958 0 0	1 15 0		958	21 ,, 1889				958 0 0
	7,008	30 ,, 1888	,,	Coolga	575 0 0	2 0 0	238 0 0						337 0 0
	7,014	30 ,, 1888	,,	Dealwarindi	1,422 2 0	1 10 0		1,422½	10 Oct., 1888				1,422 2 0
	7,022	30 ,, 1888	Denham	Gorian	1,796 0 0	1 10 0		1,280	10 ,, 1888	640			640 0 0
	7,010	30 ,, 1888	White	Mallee	562 1 0	1 15 0		562½	10 ,, 1888	562¼			
	7,081	18 Aug., 1888	Denham	Berryabar	2,778 1 0	1 10 0							2,778 1 0
	7,185		Jamison	Bobbiwaa	160 0 0	2 0 0	154 0 0						
	7,607	10 Nov., 1888	,,	Bibil	1,172 0 0	1 10 0							1,172 0 0
	7,608	10 ,, 1888	,,	,,	627 0 0	2 0 0							627 0 0
	7,552	25 Sept., 1888	,,	Helebah	2,544 0 0	2 10 0		2,508½	10 Oct., 1888				2,508 2 0
	7,694	17 Nov., 1888	Baradine	Pilliga	921 0 0	2 0 0							921 0 0
	8,243	19 Dec., 1888	Jamison	Bolcarol	673 3 0	2 10 0							673 3 0
Narrandera	2,443	2 Oct., 1886	Boyd	Banandra	321 2 0	1 15 0		321½	28 Sept., 1887	321½	1 15 0	1 15 0	
	7,188	1 Sept., 1888	Mitchell	Yarabee	689 0 0	2 0 0	591 3 0						97 1 0
	7,339	22 ,, 1888	,,	Gillenbah	215 1 0	1 10 0	215 1 0						
	7,528	20 Oct., 1888	,,	Cuddell	82 0 0	2 0 0							82 0 0
	7,626	10 Nov., 1888	Boyd	Waddi	2,334 1 0	1 15 0							2,334 1 0
Newcastle	8,179	12 Jan., 1889	Northumberland	Coorumbung	293 2 20	2 10 0							293 2 20

SPECIAL AREAS—*continued.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Land District.	No.	Date.	County.	Parish.	Area.	Price.	Area selected.	Offered at Auction.	Date.	Area sold.	Upset price.	Price realized.	Unalienated.
					a. r. p.	£ s. d.	a. r. p.	acres.		acres.	£ s. d.	£ s. d.	a. r. p.
Newcastle	8,183	12 Jan., 1889	Northumberland	Coorumbung	45 3 5	3 0 0							45 3 5
Nowra	1	22 April, 1886	Camden	Bimberra	150 0 0	1 15 0	47 3 0						66 0 0
	8,801	16 Mar., 1889	St. Vincent	Nowra	40 0 0	2 0 0							40 0 0
Parkes	8,119	12 Jan., 1889	Ashburnham	Currajong	642 1 31	2 0 0	642 1 31						
Parramatta	8,284	12 ,, 1889	Cumberland	Castle Hill	40 0 0	3 0 0	40 0 0						
Penrith	5,530	21 ,, 1888	Cook	Nepean	254 1 0	2 0 0	254 1 0						
	6,258	11 April, 1888	,,	Woodford	253 2 0	2 0 0							253 2
Picton	6,259	11 ,, 1888	Camden	Cumbertine	120 0 0	2 0 0	40 0 0						80 0
	6,684	20 June, 1888	,,	Couridjah	40 0 0	2 0 0	Proclaimed void, previously selected.						
	6,685	20 ,, 1888	,,	Cumbertine	40 0 0	2 0 0	,,		,,				
	6,686	20 ,, 1888	,,	,,	40 0 0	2 0 0	,,		,,				
	8,287	12 Jan., 1889	,,	,,	246 0 0	2 0 0							246 0 0
	8,288	12 ,, 1889	,,	,,	115 1 0	2 0 0							115 1 0
	8,289	12 ,, 1889	,,	,,	40 0 0	2 0 0	40 0 0						
	8,290	12 ,, 1889	,,	,,	40 0 0	2 0 0	40 0 0						
	8,780	16 Mar., 1889	,,	,,	80 0 0	2 0 0							80 0 0
Scone	790	28 Oct., 1885	Brisbane and Durham	Russell and Strathearn	1,000 0 0	1 10 0							1,000 0 0
Tamworth	1	10 April, 1886	Darling	Baldwin	300 0 0	2 0 0	160 0 0						140 0 0
	3,190	12 Jan., 1889	Parry	Turi	390 0 0	3 0 0	294 0 0						96 0 0
	6,991	30 July, 1888	Buckland	Birambil	1,372 0 0	3 0 0	112 0 0	81$\frac{3}{4}$	21 Jan., 1889				1,260 0 0
	7,343	22 Sept., 1888	Parry	Turi	90 1 0	2 0 0	90 1 0						
	7,900	15 Dec., 1888	Buckland	Wallabadah	1,320 0 0	2 0 0							1,320 0 0
Taree	7,069	1 ,, 1888	Macquarie	Harrington	50 0 0	2 0 0							50 0 0
	8,196	12 Jan., 1889	Gloucester	Wang Wank	29 2 0	1 10 0	29 2 0						
	8,197	12 ,, 1889	,,	,,	61 3 0	1 15 0	31 0 0						30 3 0
	8,198	12 ,, 1889	,,	,,	44 1 0	2 0 0	44 2 0						
	8,199	12 ,, 1889	,,	,,	94 0 0	2 5 0	94 0 0						
Tenterfield	8,194	12 ,, 1889	Clive	Romney	236 1 0	1 10 0							236 1 0
Tumut	7,336	22 Sept., 1888	Buccleuch	Brungle	65 0 0	1 10 0	65 0 0						
	7,532	20 Oct., 1888	Wynyard	Ellerslie	154 0 0	2 0 0	154 0 0						
Urana	1,862	26 June, 1886	Urana	Wood	87 0 0	2 0 0							87 0 0
	2,322	25 Aug., 1886	,,	Morundah	321 2 0	3 0 0							321 2 0
	2,323	25 ,, 1886	,,	Bingagong	619 0 0	3 0 0		619	29 Sept., 1886	619	3 0 0	3 0 0	
	2,324	25 ,, 1886	,,	Cocketgedong	469 0 0	2 10 0		469	29 ,, 1886	469	2 10 0	2 10 0	
	2,325	25 ,, 1886	,,	Watt	494 0 0	2 10 0		494	29 ,, 1886	494	2 10 0	2 10 0	
	2,326	7 Sept., 1886	,,	,,	548 1 0	2 10 0		548$\frac{1}{4}$	29 ,, 1886	548$\frac{1}{4}$	2 10 0	2 10 0	
	2,327	25 Aug., 1886	,,	Cocketgedong	291 3 0	2 0 0		291$\frac{3}{4}$	29 ,, 1886	291$\frac{3}{4}$	2 0 0	2 0 0	
	2,328	25 ,, 1886	,,	Bingagong	1,144 1 0	2 10 0		1,144$\frac{1}{4}$	29 ,, 1886	1,144$\frac{1}{4}$	2 10 0	2 10 0	
	2,329	25 ,, 1886	,,	Morundah South	2,379 2 0	2 10 0		2,058	29 ,, 1886	2,059$\frac{1}{2}$	2 10 0	2 10 0	Shown in S.A. 2,322.
	2,330	25 ,, 1886	,,	Finlay	463 1 0	2 0 0	463 1 0						
	2,331	25 ,, 1886	,,	Urangeline	237 0 0	2 10 0		237	29 Sept., 1886	237	2 10 0	2 10 0	
	2,332	25 ,, 1886	,,	Finlay	339 2 0	2 10 0	309 0 0						30 2 0
	2,333	25 ,, 1886	,,	,,	2,264 0 0	1 10 0		1,689$\frac{1}{2}$	29 Sept., 1886	1,689$\frac{1}{2}$	1 10 0	1 10 0	574 2 0
	2,334	25 ,, 1886	,,	Urangeline	830 1 0	1 10 0		830$\frac{1}{4}$	29 ,, 1886	830$\frac{1}{4}$	1 10 0	1 10 0	

Special Areas—*continued.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Land District.	No.	Date.	County.	Parish.	Area.	Price.	Area selected.	Offered at Auction	Date.	Area sold.	Upset price	Price realized.	Unalineated.
					a. r. p.	£ s. d.	a. r. p.	acres.		acres.	£ s. d.	£ s. d.	a. r. p.
Urana	2,447	7 Sept., 1886	Urana	Wallandoon	1,187 0 0	2 0 0	700 0 0		8 Feb., 1888	*135¾	3 2 3	3 2 3	191 1 0
	7,009	30 July, 1888	,,	Widgiewa	529 3 0	2 0 0		529¼	28 Sept., 1888	†160	2 0 0	2 0 0	
	7,186	1 Sept., 1888	,,	Broome	320 0 0	2 0 0				529¾	2 0 0	2 0 0	
	7,181	6 Oct., 1888	,,	Hastings	139 1 0	2 0 0							320 0 0
	7,187	1 Sept., 1888	,,	Cadell	274 0 0	2 0 0							139 1 0
	7,189	1 ,, 1888	,,	Broome	960 0 0	2 0 0							‡274 0 0
	7,409	6 Oct., 1888	,,	Broome and Cadell	1,554 0 0	2 5 0							‡960 0 0
	7,413	6 ,, 1888	,,	Bundure	2,275 1 0	2 5 0							‡320 0 0
	7,691	17 Nov., 1888	,,	Osborne	4,899 3 0	2 0 0	800 0 0						2,275 1 0
	8,006	1 Dec., 1888		Wallandoon	204 1 0	1 15 0							6,099 3 0
	8,041			Morundah South	115 2 0	3 0 0	This land is included in special area.						204 1 0
Wagga Wagga	1	6 April, 1886	Mitchell	Brewarrina	3,632 0 0	2 0 0		3,391¼	3 Aug., 1887	3,231¼	2 0 0	§	2,322 0 0
	2,816	11 Dec., 1886	Wynyard	Woomahrigong	76 0 0	1 10 0							401 0 0
	2,831	11 ,, 1886	Bourke	Lachlan	640 0 0	1 15 0	640 0 0						76 0 0
	2,833	1 ,, 1886	,,	Ganmain	1,945 2 0	2 10 0	595 3 0	1,349¾	24 Oct., 1887	1,349¾	2 10 0	2 10 0	
	7,011	30 July, 1888	,,	Kindra	150 2 0	1 15 0							150 2 0
	7,177	22 Sept., 1888	,,	Matong	640 0 0	2 0 0		640	18 Feb., 1887	640	2 0 3	3 0 3	
	7,306	6 Oct., 1888	Wynyard	Book Book	397 2 0	1 15 0	320 0 0						77 1 0
	7,609	10 Nov., 1888	Bourke	Kindra	2,248 2 0	1 10 0	1,311 0 0						937 2 0
	7,610	10 ,, 1888	Mitchell	Edgehill	2,754 2 0	1 15 0	2,754 2 0						
	7,686	17 ,, 1888	Wynyard	Kyeamba	320 0 0	1 10 0							320 0 0
	7,687	17 ,, 1888	,,	,,	531 3 0	2 10 0	321 0 0						210 3 0
	7,688	17 ,, 1888	,,	Borambula	320 0 0	1 10 0	320 0 0						
	7,689	17 ,, 1888	,,	,,	198 3 0	2 5 0	160 0 0						38 3 0
	8,003	1 Dec., 1888	Mitchell	Bulgary	138 0 0	2 0 0	138 0 0						
	8,004	1 ,, 1888	,,	Ashcroft	600 0 0	2 0 0	106 0 0						494 0 0
	8,005	1 ,, 1888	,,	,,	600 0 0	2 0 0							600 0 0
	8,007	1 ,, 1888	Bourke	Hooke	470 0 0	2 0 0							470 0 0
Walgett	2,067	27 July, 1886	Denham	Walgett	640 0 0	3 0 0							640 0 0
	7,361		Clyde	Carinda	965 0 0	1 15 0							965 0 0
Warialda	7,337	22 Sept., 1888	Burnett	Abercrombie	950 0 0	1 10 0	929 2 0	623¾	5 Jan., 1880				(20½ a road.)
								305¾	15 Mar., 1888				
Windsor	8,745	16 Mar., 1889	Cumberland	Nelson	61 2 0	2 0 0							61 2 0
Wollongong	6,970	1 Sept., 1888	Cumberland	Southend	3,100 0 0	2 0 0	195 2 0						2,904 2 0
Yass	7,018	30 July, 1888	Harden	Bowning	287 2 0	1 10 0		287½	10 Oct., 1888	61¾	1 10 0	1 10 0	225 3 0
	7,406	6 Oct., 1888	King	Crosby and Derringullen	374 2 0	2 0 0							374 2 0
Young	1,461	29 Jan., 1886	Monteagle	Dannanbilla	42 3 0	1 10 0							42 3 0
	7,182	29 Sept., 1888	,,	Wambancunba	458 1 0	1 10 0	420 0 0						38 1 0
	8,083	22 Dec., 1888	Bland	Tubbul	698 1 0	2 0 0							698 1 0
	8,512	9 Mar., 1889	Monteagle	Murringo	1,735 3 0	2 0 0	893 1 0						842 2 0

* Portion 55. † Portion 88. ‡ Combined in special area 7,409—1,554 acres. § Portion 63, £2 7s., balance, £2.

535—B

Sydney: Charles Potter, Government Printer—1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CROWN LANDS.

(APPLICATION OF C. W. PORTER FOR A PRE-EMPTIVE LEASE.)

Ordered by the Legislative Assembly to be printed, 13 *August*, 1889.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 7th June, 1889, That there be laid upon the Table of this House,—

"Copies of the application of Mr. C. W. Porter for a Pre-emptive Lease, "which was gazetted as No. 782, on the 17th May, 1878, together with a "plan of the same, as then gazetted, and also all papers, plans, and other "documents relating to the same, and to the gazetting of Pre-emptive "Lease No. 2, of 1878, 25th March, 1884, situated in the county of Perry, "near Pooncarie, and all papers, reports, plans, and correspondence relating "to the same."

(*Mr. J. P. Abbott.*)

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No. 1.

Application by Mary Ann Porter.

[Lease Application 348, 11th February, 1878.]

[Occupation Act, 1861, and Lands Acts Amendment Act, 1875.]

To be used in claiming to lease adjoining lands under Pre-emptive Right.

District of Wentworth.

Received this 25th day of January, 1878, at 10·15 o'clock, together with the sum of £6,—

P. F. RICHARDSON,

Land Agent.

Sir, Wentworth, 25 January, 1878.

In pursuance of the provisions of the Crown Lands Occupation Act of 1861, and the Lands Acts Amendment Act, 1875, and Regulations thereunder, I, Mary Ann Porter, do hereby apply to be allowed to lease the sections or portions of Crown lands hereunder described, at the fixed rent of £2 per section, which I hereby tender.

The land in virtue of which I claim to exercise a right of pre-emption, is situated as follows, and is now in my possession, viz.:—County of Perry, parish of Pooncarie, situated on the southern boundary of Pooncarie Village Reserve, containing 640 acres, being conditional purchase, on the 24th day of January, 1878, by myself, at Wentworth, registered as lot 39.

I have, &c.,

To the Land Agent for the District of Wentworth. M. A. PORTER.

Description of the sections or portion applied for.

Commencing at the north-east corner of my conditional purchase above mentioned, and extending easterly 3 miles, southerly 1 mile, and west to the south-east corner of said conditional purchase to include 1,920 acres.

78–3–640 plan, and 78–28,316. 1,920 acres gazetted, 17/5/78. Applicant and Agent informed, 7/8/78. Charted 1,920 acres, Wentworth.—W.H.H., 16/12/79. *Tracing to Agent, and applicant informed, 23/12/79. Regazetted at 1,100 acres, 25/3/84; *vide* 84–2,245, Leases. Conditional lease, clause 52, Crown Lands Act, 1884, No. 4,342, *Government Gazette*, 16/4/86.

*See Appendix A

No. 2.

No. 2.

Mr. J. L. Phelps to The Secretary for Lands.

Sir, Tarcoola, Wentworth, 6 August, 1880.

I have the honor to make application for the survey of all reserves comprised within the leases of the runs Pooncarie and Tarcoola, held under lease by me, and numbered 4–9–10B, 11A, 12, and 13, 14, 15, 16 in list of "Reserves from sale and lease, pastoral district of The Darling" for 1879.

I have, &c.,
MICHAEL DARCHY
(*Pro* J. L. PHELPS).

Mr. Surveyor M'Donald is requested to mark reserve No. 4, and as much of reserves 9A, 10B, 11A, 12, 13, 14, 15, and 16, as he considers necessary.—G. LEWIS (for the Surveyor-General), 26/8/80. Mr. Surveyor M'Donald.

No. 197 returned for reissue, in consequence of my appointment to the Hunter District.—R. M'DONALD, Surveyor, Hay, 29/12/80. Transferred to Mr. District-Surveyor Bolton, Surveyor-General's Office, 11/3/81. Transferred to Mr. Surveyor Conolly, 2/5/81.—C. F. BOLTON, District Surveyor. Received.—T.W.C., 13/15/81.

Transferred to Mr. Licensed-Surveyor Tarrant, who will be good enough to mark reserves Nos. 4 and 10B, the latter reserve to be marked in the form shown on accompanying tracing with a view to its renotification.—T. W. CONOLLY, Surveyor, 7/9/81.

Returned to the Surveyor-General with my letter No. 82-24.—JOSEPH TARRANT, Licensed Surveyor, 1/5/82.

No. 3.

Mr. C. W. Porter to The Under Secretary for Lands.

Extract from 80-49,915, C.S.

Sir, Wondenbro, Pooncarie, River Darling, 19 November, 1880.

* * * * * * * * * *

I am also anxious to know if the prelease 2 of 1878 (taken up in virtue of conditional purchase of Mary Ann Porter) has been registered in my name. An early reply will much oblige. Wentworth, 78-2; 640 acres.

I have, &c.,
C. W. PORTER,

The lease stands as originally gazetted in name of Mary Ann Porter.—F.W., 2/12/80. Mr. Wilson. Mr. Porter, 8/12/80. Put away.

No. 4.

The Under Secretary for Lands to Mr. C. W. Porter.

Sir, Department of Lands, Sydney, 8 December, 1880.

In reply to the inquiry contained in your letter of the 19th ultimo, I am directed to inform you that the prelease, quoted in the margin, stands on the books of the Department in the name of Mary A. Porter, as originally gazetted. Wentworth, 78-2; 640 acres. Mary A. Porter.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 5.

Mr. C. W. Porter to The Under Secretary for Lands.

Sir, Wondenbro, near Pooncarie, River Darling, 17 December, 1880.

In reply to your letter of the 8th December, the copies of letters herewith will best explain the reason of inquiry as to prelease, contained in my letter of 19th November:—

Sir, Department of Lands, Conditional Sales Division, Sydney, 16 September, 1880.

With reference to the conditional purchase at Wentworth, on the 24th January, 1878, by your wife Mary Ann Porter, I am directed to inform you that no married woman can hold a conditional purchase, consequently the above is liable to cancellation, but the Minister for Lands, in consideration of the length of time she has held the purchase without question, has consented to allow you the option of having it registered in your name, subject to the fulfilment by you of the conditions. Your early reply is requested. Wentworth, 78-3; 640 acres.

Mr. C. W. Porter, Pooncarie, Wentworth.

I have, &c.,
WM. BLACKMAN
(For the Chief Commissioner).

Sir, Wondenbro, River Darling, 27 September, 1880.

I have the honor to acknowledge the receipt of your letter of the 16th September instant, referring to the conditional purchase at Wentworth, on the 24th January, 1878, by my wife, Mary Ann Porter, and request that the same may be registered in my name in accordance with the terms mentioned therein.

The Chief Commissioner, Conditional Purchases, Sydney.

I have, &c.,
CHAS. WM. PORTER.

The 24th January, 1881, is not far distant, and the declaration as to residence and improvements having then to be made, I am most anxious to have official information of the alterations in registers of prelease and conditional purchase.

I have, &c.,
CHAS. WM. PORTER.

Submitted that the prelease be also transferred to the name of Mr. C. W. Porter.—F.H.W., 5/1/81. Yes.—C.O., 5/1/81. Mr. Boot, 5/1/81. Transfer noted in Register. Land Agent and parties informed.—C.H., 27/4/81. Put away.

No. 6.

No. 6.

The Under Secretary for Lands to The Crown Lands Agent, Wentworth.

Department of Lands, Sydney, 27 April, 1881.

Sir,

Annexed is a schedule of leases held by Mrs. Mary A. Porter, which have been transferred to Mr. C. W. Porter, which transfer you are requested to note in the records of your office, and then return the schedule to me, duly dated and signed by you.

I have, &c.,
F. H. WILSON
(*Pro* Under Secretary).

SCHEDULE of leases transferred from Mrs. Mary Ann Porter to Mr. C. W. Porter:—

County, Perry; abstract numbers, 78-2; date of sale or prenotice, 17th May, 1878; prelease; 1,920 acres; rent, £6.

Noted.—W.H.H., 4/7/81.

I hereby certify that I have duly noted the transfer above referred to in the records of this office.

P. F. RICHARDSON,
Agent for the Sale of Crown Lands.

Crown Lands Office, Wentworth, 18th June, 1881.

No. 7.

Mr. C. W. Porter to The Secretary for Mines.

Wondenbro, Pooncarie, River Darling, 27 June, 1881.

Sir,

I have the honor to apply for permission to ringbark box timber only on my prelease, No. 2, of 1878, district of Wentworth.

I have, &c.,
C. W. PORTER.

Inform in terms of instructions on 81-1,261 M. Informed, 12/7/81.

[*Enclosure.*]

*Tracing.

*See Appendix B.

No. 8.

Office Memorandum.

THE lease referred to in the enclosed application stands in the name of the applicant, C. W. Porter, and has been renewed up to the end of the current year. Lease application, 78-348; leases, 80-4,809 required. Messrs. Ferris and Linsley.—E.H.S., 31/3/82. Lease application, 78-348 herewith.—H.P.F., 4/4/82. Mr. Gale.

---

11 April, 1882.

Mr. Hall,

Forwarded to you with a request that you will be good enough to examine the maps, &c., and state whether they suggest any objection to a compliance with the application. If the lease comprises any part of an existing or a forfeited lease, or any part of a reserve from sale or from lease, or is situated within a gold-field reserved from conditional sale, the fact should be mentioned and necessary particulars furnished, and if the lease might now, having regard to recent decisions and opinions, be looked upon as invalid or objectionable, attention should be drawn to the situation of the case. If the lease includes any measured portions or parts of measured portions, their respective areas should be stated, and their positions delineated. Tracings should be made and returned with the papers. Lease, 78-2, Wentworth.

H.C.

No. 9.

Mr. Licensed-Surveyor J. Tarrant to The Surveyor-General.

Reserve.

Wentworth, 1 May, 1882.

Sir,

I have the honor to transmit herewith the plan of water reserve No. 10B, parish of Timpunga, county of Perry, containing 2,372 acres, and measured in accordance with instruction, No. 197, of 26th August, 1880, to Mr. Surveyor M'Donald; papers Ms. 80-11,498.

I found the old marked tree mentioned in description marked broad-arrow over 10B, which I made my starting point (marked K on my plan).

The country for the most part is polygnum swamp with box forest, high ground, with scrub at back.

I found improvements to the value of £70, viz., hut, £30, and fence, £40, erected as shown on plan.

This reserve has been modified in accordance with memo. on instructions.

I have, &c.,
JOSEPH TARRANT,
Licensed Surveyor.

Roll plan D 190-1,834, papers Ms. 80-11,498, and plan herewith. Received 2nd May. Forwarded to Surveyor-General. As reserve 10B is described, it does not wholly reach the outside main road from Wentworth to Menindie. The reserve is one which will be permanently useful to the travelling public for access to water. It is submitted that extension be notified and survey accepted.—T. W. CONOLLY, Surveyor, Wentworth, 2 May, 1882.

Reserve Branch, 20 May, 1882.

Mr.

Mr. Conolly has not stated any reason why this instruction should not be fully complied with, and Mr. Licensed-Surveyor Tarrant seems to have overlooked that part of his instruction having reference to reserve No. 4. He has also omitted the reference to the south-west corner of portion 3. Mr. Conolly will be good enough to explain.—G. Lewis (for the Surveyor-General), 17/6/82. Mr. Surveyor Conolly.

Received.—T.W.C., 26/6/82. Memo. to Mr. Tarrant, 11/7/82. Plan of reserve No. 4 not yet to hand.—T.W.C. No reply from Mr. Tarrant. Now forwarded to Surveyor-General with my report, No. 82-55 of 25th July.—T. W. Conolly, Surveyor.

No. 10.

Office Memorandum.

Mr. Curry,—

Upon examination it is found that the prelease in its present form is objectionable as the run boundary has been ignored, it not being shown on the maps at the time the lease was granted. Prelease 78-2, Wentworth.

It is submitted that the lease be charted as shown by blue lines on the accompanying tracing, which will absorb all the available land on Pooncarie Run, and then cancel 720 acres of Letheroe Run.

The position of the travelling stock reserve 381 has also been altered since date of approval of prelease.

Tracing attached showing the present and proposed forms of the prelease.

W.H.H., 17/5/82.

The lease may, it is submitted, be amended as designed.—H.C., 25/5/82. Yes.—C.O., 29/5/83.

Mr. Curry,—Tracing herewith for the Land Agent; also one for the ranger. There are no alienations or unalienated measurements within the lease. About 960 acres of travelling stock reserve 381, notified 19th May, 1878, fall within the lease. The maps disclose no other objection to a compliance with the request.—W.H.H., 7/6/82.

Amended tracing to land agent, and lessee informed 10th June. Mr. Curry,—The case may now, perhaps, be referred to the Department of Mines.—C.H., 10/6/82. May be asked to indicate the position of the land.—H.C., 17/6/82. Applicant with tracing, 22nd June. In a month. Applicant reminded, also to pay fee, £3 (form attached), 31st July, 1882. End of month. Any reply?—C.H., 8/9/82. Mr. Helm,—Cannot trace.—J.P.C., 11/9/82. In a month.—C.H., 18/9/82. Any reply or report of payment.—C.H., 18/11/82. Records. No trace.—J.P.C., 22/11/82. Mr. Freeman may perhaps be asked to return the tracing* and reminded as to fee.—C.H., 6/12/82. It is hardly worth while to ask for the return of the tracing sent to applicant for the purpose of marking the area desired to be rung.—S.F., 15/12/82. May be put away? Put away.—C.O., 16/12/82. *See Appendix C.

No. 11.

The Under Secretary for Lands to Mr. C. W. Porter.

Sir, Department of Lands, Sydney, 10 June, 1882.

I am directed to inform you that the original boundaries of your pre-emptive lease, No. 78-2, lot of 1,920 acres, in the district of Wentworth, county of Perry, notified as approved in the *Government Gazette* of the 17th May, 1878, have been amended; and that a tracing has been forwarded to the local Crown Lands Agent, which shows approximately the position now occupied by the lease, and which you, therefore, will find it very desirable to inspect.

The action taken was found necessary, as in its original position it extended across the boundary between Pooncarie and Letheroe Runs, leaving land available in Pooncarie Run. It has now been charted in accordance with the regulations, so as to absorb all available land in Pooncarie Run, then extending into Letheroe Run to the extent of about 720 acres.

I have, &c.,
H. CURRY
(For the Under Secretary).

No. 12.

Mr. Surveyor Conolly to The Surveyor-General.

Sir, Wentworth, 25 July, 1882.

Adverting to your B.C. instructions, No. 82-87, of 20th June, I have the honor most respectfully to state that I inadvertently omitted to explain that my report was being kept in abeyance awaiting Mr. Licensed-Surveyor Tarrant's plans of reserve 4 and of several subdivisions of land adjacent to the reserves in question, I desire now most respectfully to submit the following report on each case:— Misc. 82-7,427, Misc. 81-11,473, and tracing herewith.

2. Water reserve 9A.—This reserve as at present notified divides water, the whole of which, with sufficient access thereto, it is most advisable to reserve from sale. After high floods in the Darling River this water remains permanent for a considerable length of time, and almost every year the water is permanent during the greater part thereof. Situated close to the road from Pooncarie to Euston, this reserve is of great service to travelling stock in addition to its local use. I would therefore recommend the extension shown on my tracing by red tint, upon approval of this extension. I would advise the permanent marking of all unmarked boundaries of this reserve.

3. Water reserve 10B has been surveyed and plan transmitted by Mr. Tarrant.

4. Water reserve 11A lies in low flooded country out of the line of traffic, and its marking would not be of any public service.

5. Water reserves 12 and 13.—These are very close to each other, and I am of opinion that a reserve in the position indicated on my tracing by red tint would meet all public requirements; it has this advantage also to recommend it, that the approaches to the river Darling are good at any height of water, and banks firm and shelving. Within water reserves 12 and 13, for the most part, the banks are high

high and steep. In view of my proposal being adopted, Mr. District-Surveyor Bolton has approved of design for subdivision of land adjoining. By these adjacent measurements the proposed reserve will be sufficiently marked for easy identification.

6. Water reserves 14, 15, and 16 are now sufficiently marked by recent adjacent surveys for identification by the public.

7. Referring to the latter part of your B.C. instructions, I desire most respectfully to state that I sent a memorandum to Mr. Tarrant on 11th July instant, requesting him to forward his plan* of reserve 4 as early as possible, explaining cause of delay; also to supply reference to corner of portion 3 omitted. No reply has yet reached this office.

* See Appendix D.

When Mr. Tarrant's plan of reserve 10B was passing through this office I noted in pencil on the plan the omission referred to, but not considering the oversight of one detail justified me in returning his plan, sent it on at once that advance on survey might be paid without delay, leaving the omission to be dealt with by head office.

Postal communication in this district is slow and unfrequent, and very often a fortnight at least elapses ere a reply can be received.

I have, &c.,

T. W. CONOLLY.

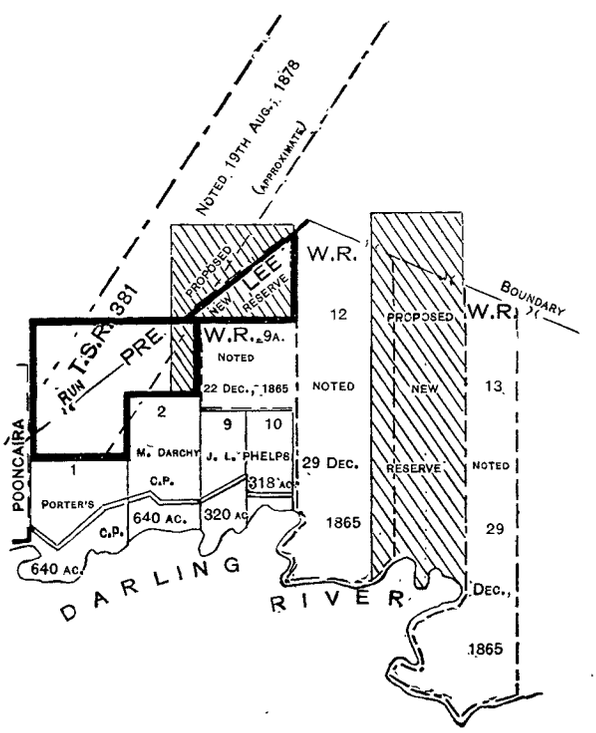
No. 13.

Mr. F. W. Rutter to The Under Secretary for Lands.

Sir, 14A, Exchange, Sydney, 8 September, 1882.

I have the honor on behalf of my client (Charles W. Porter, of Wondenbro, Pooncarie, Darling River) to protest against the proclamation of the reserve from sale (I presume proposed for notification in lieu of Nos. 12 and 13, south) of my client's conditional purchase, portion 1, of the parish of Pooncarie, county of Perry.

Upon reference to the map (from which is a sketch herewith) it will be seen that the proclamation of that reserve is fraught with danger to my client. As the next step may be the withdrawal from lease of the area so proposed, which covers nearly the whole of his prelease of 1,920 acres adjacent to his conditional purchase, and thus prevent and put an end to a right obtained under the law.



Portions 2, 9, *and* 10 *tinted red on original.*

It will further be seen that in consequence of the Pooncarie Village Reserve and of the proximity of the Travelling Stock Reserve, that there would be no other land open for him to prelease.

It is a remarkable circumstance that the portions tinted red are, I believe, held in the squatter's interest and that he will largely benefit by the revocation from reservation of the reserves 12 and 13 referred to, which are near the purchases in his lands, and so situated as to be unapproachable to my client if the new reserve be made, as it would intercept him from acquiring any part of the land so revoked.

The surveyor, in making this recommendation, has lost sight of what might be the result of his action if endorsed by you. Moreover, any accidental forgetfulness to pay the rent (which may occur to the best intentioned man) may cause the forfeiture of his prelease and refusal by the Department to its restoration in order to give effect to the reserve (if that be possible under the law) now proposed.

I have, &c.,

FRED. WILLIAM RUTTER.

Send to Survey Office in connection with other papers.—C.O., 11/9/82. Reserve Branch, 11th September, 1882.

No. 14.

No. 14.

The Surveyor-General to The Under Secretary for Lands.

14 September, 1882.

Land District of Wentworth.

In reporting on reserves near the village of Pooncarie, parish of Pooncarie, county of Perry, Mr. Surveyor Conolly has suggested several modifications and extensions, which, for reasons advanced by him, it is considered advisable to adopt.

Reserve No. 10B has been recently marked by Mr. Licensed-Surveyor Tarrant with an extension, as shown in red on tracing. This extension is endorsed by Mr. Surveyor Conolly, and is deemed advisable, both in the public interest, and as ensuring symmetry of design. It is proposed to cancel the old reserve—reserve 10B—and notify anew with the extension referred to.

For revocation, 1,920 acres.
For notification, 2,372 acres.
1,172 ,,
2,560 ,,

Water reserve No. 9A is also proposed to be extended, as shown in red on tracing. As at present this reserve is insufficient in area. It is also desirable that the extension proposed be carried out, as after high floods in the Darling River this reserve is covered with water, which remains permanent for a lengthened period, and it is of great importance that access to it be secured from the adjacent stock route, from Euston to Pooncarie, which is greatly used.

Respecting the objection to this extension raised by Mr. F. W. Rutter on behalf of Chas. W. Porter (objection enclosed), it is pointed out that the proposed extension will not cancel Porter's prelease, except on failure of renewal.

Water reserves 12 and 13, situated close together, one proposed for cancellation, and in lieu thereof the area shown in red is proposed for notification. This area is considered ample for all public requirements, and is a decided improvement on Nos. 12 and 13, inasmuch as whilst it is of far smaller area, it embraces in its frontage good approaches to the river at any height of water, and the banks at this are firm and shelving, whereas in the reserves proposed for cancellation the banks are high and steep.

It is therefore submitted that reserve 10B be cancelled, and that in lieu thereof an area of 2,372 acres be reserved for water supply and access; also, that the extension of water reserve 9A, notified 22nd December, 1865, being an area of 1,172 acres, be notified as proposed. Further, that water reserves 12 and 13 be cancelled after subdivision, as being no longer required in the public interest, and that in lieu thereof the area of 2,560 acres, as shown in red on tracing, be notified for water supply under the provisions of the 4th clause of the Lands Act of 1861.

Descriptions are enclosed for the notification of reserves recommended, and for the revocation of water reserve 10B.

I have, &c.,
G. LEWIS
(For Surveyor-General).

Submitted for approval.—F.H.W., 25/9/82. It appears that portion of the proposed extension of 9A is already in the travelling stock reserve; if so, why reserve a second time?—C.O., 3/11/82. Found to-day with the Newcastle pasturage papers just returned from Reserve Branch.—F.H.W., 4/12/82. Mr. G. Lewis.

The position of the track is shown approximately, not having been determined by survey, and it is deemed advisable to secure access from the Euston Road to the land against possible modification or alteration of the travelling stock reserve.—G. Lewis (for the Surveyor-General), 20/12/82. The Under Secretary for Lands.

Submitted.—F.H.W., 22/12/82. May be approved, but the position of the stock route should be determined.—C.O., 22/12/82. Approved.—John R., 22/12/82. Executive Council Minute:—Gazetted 15/1/83. Land Agent informed, 15/1/83. Charted, &c., on county of Perry, and traced for Land Agent, 30/1/83.

[* *Enclosures.*]
Tracings, E, F, G.

*See Appendices E. F, G.

No. 15.

Mr. C. W. Porter to E. Quin, Esq., M.P.

Wondenbro, 13 October, 1882.

Dear Sir,

Many thanks for your kind attention to my somewhat abrupt request. I am never a polished letter-writer, and having to write as I had, and hurry to post my effusion, I am afraid, I exceeded my usual abruptness.

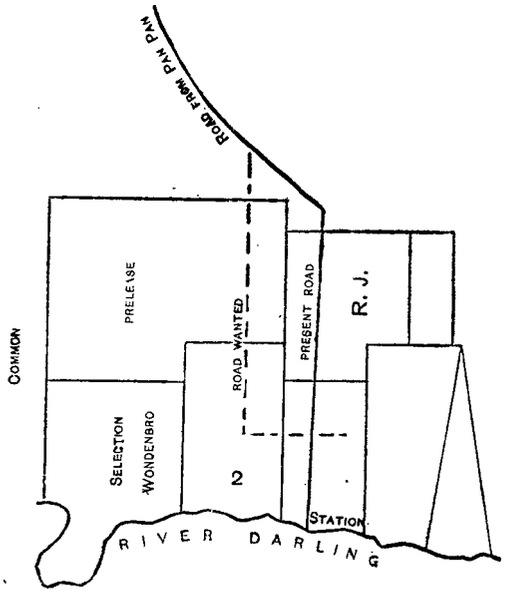
I send you a very rough sketch, showing the object of the reserve asked for. That portion marked 2 is a selection of M. Darchy, and no road has been surveyed through it from Pan Pan to station. Should such road be now granted I shall have the whole of the back country sheep through my prelease every shearing, without the Darchys having to drive their sheep a less distance than they have to now, consequently I look upon it as an attempt to injure me solely.

When the surveyor was going to apply for a reserve, why not have consulted me, it being on my land. Since 1878 the Darchys have been having a peck at my unfortunate holding. I think it about time the matter was settled.

The commoners are anxious to know when the common will be gazetted, as they wish to fence. Can you kindly supply the information?

I trust all the electors in your large district do not trouble you as I have done.

Yours faithfully,
CHAS. WM. PORTER.



No. 16.

No. 16.

Mr. F. W. Rutter to The Under Secretary for Lands.

Sir, 14A, Exchange, Sydney, 17 November, 1882.

82-14,705, Mis., Objecting to reserve 9A on account of Mr. Porter's prelease, near Pooncarie.

I have the honor to request that I may be informed of the decision arrived at—if such has yet been given—by the Minister in my protest of date 8 August, 1882, referred to in the margin.

Yours obediently,

FRED. WM. RUTTER.

No. 17.

Memo. from Mr. F. W. Rutter to The Under Secretary for Lands.

14A, Exchange, Sydney, 28 November, 1882.

THE papers mislaid are 82-14,705, Misc.

There is a later paper (82-18,590 Misc.) from me, asking for terms of decision arrived at (if any).

FRED. WM. RUTTER

(Agent for C. W. PORTER, of Pooncarie).

Mr. Geo. Lewis for former papers, please.—E.B. (*pro* J.M'G.), 12/12/82. Misc. 82-14,705 were sent to the Under Secretary for Lands, 20th December, 1882.—J.T.K. (*pro* G.L.), 28/12/82. Mr. M'Guinn. Executive Council, 28/12/82. Inform Mr. Rutter, *vide* decision on 82-14,705, Misc.—J.D.D., 9/3/83. F. W. Rutter informed, 9/3/83.

No. 18.

Minute Paper for the Executive Council.

Recommending revocation of reserves and reservation of other Crown lands.

Department of Lands, Sydney, 28 December, 1882.

IT is recommended to His Excellency the Governor and the Executive Council that the temporary reservation of the portions of land within described and particularized in a schedule annexed, be now revoked, under the 6th section of the Crown Lands Alienation Act of 1861—the revocation to take effect at the expiration of thirty clear days from the date of notification in the *Government Gazette*.

It is further recommended that the portions of land also within described and particularized in a schedule annexed, be reserved from sale, under the 4th section of the Act quoted.

JOHN ROBERTSON.

His Excellency the Governor and the Executive Council.

The Executive Council advise that the course recommended in each case, be approved as herein set forth.—ALEX. C. BUDGE, Clerk of the Council. Minute 82-60, 28/12/82. Approved.—A.L., 28/12/82. Confirmed, 2/1/83. Gazetted, 15/1/83.

SCHEDULE of reserves to be revoked.

Number of papers, Ms. 82-14,705; number of reserve, 106; county of Perry; area to revoke, about 3 square miles.

Schedule of reserves to be proclaimed.

Number of papers, Ms. 82-14,705; number of reserve, 9A Extension; county of Perry; about 1,172 acres; purpose of reservation, for water supply.

Number of papers, Ms. 82-14,705; number of reserve, 526; county of Perry; about 2,372 acres; purpose of reservation, for water supply.

Number of papers, Ms. 82-14,705; number of reserve, 527; county of Perry; about 2,560 acres; purpose of reservation, for water supply.

No. 19.

Gazette Notice.

RESERVES FROM SALE FOR WATER SUPPLY.

Department of Lands, Sydney, 15 January, 1883.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that in pursuance of the provisions of the 4th section of the Crown Lands Alienation Act of 1861, the land specified in the Schedule appended hereto shall be reserved from sale for water supply.

JAMES S. FARNELL.

Darling District.

No. 526. County of Perry, parish of Timpunga, Pooncarie and Pooncarie Back Plains Runs, area about 2,372 acres. The Crown lands within the following boundaries: Commencing on the left bank of the Darling River, at a point bearing north 70 degrees west 5 links from a gum-tree marked broad-arrow over R over 10B, said point being about 49 chains in a direct line south-westerly from the south-west corner of portion No. 3; bounded thence on the north by a line east 5 miles 7 chains 34 links; on the east by a line south 60 chains; on the south by a line west 3 miles to the Darling River aforesaid; and thence by that river upwards, to the point of commencement.

The above is in lieu of reserve No. 106, cancelled this day.

The corner trees of this reserve are marked broad-arrow over R over 10B.

[Ms. 82-14705; Plan D. 19-1,834.]

No. 20.

No. 20.

Gazette Notice.

RESERVES FROM SALE FOR WATER SUPPLY.

Department of Lands, Sydney, 15 January, 1883.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that in pursuance of the provisions of the 4th section of the Crown Lands Alienation Act of 1861, the land specified in the Schedule appended hereto shall be reserved from sale for water supply.

JAMES S. FARNELL.

Darling District.

No. 527. County of Perry, parish of Pooncarie, Tarcoola, and Letheroe Runs, area about 2,560 acres. The Crown lands within the following boundaries: Commencing on the left bank of the Darling River, at the north-west corner of reserve No. 13; bounded thence on the south by the north boundary of that reserve and its prolongation east in all 4 miles; thence on the east by a line north 1 mile; thence on the north by a line west to the Darling River aforesaid; and thence by that river downwards, to the point of commencement.

[Ms. 82-14,705.]

No. 21.

Gazette Notice.

RESERVES FROM SALE FOR WATER SUPPLY.

Department of Lands, Sydney, 15 January, 1883.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that in pursuance of the provisions of the 4th section of the Crown Lands Alienation Act of 1861, the land specified in the Schedule appended hereto shall be reserved from sale for water supply.

JAMES S. FARNELL.

Darling District.

No. 9A extension. County of Perry, parish of Pooncarie, Pooncarie and Letheroe Runs, area about 1,172 acres. The Crown lands within the following boundaries: Commencing on the north boundary of water reserve No. 9A, notified 22nd December, 1865, at the south-east corner of portion No. 2; bounded thence on part of the south by part of the north boundary of that reserve east to its north-east corner; thence on part of the west by the east boundary of that reserve south to its south-east corner; thence on the remainder of the south by a line east 1 mile; thence on the east by a line north 1 mile 36 chains; thence on the north by a line west to the east boundary of portion No. 2 aforesaid; and thence on the remainder of the west by part of that boundary south, to the point of commencement.

[Ms. 82-14,705.]

No. 22.

Gazette Notice.

REVOCATION OF TEMPORARY RESERVES.

Department of Lands, Sydney, 15 January, 1883.

IT is hereby notified, for general information, that His Excellency the Governor, with the advice of the Executive Council, has been pleased to revoke under the 6th section of the Crown Lands Alienation Act of 1861, the temporary reservation from sale of the portions of land hereinafter described,—the revocation to take effect at the expiration of thirty clear days from this date.

JAMES S. FARNELL.

Darling District.

No. 106. County of Perry, Pooncarie Run, Coloungina, 3 square miles; Commencing at a blazed tree at a point of the Darling River, about ¼ of a mile north of a point known as Wealwulla; and bounded on the south by a line running east to the back line of the run, about ¾ mile wide, northerly, the northern boundary line being the southern boundary line of Coloungina pre-emptive purchase.

Reserve No. 526, notified this day, is in lieu of the above.

[Ms. 82-14,705.]

No. 23.

Mr. C. W. Porter to E. Quin, Esq., M.P.

Dear Sir,

Wondenbro, 22 January, 1883.

You were kind enough when in Pooncarie last December to interest yourself in the matter of the travelling stock reserve through my prelease. I now forward you the following facts, so that you may lay them before the Lands Department:—Prelease was applied for in January, 1878, to be immediately east of conditional purchase, and was gazetted on the 17th May following. On the 19th August, 1878, I received official notice thereof. You will perceive, on referring to tracing A, that the travelling stock reserve was only gazetted on that date, three months after prelease gazetted. Trusting to *Gazette* notice, I fenced in such part of prelease as I then required for my stock, and heard nothing further in the matter until the 23rd December, 1879, when I received notice that a plan of prelease had been forwarded to the Local Office for public inspection. On obtaining a copy of such tracing (marked B*), * See Appendix H.

I wrote to the Lands Office asking for my prelease to be granted when applied for, stating, to the best of my ability, the hardship it would cause me to have to remove my fence, and the injury it would be to the lessees of Tarcoola, by shutting the station in. On the 23rd July, 1880, I received a letter stating, "I am directed to inform you that the Minister of Lands has decided in this and in other cases that where there is other available land, the prelease must be in a modified manner, so as to preserve intact the travelling stock reserve. Your request cannot be complied with." I then employed Mr. F. W. Rutter to act for me and to explain the matter fully to the Department, and received the letter, dated 10th June, 1882, with the tracing marked 'A. You will notice that the prelease has the objectionable feature perpetuated of coming at the back of Tarcoola head station, which is on blocks 9 and 10, and that the travelling stock reserve runs through the remainder of prelease. I think you will agree with me that as to the three-cornered piece, it would be but little violation of the regulations to have the same quantity of land given me east where marked in pencil, and that the travelling stock reserve, which only commences on the boundary of common and prelease, may be removed outside of my land. There might be some difficulty about this if my land was situated some miles from the starting point of reserve. I should think but little objection can be made to it as it is. I also think that conditional purchasers should not be made to find land for travelling stock reserves, which are not used by them, when other land is available. There is another stock route talked about from Menindie to Wentworth. This could also join the present stock reserve on the east of prelease, and also east of the Pooncarie Common. Should it come through the frontage a very ordinary flood would render it impassable. I also enclose the evidence of a case heard before the Bench on Tuesday last. I summoned the defendant for not travelling the direct road from Berlundy to Menindie. I argued that the travelling stock reserve was a good road for stock going between here and Euston, and that defendant had no right to use that road, his route lying up the river, and that Darchy was not justified in giving the permission to cross from one road to the other, to the injury of self, and that the sheep could have been drafted at Darchy's wool-shed yards, which are alongside the inside and direct road. Defendant, according to my time, was five hours on my prelease with 13,000 sheep, eating off what little feed I had, leaving my sheep to starve. Darchy also uses the travelling stock reserve when mustering his paddocks north of the station and in moving his sheep from one paddock to another. All this is a most decided loss to me, rendering the fully stocking of my land an impossibility, for should I do so, either travelling stock or station sheep may, as the law seems to be here, come through my prelease and eat off everything. Your knowledge of this country will tell you that to get a living off 640 acres by grazing in this part is an impossibility, and without the prelease a conditional purchase would be nearly worthless. You also saw sufficient of Wondenbro to show that I have spent considerable money in improving the land.

There is a track through prelease used in time of flood. If this were made a 1-chain road it would meet all requirements of traffic, as in flood time the mail and a few horsemen are the only users of the track. If the road is undefined, stock would still claim to use it.

I have no faith in surveyors. They invariably survey against settlement. Mr. Conolly, the district surveyor, Wentworth, has quite recently caused some other part of my prelease to be reserved. I am quite ignorant where this is, not being yet gazetted, or for what purpose it is required. I can only judge that it is at the wish of Mr. Darchy, for some purpose of his own.

I do not know if I have made my wants intelligible. What I mean is, the same quantity of land contained in three-cornered piece to be given to me at the east of prelease, so that it may contain 1,920 acres, the travelling stock reserve leading to Euston and the projected one (if granted) to Wentworth to be placed east of prelease, and a 1-chain road leading along the track used in time of flood. With the stock roads immediately east of this track 1 chain would be quite sufficient.

Whatever may be the result, I feel quite confident you will do your best for me.

Yours, &c.,
CHAS. WM. PORTER.

[*Enclosure.*]

BEFORE W. L. Richardson, P.M., and W. J. Gould, J.P.

Pooncarie Police Court, 16 January, 1883.

Information:—Thos. Rhodes, in charge of 13,000 sheep, did unlawfully travel with the said sheep other than the direct road, to the injury of C. W. Porter.

C. W. Porter, sworn, deposed:—I am a grazier, residing at Wondenbro; on 7th January I received notice from the defendant that he would pass through my property on the following day; the notice given told me the sheep were at the white gate at the lower end of Darchy's ram paddock, and would be at Monulta yards that night; the gate in question is on the river on the inside road; I told the defendant before he left the yards on the morning of the 8th that he had no business there, and that I should summon him; I produce plan showing the position of the roads.

N. M'Leod, sworn, deposed:—I am a selector, residing near Pooncarie; I am a long resident in this district; I have lived on the Tarcoola Station; altogether I have been about fifteen years about here; I know the white gate at the bottom of Darchy's ram paddock; I also know the Monulta yards; there is no road from the white gate to those yards; from the white gate on the inside road to the outside road is from 2½ to 3 miles; if I were at the white gate and wished to come to Pooncarie, I should not go by the Monulta yards; it would be 4 or 5 miles farther to come to Pooncarie by that route.

Thos. Rhodes, sworn, deposed:—I am a drover; on Monday the 8th, I came on the outside road with about 13,000 sheep; I was in charge of those sheep; I received permission from Mr. Darchy to water at the white gate, and went out back again; on coming in to water, my sheep got boxed with the Tarcoola sheep, and Mr. Darchy requested me to go to the Monulta yards to draft them, which I did, and then took the travelling stock road from those yards and entered Mr. Porter's prelease at quarter to 7 on the morning of the 8th, and was on Pooncarie at quarter to 11 on the same day; Mr. Darchy gave me permission to travel where I liked for water.

By the Plaintiff: I camped at M'Caughey's hut, on the inside road, the night before I camped at Monulta.

Michael Darchy, sworn, deposed:—I am a sheep farmer, and owner of Tarcoola; I gave defendant permission to come in from the outside road to water; I insisted on defendant's going to the Monulta yards, as my sheep were boxed with his.

By the Plaintiff: I have a drafting-yard at the Woolshed; by his camping his sheep at M'Caughey's hut he would be on the inside road.

Case dismissed, the Bench stating that, as defendant had Mr. Darchy's permission to go from one road to the other, he was justified in using the Travelling Stock Road from Pooncarie to Euston.

No. 24.

The Surveyor-General to The Under Secretary for Lands.

A tracing is enclosed*, showing water reserves 9A extension, Pooncarie and Letheroe Runs, and No. 527 Tarcoola and Letheroe Runs, both notified 15th January, 1883, county of Perry, parish of Pooncarie, for the information of the Crown Lands Agent at Wentworth. *See Appendix J.

A tracing is also enclosed showing water reserve 526, notified 15th January, 1883, in lieu of water reserve 10B, cancelled same day, parish of Timpunga, county of Perry, for the land agent at Wentworth.

G. LEWIS
(For the Surveyor-General).

To be returned to Reserves Branch after informing land agent, whose attention should probably be drawn to the fact that reserve 10B was erroneously called reserve 106 in the cancellation notice. His attention should also be invited to the fact that the cancellation of reserve 10B does not throw open any additional land to selection, 1/2/83.

Land agent with tracings, 7/2/83. Mr. G. Lewis.—J.D.D., 8/2/83.

Mr. Surveyor Conolly is requested to determine the position of travelling stock reserve 381, in accordance with ministerial direction herein. He will also be good enough to furnish a sketch of same.—G. LEWIS (for Surveyor-General), 5/3/83. Mr. Surveyor Conolly.

Received.—T.W.C., 19/3/83.

Transferred to Mr. Licensed-Surveyor Tarrant, who is requested to traverse the Pooncarie and Euston Road from the gate, or Pooncarie Temporary Common, to south boundary of water reserve 9A, notified 22nd December, 1865, or a point in a line with the prolongation of the south boundary of the said water reserve 9A. Marks to be inserted at the terminal points and intermediate mile trees or posts marked in course of survey.—T. W. CONOLLY, surveyor, Wentworth, 9/4/83.

Returned to the Surveyor-General with my letter, No. 83-14, 10th May, 1883.—J. TARRANT, Licensed Surveyor.

No. 25.

Telegram from Mr. C. W. Porter to The Under Secretary for Lands.

6 February, 1883.

PART of my prelease selected three weeks since. Have wired land agent for information, and have been refused. Is this correct?

Mr. Curry.—C.O., 7/2/83.

This telegram may be taken to mean that the lessee is aware that part of his lease has been selected, but has sought further information from the land agent. Both Mr. Porter and the land agent may be asked by letter for further information.—H.C., 7/2/83.

Yes, 8/2/83. Land Agent, Wentworth, C. W. Porter, 9/2/83. In a month.

No. 26.

The Under Secretary for Lands to Mr. C. W. Porter.

Sir,

Department of Lands, Sydney, 9 February, 1883.

I have the honor to acknowledge the receipt of your telegram of the 6th instant, respecting your pre-emptive lease, specified in the margin, and to inform you that the local Crown Lands Agent has been communicated with, and requested to forward to this Department whatever information he may possess respecting the conditional purchase which, it is understood from your statement, has been made in the lease. Upon receipt of his reply you will be further communicated with. 78-2, 1,920 acres, Wentworth.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 27.

The Crown Lands Agent, Wentworth, to The Under Secretary for Lands.

Sir,

Crown Lands Office, Wentworth, 16 February, 1883.

Replying to your letter of number and date, as per margin, I have the honor to state as follows:— 83-1,851, 9th February.

So far as I am aware no selection has been made upon Mr. Porter's prelease, unless he claims that the gazetted addition to water reserve 9A or the stock route be upon that prelease.

On the 18th January a Mr. Richardson selected 326 acres, and I informed him, as per memorandum sent with his application, that he had selected partly on intended addition to water reserve 9A, and partly on the travelling stock route, as marked upon my plan.

I did not, therefore, inform Mr. Porter of such selection, as I could not be aware of his being in any way affected.

I have, &c.,
HY. HIBBLE,
Crown Land Agent.

No. 28.

No. 28.

Office Memorandum.

Reserve Branch, No. 4.

MEMORANDUM of subjects requiring explanation or completion in connection with the survey and plan of water reserve No. 526 (10B), parish of Timpunga, county of Perry, transmitted by Mr. Tarrant's, letter, No. 82-24, of 1st May, 1882. Instructions issued to Mr. M'Donald on 26th August, No. 80-197, and on which Mr. Tarrant's report in explanation is requested.

Subject.	Report.
In connecting the north west corner of the reserve with the south-west corner of portion No. 3 A. Nicholls' conditional purchase of 300 acres Mr. Tarrant gives on his plan a reference letter to the latter corner, but in the table opposite that letter is a blank.—G. LEWIS (for Surveyor-General), 5/3/83. Forest Clerk, Surveyor-General's Office, 8/3/83, (per Mr. Surveyor Conolly). Received, 19/3/83. Forwarded to Mr. Licensed-surveyor Tarrant, with my memo. of this date.—T. W. CONOLLY, Surveyor. Wentworth, 19/3/83. Received.—J.T., 20/3/83.	Corner 90° 00′ (approximate), 5 links. Gum. The line being covered with heavy brush fence it is impossible to obtain reference with any degree of accuracy.—JOSEPH TARRANT, 21/3/83. Received.—T.W.C., 27/3/83. Now forwarded to Surveyor-General. I have not a copy of original survey of portion 3 to check this reply by.—T. W. CONOLLY, Surveyor, 27/3/83. Plan noted. Place with papers.—J.T.K., 13.

No. 29.

Office Memorandum.

8 March, 1883.

THIS is a request to amend the form of a prelease No. 2 of 78, and to make a deviation of travelling stock reserve No. 381, so that it will not embrace any part of the lease.

I would point out, that as the lease stands at present, the form is objectionable, as it was not till the Further Amendment Act of 1880 was passed that provision was made for the extension of a prelease across a run boundary to make up the area applied for after absorbing all the available land in the run in which the conditional purchase was situated.

Therefore, if the strictly legal course be pursued, the area of the prelease should be reduced to 1,300 acres, that being the area west of the run boundary; then the reserve might perhaps be diverted to follow the run boundary, as shown by firm red lines on tracing, although this proposal would involve the loss of 620 acres, still the greater security that the lessee would enjoy, so far as the balance of the lease is concerned, and the freedom from annoyance or hardship by travelling stock, and would more than compensate for this loss of area. J.B.

Urgent. Strictly speaking (as the Act of 1875 precludes the crossing of a lease into a second run when any vacant land exists in the first), the lease shall be restricted.

The question however in which the lessee is most interested is the shifting of the travelling stock reserve, and it may be thought desirable to refer the case to the District Surveyor for report.—H.C., 8/3/83.

It would perhaps be well to have a report. Refer for the purpose to the Surveyor-General.—C.O., 9/3/83. E. Quin, Esq., M.P., informed, 13/3/83. The Surveyor-General, 13/3/83. Mr. Burt, 16/3/83.

Mr. G. Lewis. The action indicated should perhaps be done through the Reserve Branch.—J.B., 29/3/83. Mr. Surveyor Conolly for consideration and report accordingly.—G. LEWIS, (for the Surveyor-General), 17/4/83. Mr. Quin, M.P., informed, 23/4/83.

Mr. Landers, 23/4/83. Received.—T.W.C., 7/5/83. Telegram to Mr. Licensed-Surveyor Tarrant to expedite plan and report required by B.C. 83-40, 5th March.—T.W.C., 8/5/83.

Now placed with Mr. Licensed-Surveyor Tarrant's letter 83-14, 10th May, *vide* my B.C. thereon dealing with this matter.—T. W. CONOLLY, Surveyor, 25/5/83.

No. 30.

The Under Secretary for Lands to Mr. F. W. Rutter.

Sir, Department of Lands, Sydney, 10 March, 1883.

In reference to your letter of the 28th November last, respecting your protest on behalf of Mr. C. W. Porter against the reservation of an area in lieu of reserves Nos. 12 and 13, in the parish of Pooncarie, county of Perry, I am directed to inform you that the Secretary for Lands has approved of the reserves in question being cancelled after subdivision, and an area of 2,560 acres reserved in lieu thereof.

I am to add that your client's pre-emptive lease will not be cancelled by the reservation, except on failure of renewal.

I have, &c.,
CHAS. OLIVER,
Under Secretary.

No. 31.

13

No. 31.

The Under Secretary for Lands to E. Quin, Esq., M.P.

Sir, Department of Lands, Sydney, 13 March, 1883.

I have the honor to state for your information that the letter addressed to you by Mr. C. W. Porter, respecting the pre-emptive lease specified in the margin, and forwarded by you to this Department on the 15th February last, has, together with the other papers in the case, been referred to the District Surveyor for report. 78-2, 1,920 acres, Wentworth.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 32.

Memo. from Mr. Surveyor Conolly to Mr. Licensed-Surveyor J. Tarrant.

Wentworth, 19 March, 1883.

Charting Branch Memo. of 5th March, 1883, to Licensed-Surveyor Tarrant.

Mr. Licensed-Surveyor Tarrant's attention was directed to the omission referred to in the above memorandum on the 11th July, 1882.

An explanation requested as to why the information has not been supplied.

T. W. CONOLLY,
Surveyor.

Herewith I have returned memo. *re* corner of Nicholls' conditional purchase. I retook corner some time ago, but omitted to send result.—J. Tarrant, Licensed Surveyor, 21/3/83.

No. 33.

Telegram from Mr. C. W. Porter to The Under Secretary for Lands.

18 April, 1883.

Surveyor Tarrant now defining travelling stock road through my prelease, 2-78. Understood was to have been reported on first. Surveyor states would be no difficulty in making alteration required. Reply.

C. W. PORTER.

Urgent.—C.O., 18/4/83. Mr. Surveyor Conolly instructed to report on proposed deviation of stock route on papers Misc. 83-2,449, on 17th April.—Wm. M'F., 18/4/83. Perhaps the Surveyor-General will specially instruct Mr. Conolly to send the further papers to Surveyor Tarrant at once.—C.O., 18/4/83. Mr. M'Lean, for copy of instructions, if you please. Immediate.—G.L., 19/4/83. Not issued from this branch (Geographical division, No. 9).—M.A.M'L., 19/4/83. Ask Mr. Conolly to report upon a proposed deviation at once. Inform him that Mr. Tarrant is on the ground. Mr. Landers,—Telegraph the above.—G.L., 19/4/83.

No. 34.

Telegram from Mr. Surveyor Conolly to Mr. Licensed-Surveyor J. Tarrant.

18 May, 1883.

Your survey of track from Pooncarie towards Ariunpe urgently required. Please state in your report if any modification of that part of travelling stock reserve 3-81 practicable; and, if so, whether in public interest advisable.

T. W. CONOLLY, Surveyor,
Wentworth.

No. 35.

Mr. Licensed-Surveyor J. Tarrant to The Surveyor-General.

Sir, Wentworth, 10 May, 1883.

I have the honor to transmit herewith plan of traverse of part of main track from Pooncarie to Euston, starting at south boundary of reserve No. 6, at village of Pooncarie, and ending at the south-east corner of extension of water reserve 9A, notified 15th January, 1883, also survey of south boundary of water reserve 9A to its extension, county of Perry.

I would recommend that travelling stock reserve No. 381, notified 19th August, 1878, instead of being half a mile of each side of track, should be notified so as to extend only to the eastward, the country being much better adapted to the wants of travelling stock.

As plan was urgently required I have not had time to obtain original tracings of portions 2, 9, and 10, so that these portions are only charted approximately.

I have, &c.,
JOSEPH TARRANT,
Licensed Surveyor.

Roll plan D 21-1,834; plan and papers Misc. 82-19,725, with instruction; No. 40 of the 5th May, 1883, herewith. Received.—T.W.C., 17/5/83.

Plan traced, 25/5/83; forwarded to Surveyor-General; Misc. 83-2,449, and copy of telegram now herewith. I know of no objection to the extension of this part of travelling stock reserve 381, as herein proposed, viz.:—That the reserve should be placed wholly on the north-east side of track; but the proposed travelling stock reserve from Wentworth to Menindie embraces some of the land which, in C. W. Porter's interest, it is proposed to release by modifying travelling stock reserve 381, and I think the public convenience would hardly be fairly considered were the two stock routes made to join south of the

the point where the outside road from Wentworth meets the Euston road to Pooncarie. The modification proposed by Mr. Tarrant is preferable to that shown by red lines on tracing with Misc. 83-2,449, inasmuch as by the latter drovers would be very liable to trespass were the lessee to have his land unfenced. To modify travelling stock reserve 381, as shown by brown tint, would be most inconvenient to the public. Attached is tracing, showing the correct position of travelling stock reserve 381 as notified, and the furthest point south that the proposed travelling stock reserve from Wentworth to Menindie should be made to meet the Euston and Pooncarie road.—T. W. Conolly, Surveyor, 25/5/83.

For Mr. George Lewis,—Plan herewith, 18/6/73. Memorandum to surveyor *re* closes, folio 374, on 13th July, 1883. Memorandum returned, 28th September, 1883, now with papers. Charted and examined.—W. M. Gordon, 9/7/83.

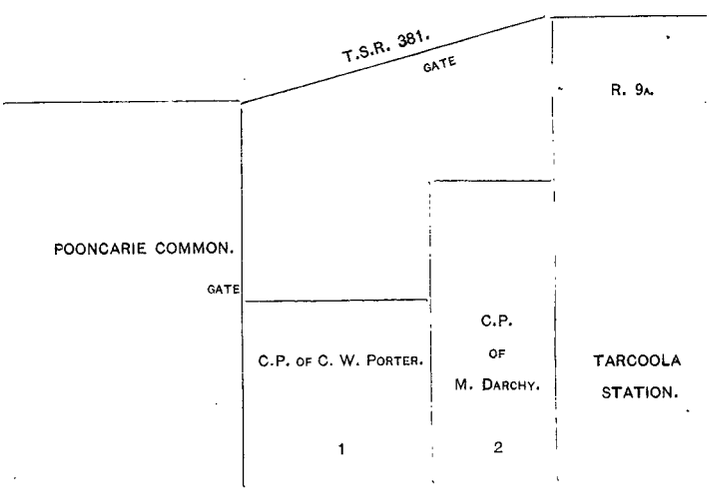
No. 36.

Mr. C. W. Porter to The Under Secretary for Lands.

Sir, Wondenbro, Pooncarie, 15 June, 1883.

I have the honor to enclose letters received from Mr. Conolly and Mr. Surveyor Tarrant, also your own letter to Mr. Quin, M.L.A. I can in no way reconcile Mr. Tarrant's letter as following the instructions that would most probably be sent by you to Mr. Tarrant, and as that gentleman did not think it worth while to see me before sending his report, my views of the matter remain as a sealed book to him. When he was measuring the road through prelease he distinctly told me he could not see any reason why travelling stock reserve 381 should not run at the back of prelease. I suppose however, that as he was afterwards the guest of the Tarcoola manager he found this would not cramp me up sufficiently. I have no faith in any action taken by surveyors, they always work against settlement.

I have now the honor to submit the following plan for your consideration, and as the increase in distance would be only about two hundred yards, I hope it may be granted without surveyors reporting on the case.



Travelling stock reserve 381 to start from south-east corner of Pooncarie Common, thence south until it joins travelling stock reserve as placed by Mr. Tarrant, the remainder of my acreage to be contained between the dotted lines, the triangular portion lying at the east of the old reserve 9A being also just behind the Tarcoola Station would be thus done away with, should I have to fence it off it would be a great nuisance to the station and very expensive for me to fence.

The travelling stock route from Menindie to Wentworth could also go by 381 until it clears the east side of the lake, it being impossible for stock to travel by any other way, the lake joining the south-east corner of conditional purchase 2.

By granting this request I shall have one paddock free from travelling stock, and the land to the east through which the travelling stock reserve will run. I shall have to make some little use of it in wet weather.

I have also the honor to draw your attention to the fact, that when my prelease was gazetted as granted in May, 1878, the travelling stock reserve was not known, so that the remainder of prelease cannot be supposed to be taken out of a reserve, but the reserve out of prelease. I am quite aware that stock must have roads defined for them, at the same time where such a very slight deviation is asked for, as in my case, I think the stock ought to give way to the *bonâ fide* selector.

Mr. Tarrant, by some strange reasoning, concludes that I want prelease on the west side of travelling stock reserve as reported on by him, how he arrives at such a conclusion is a mystery to me, my various letters to the Department for Lands will show the reverse to be the case.

I have, &c.,
CHAS. WM. PORTER.

[*Enclosures.*]

Sir, Wentworth, 8 May, 1883.

The instructions for report upon your application for modification of travelling stock reserve 381 have come to hand and will be attended to as early as possible.

If you place yourself in communication with Mr. Tarrant, he will consider and report upon your views, as he has now been requested to say whether any modification is advisable in the public interest.

I have, &c.,
T. W. CONOLLY,
Surveyor.

Mr. C. W. Porter.

Sir

Sir,

Department of Lands, Sydney, 13 March, 1883.

I have the honor to state for your information that the letter addressed to you by Mr. C. W. Porter, respecting the pre-emptive lease specified in the margin, and forwarded by you to the Department on the 15th February last, has, together with the other papers in the case, been referred to the District Surveyor for report.

73-2, 1,920 acres, Wentworth.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

E. Quin, Esq., M.P., Legislative Assembly, Sydney.

Dear Sir,

Wentworth, 20 May, 1883.

Your note of the 14th instant to hand, and in reply I have to inform you that I have reported on the travelling stock reserve adjoining your selection. I did not see any objection to a modification of reserve, so as to allow of your prelease to stand good, and reported that, in my opinion, reserve should be renotified 1 mile on east side of track, and not as at present, half a mile on each side. I shall in all probability be coming down the river in the course of the week, when, if I can make it convenient, I will call and see you.

I have, &c.,
JOSEPH TARRANT,
Licensed Surveyor.

C. W. Porter, Esq., Wondenbro.

No. 37.
The Surveyor-General to The Under Secretary for Lands.
Darling District.

28 September, 1883.

SUBMITTED for the consideration of the Secretary for Lands:—That the defined area enumerated in the margin, and situate in the county of Perry, in the parish of Pooncarie, be reserved from sale for travelling stock, under the provisions of the 4th clause of the Crown Lands Act of 1861.

Land District of Wentworth; area for reservation, about 3½ square miles; for cancellation, about 3½ square miles of travelling stock reserve 381, and about 3 square miles of travelling stock reserve 537.

It is further submitted that the portions of travelling stock reserve 381 (notified 19th August, 1878), and of travelling stock reserve 537 (notified 25th April, 1883), shown on tracing "A" by red and blue hatching respectively, be cancelled under the provisions of the 6th clause of Crown Lands Alienation Act of 1861.

An alteration in the form of these reserves is necessary in order to allow of the amendment of C. W. Porter's prelease 78-2, shown on tracing "C" enclosed, and Mr. Surveyor Conolly has reported that there is no objection in the public interest to the modification proposed, which consists in the revocation of the portions of travelling stock reserves 381 and 357 herein described, and the renotification of an area common to both travelling stock reserves (shown by green hatching), and confined to the outside of the track and maintaining the original width.

G. LEWIS
(For the Surveyor-General).

Submmitted for approval.—J.G.B., 4/10/83.

Before taking action on this recommendation, it is submitted that a report be obtained from the Department of Mines as to whether there is any objection to the proposed alteration of the travelling stock reserves.—F.H.W., 4/10/83.

The alteration is so slight, the reference may, I think, be dispensed with before carrying it out.—C.O., 5/10/83. Approved.—J. P. ABBOTT, 10/10/83. Gazetted, 29/10/83. Executive Council minute, and Land Agent informed, 29/10/83.

No. 38.
Minute Paper for the Executive Council.
Recommending revocation of reserves and reservation of other Crown lands.

Department of Lands, Sydney, 16 October, 1883.

IT is recommended to His Excellency the Governor and the Executive Council that the temporary reservations of the portions of land within described and particularized in a schedule annexed, be now revoked, under the 6th section of the Crown Lands Alienation Act of 1861—the revocation to take effect at the expiration of thirty clear days from the date of notification in the *Government Gazette*.

It is further recommended that the portions of land also within described and particularized in a schedule annexed be reserved from sale under the 4th section of the Act quoted.

JAMES S. FARNELL.

His Excellency the Governor and the Executive Council.

The Executive Council advise that the course herein recommended be approved.—ALEX. C. BUDGE, Clerk of the Council. Minute 83-43, 16/10/83. Approved.—A.L., 16/10/83. Confirmed, 23/10/83. Gazetted, 20/10/83.

SCHEDULE of reserves to be revoked.

Number of papers, Ms. 83-19,190; number of reserve, part of 537; county of Perry; area to revoke, about 3 square miles; when notified, 25th April, 1883.

Number of papers, Ms. 83-19,190; number of reserve, part of 381; county of Perry; area to revoke, about 3½ square miles; when notified, 19 August, 1878.

SCHEDULE of reserve to be proclaimed.

Number of papers, Ms. 83-19,190; number of reserve, 381 Extension; county of Perry; area, about 3½ square miles; purpose of reservation, for travelling stock.

No. 39.
Gazette Notice.

REVOCATION OF TEMPORARY RESERVES.

Department of Lands, Sydney, 29 October, 1883.

IT is hereby notified, for general information, that His Excellency the Governor, with the advice of the Executive Council, has been pleased to revoke, under the 6th section of the Crown Lands Alienation Act of 1861, the temporary reservation from sale of the portions of land hereinafter described, the revocation to take effect at the expiration of thirty clear days from this date.

JAMES S. FARNELL.

Darling

Darling District.

Part of travelling stock reserve No. 381, notified 19th August, 1878, county of Perry, parish of Pooncarie, area about 3½ square miles: Commencing at the north-east corner of portion No. 1, parish of Pooncarie; and bounded thence on the north by part of the south boundary of Pooncarie temporary common east to its south-east corner; thence by the eastern boundary of travelling stock reserve No. 381 aforesaid, south-easterly to the point of its intersection with the east boundary of water reserve No. 9A extension, notified 15th January, 1883; thence by part of the east boundary of that water reserve to its south-east corner; thence on the south by the south boundary of that water reserve west to its intersection with the western boundary of water reserve No. 381 aforesaid; thence by part of the western boundary of the last-named travelling stock reserve north-easterly to the east boundary of portion No. 1 aforesaid; and thence by part of that east boundary north, to the point of commencement.

Travelling stock reserve No. 381 extension, notified this day, in lieu of the above.

[Ms. 83-19,190.]

Part of travelling stock reserve No. 537, notified 25th April, 1883, county of Perry, parish of Pooncarie, area about 3 square miles: Commencing at the north-east corner of portion No. 1; and bounded thence on the north by part of the south boundary of Pooncarie temporary common east to its south-east corner; thence by part of the eastern boundary of travelling stock reserve No. 537, south-easterly and south to a point 40 chains south of the north-east corner of water reserve No. 9A, notified 22nd December, 1865; thence by a line bearing south-westerly to a point east of and about 30 chains distant from the south-east corner of portion No. 10; thence by a line east to that corner; and thence by part of the westerly boundary of travelling stock reserve No. 537 aforesaid, to the point of commencement.

Travelling stock reserve extension, No. 381, notified this day, in lieu of the above.

[Ms. 83-19,190.]

No. 40.

Gazette Notice.

RESERVES FROM SALE FOR TRAVELLING STOCK.

Department of Lands, Sydney, 29 October, 1883.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that, in pursuance of the provisions of the 4th section of the Crown Lands Alienation Act of 1861, the land specified in the Schedule appended hereto shall be reserved from sale for travelling stock.

JAMES S. FARNELL.

Darling District.

No. 381 extension. County of Perry, parish of Pooncarie, Tarcoola and Letheroe Runs, area about 3½ square miles. The Crown lands within the following boundaries: Commencing at the point of intersection of the north boundary of water reserve No. 527, notified 15th January, 1883, with the east boundary of travelling stock reserve No. 537, notified 25th April, 1883; and bounded thence on the south-east by a line bearing north-easterly to the south-east corner of water reserve No. 9A extension, notified 15th January, 1883; thence on the east by the east boundary of that water reserve north to its north-east corner; thence by a line parallel to and distant 1 mile from the track from Pooncarie to Euston, forming the centre of travelling stock reserve No. 281, notified 19th August, 1878, north-westerly to the east boundary of Pooncarie temporary common; thence by part of the east boundary of that common south to its south-east corner; thence by the south boundary of that common west to the track from Pooncarie to Euston, forming the centre of travelling stock reserve No. 381 aforesaid; thence by that track to its intersection with the north boundary of water reserve No. 9A extension aforesaid; thence by a line south to the north-east corner of water reserve No. 9A, notified 22nd December, 1865; thence by the east boundary of that reserve and the east boundary of water reserve No. 12, notified 29th December, 1865, to the point of commencement.

The above is in lieu of those parts of travelling stock reserves Nos. 381 and 537, cancelled this day.

[Ms. 83-19,190.]

No. 41.

Gazette Notice.

RESERVE FROM SALE FOR TRAVELLING STOCK.

Department of Lands, Sydney, 14 November, 1883.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that in pursuance of the provisions of the 4th section of the Crown Lands Alienation Act of 1861, the land specified in the Schedule appended hereto shall be reserved from sale for travelling stock.

JAMES S. FARNELL.

Darling District.

No. 381 extension. County of Perry, parish of Pooncarie, Tarcoola and Letheroe Runs, area about 3½ square miles. The Crown lands within the following boundaries: Commencing at the point of intersection of the north boundary of water reserve No. 527, notified 15th January, 1883, with the east boundary of travelling stock reserve No. 537, notified 25th April, 1883; and bounded thence on the south-east by a line bearing north-easterly to the south-east corner of water reserve No. 9A extension, notified 15th January, 1883; thence on the east by the east boundary of that water reserve north to its north-east corner; thence by a line parallel to and distant 1 mile from the track from Pooncarie to Euston, forming the centre of travelling stock reserve No. 381, notified 19th August, 1878, north-westerly to the east boundary of Pooncarie temporary common; thence by part of the east boundary of that common south to its south-east corner; thence by the south boundary of that common west to the track from Pooncarie to

Euston

Euston, forming the centre of travelling stock reserve No. 381 aforesaid; thence by that track to its intersection with the north boundary of water reserve No. 9A extension aforesaid; thence by a line south to the north-east corner of water reserve No. 9A, notified 22nd December, 1865; thence by the east boundary of that reserve and its southern prolongation south to the point of commencement

The above is in lieu of those parts of travelling stock reserves Nos. 381 and 357, cancelled 29th October, 1883.

This notice is in lieu of that published in *Government Gazette* of 29th October, 1883.

[Ms. 83-19,190.]

No. 42.

The Surveyor-General to The Under Secretary for Lands.

4 December, 1883.

A TRACING is enclosed, showing extension of travelling stock reserve 381, notified 14th November, 1883; also, revocation of parts travelling stock reserves 537 and 381, on the same date, county of Perry, parish of Pooncarie, for the information of the Crown Lands Agent at Wentworth. Duplicate tracing enclosed for Stock Branch, Department of Mines.

G. LEWIS
(For the Surveyor-General).

Dealt with in Reserve Branch. Submitted that after the Land Agent has been informed these papers be sent to Lease Branch, Survey Office. It is submitted that the Department of Mines be also informed. Land Agent, with tracing, 7/12/83.

Forward tracing.—J.D.D. (for J. G. BLAXLAND), 7/12/83. Under Secretary for Mines, with tracing, &c., 11/12/83. Lease Branch, 11/12/83. Mr. Burt, 13/12/83. See later action.

Mr. Curry,—The deviation of travelling stock reserve, as recommended by the surveyor, has been approved of in the position shown by green edging on accompanying tracing. The question as to the restriction of prelease No. 78-2 (see your minute on Misc. 83-2,419, within) to the same run in which the purchase is situated, as shown in red hatching on tracing, should now, probably, be taken into consideration.—J.B., 19/1/84.

Mr. Curry, 21/1/84.

Lease 78-2 may be amended and reduced as shown by red hatching. Rent, as difference, may be refunded from date of regazette. As the lease was applied for before the passing of the Act of 1880, it should not extend across the run boundary.—H.C., 30/1/84.

F.H.W., 31/1/84. C.O., 2/2/84. Approved.—J.S.F., 7/2/84. Mr. Burt., 7/2/84. See regazette cover, dated 3/3/84.

Wentworth.—Area of lease 78-2 reduced from 1,920 to 1,100 acres. Treasury to refund £1 19s. 2d. Land Agent, with tracing, and C. W. Porter informed, 4/4/84. No. of voucher, 4,532.—Original rent, £6; future rent, £3 8s 9d.; difference, £2 11s. 3d. Amount calculated for 280 days, £1 19s. 2d.

No. 43.

Office Memorandum.

Lease to be regazetted.

3 March, 1884.

THE lease particularized in the following schedule has now been charted on the office maps in accordance with decision on Misc. 83-24,342. Tracing enclosed, for transmission to the Land Agent at Wentworth, in which district the lease is situated.

J. BURT.

No. of lease, 2 of 78; county of Perry; parish of Pooncarie; No. of conditional purchase or portions on which lease now rests, 78-3; present area, 1,920 acres; future area, 1,100 acres; present rent, £6; future rent, £3 8s. 9d.

Lease 78-2 stands in the name of C. W. Porter, and rent has been paid to 31st December, 1884. Regazetted 25th March, 1884. Mr. Burt, 28/3/84. Mr. Curry,—Regazette noted.—J.B., 31/3/84.

No. 44.

The Under Secretary for Lands to Mr. C. W. Porter.

Sir, Department of Lands, Sydney, 4 April, 1884.

I am directed to inform you that the area of your pre-emptive lease, No. 78-2, in the district of Wentworth, approved on the 17th May, 1878, was, by notice in the *Government Gazette* of the 25th March, 1884, reduced from 1,920 to 1,100 acres; that a tracing showing approximately the present boundaries of the lease has been forwarded for public inspection to the local Crown Lands Agent; and that the Under Secretary for Finance and Trade (to whom any communication respecting the money should be addressed) has been requested to refund to you the sum of £1 19s. 2d., being the amount of rent in excess consequent upon the reduction in area that has now been made.

I am to explain that the action taken was found necessary in order that the lease should not extend into an adjoining run.

I have, &c.,
H. CURRY
(For the Under Secretary).

No. 45.

Mr. C. W. Porter to The Under Secretary for Lands.

Sir, Wondenbro, Pooncarie, 14 April, 1884.

I have the honor to acknowledge receipt of your communication of 4th April last, wherein you state that my prelease has been reduced from 1,920 to 1,100 acres; and that this was found necessary so that the lease should not extend into an adjoining run. I beg to draw your attention to a letter from the Department to me, dated 10th June, 1882, wherein my prelease is defined, and the extraordinary shape accounted for by the fact that it was necessary to first absorb all the available land of the run on which the conditional purchase is, and then to take the remainder out of the adjoining run, this being in accordance with both Land Act and Regulations.

I cannot see anything either in Act or Regulations allowing a Minister to set aside the action of his predecessor in office, and, with all deference to your Department, I shall require something more than your letter and the *Gazette* notice to oust me from my holding.

Hoping to hear soon that the defined prelease of June, 1882, has been overlooked by you, and that my lease is still to stand as therein mentioned,

I have, &c.,
CHAS. WM. PORTER.

P.S.—I am unable to give the marginal reference to letter of 10th June, 1882, being now in the hands of Mr. Quin, M.P. for this district. I have written for it, and when received will forward the numbers.

Mr. Burt,—How much vacant land is there beyond the present lease?—H.C., 30/5/84. About 210 acres, situate between the run boundary and travelling stock reserve 381 (extension).—J.B., 2/6/84. Mr. Curry.

The writer may be informed that the action cannot be disturbed, but if he makes a fresh application to the land agent for any available land between the lease and the reserve it will be dealt with on its merits.—H.C., 4/6/84. Yes.—C.O., 10/6/84. C. W. Porter, 10/6/84.

(A letter to Mr. Quin, M.P., with illustrative tracing).

No. 46.

Mr. C. W. Porter to E. Quin, Esq., M.P.

Dear Sir, Wondenbro, Pooncarie, 18 April, 1884.

When I wrote you some time since about my prelease I enclosed a letter from the Lands Office, dated 10th June, 1882, defining said lease, also plan of lease. Will you be kind enough to return them to me when you can lay your hands on them. By a letter from the Under Secretary, of 4th April, 1884, I am told that my lease has been reduced from 1,920 to 1,100 acres, and that £1 19s. 2d. will be refunded me. The explanation is couched in the following words, "I am to explain that the action taken was found necessary in order that the lease should not extend into an adjoining run." You can fancy this notice came on me like a thunderbolt. I know that Darchy has just returned from Sydney, and feel quite sure that some gross misrepresentation has been made to the Minister to induce him to attempt to commit such an injustice. I wrote immediately on receipt of letter, and could only give the date of the letter, 10th June, 1882, and not the reference. This is why I require it. I have fully made up my mind not to let the lease stand at 1,100 acres, it being both against Land Act and Regulations, and if at last I should have to eat humble pie, the most of my fencing will have to be shifted. If you will take the trouble to look at the plan you have, the division of the runs is marked on it.

The Local Land Board would put a stop to all such one-sided decisions. When will they be established or a Land Bill passed?

I beg to apologize for the trouble I am giving you.

Yours, &c.,
CHAS. WM. PORTER.

Presented by Mr. Quin, M.P.

No. 47.

Mr. C. W. Porter to E. Quin, Esq., M.P.

Dear Sir, Wondenbro, Pooncarie, 9 May, 1884.

Many thanks for your offer of seeing the Minister for Lands *re* my prelease. I forward you the last previous communication from the Lands Office, so that the one of the 10th June can be compared with it. My own opinion of the matter is, that some gross misstatement has been made to the Lands officials to induce them to alter the boundaries. I have no faith in Darchy's truthfulness. I hear that he induced one of his contractors to give him a receipt for £130 for about five days' work for two men in moving a small hut (a wood-cutter's residence) on to the prelease of Mr. Nicholls, so that he could make a claim for improvements; and the man further states that this is his usual practice for all work done on the station. Should such be the fact, how can I help doubting his *bona fides*.

It is quite struggle enough to live on the 2,560 acres, and the loss of 820 acres of the very best of the land would cause me to give in altogether, and to own to being licked is very repugnant to me.

A very nice rain is now falling, with every appearance of continuing. I hope you are having the like at Tarella.

Yours, &c.,
CHAS. WM. PORTER.

No. 48.

No. 48.

The Under Secretary for Lands to Mr. C. W. Porter.

Sir, Department of Lands, Sydney, 10 June, 1884.

With respect to your letter of the 14th April last, I have the honor to inform you that your pre-emptive lease, 78–2 of 1,100 acres, in the district of Wentworth, was reduced to comprise land in the run in which your conditional purchase is situated, and having regard to the 35th clause of the Lands Act Amendment Act of 1875, the action taken cannot be altered. If, however, you make to the local Crown Lands Agent an application for a pre-emptive lease of any available land between your present lease and travelling stock reserve extension 381, it, on receipt in this Department, will be dealt with on its merits.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 49.

E. Quin, Esq., M.P., to The Under Secretary for Lands.

Sir, Parliament House, Sydney, 3 July, 1884.

I have the honor to enclose a letter from C. W. Porter, which I shall feel obliged if you will read, and then if you can see your way to giving him the benefit of his prelease, which he has had fenced for many years and occupied, I shall be grateful.

I certainly think the case one of peculiar hardship if he is dispossessed of land which he took up in good faith, and which has been interfered with by reserves created since he took it up.

I have, &c.,
EDWARD QUIN.

Urgent.—C.O., 3/7/84. Mr. Thomas, 3/7/84. Lease application 78–348, Ls. 84–36–36, place herewith, please, and register this paper.—C.W.T., 4/7/84. Reserves.

The lease was applied for before the Act of 1880 came into operation, and the provisions of the Act of 1875 are, that if there is any land in the first run the boundary cannot be crossed. It is this that has led to the reduction of the lease, and the existence of the travelling stock reserve prevents, in its present position, any more liberal proposal.—H.C., 4/7/84.

To amend the lease and increase the area to 1,920 acres would involve the temporary cancellation of part of the travelling stock reserve. The applicant might then reapply for a full extension of area under a new application, and when the lease was granted the reserve might be reinstated.—H.C., 4/7/84.

Perhaps the stock route might be slightly deviated in area to permit of Mr. Porter obtaining his full area as desired. I should not suggest this course were it not for the fact that lease was originally charted without question, and it was only after a lapse of considerable time that the reduction in area was made.—C.O., 4/7/84.

Approved.—J.S.F., 8/7/84. Mr. G. Lewis, 9/7/84.

Mr. Burt,—Will you kindly show distinctly the position of the prelease as desired by applicant, in order that the deviation of the stock route may be described, *vide* Ministerial approval.—G. Lewis, 29/7/84.

Mr. Lewis,—I have shown by red lines on the enclosed tracing* (registered as an enclosure to leases 84–5,692), the original form of the prelease. According to the lessee's statement he has fenced in the north and east boundaries of the lease as originally gazetted. It is therefore presumed that the deviation in the stock route will be effected, so as to cause no interference with the fencing.—J.B., 5/8/84.

* See Appendix K.

[*Enclosure.*]

Sir, Wondenbro, Pooncarie, 17 June, 1884.

I enclose tracing showing the measurement of my fencing on the north and east sides of my prelease, the exact measurements of the zig-zag line I have not, the lines will serve to show that the corners are connected—the irregular line of fence is due to a now dry lake, filled only at high floods, it will be useful in paddock when fenced in. East of present fence, the south sides are all fenced and the conditional purchase.

I notice in the plan forwarded the date of gazetting reserve 381 is given as 19th August, 1878. The gazetting of my prelease, 17th May, 1878, is conspicuous by its absence, thus ignoring my prior right. In the regulations applying to preleases, No. 2 states, "The leasehold will include only such Crown land as may be open to and not already under prelease or notified as a reserve," thus showing that in January, 1878, when the application in due form was made, and on 17 May, 1878, when it was gazetted, the land now in question was open for pre-emptive lease. The 9th regulation states, "But no portion of any run so adjoining will be granted as a lease until all the available land within the pastoral lease in which the conditional purchase is situated shall be first exhausted."

I cannot read clause 35 of Act 1875 as applying to cancellation.

The whole question appears to me to resolve itself as occurring on the 17th May, 1878, the date of *Gazette* notice, at which time there is not any doubt as to the land being available, and had the lease been charted at that time, as perhaps it should have been, it would have been so done as in the letter of June, 1882, is described, for, although my application was for land immediately east of conditional purchase according to regulation 9, I must first exhaust the land in the run purchase is selected—of course, the Lands Department can gazette a travelling stock reserve through a prelease the same as through a pastoral lease; but why take the land from the first to give it to the second as in this case—would the travelling stock benefit by the change? My experience says no.

Without a doubt it would have been of great benefit both to myself and the owners of Tarcoola, if the same acreage as is contained in the triangular piece forming the south-east corner of Pooncarie run had been placed to the east of line as notified in letter of 2nd June, 1882. Had I not have been waiting for this change to be made my fencing would long ere this have been completed; unfortunately for myself I see too late that, according to the regulations, this cannot be done, and I attribute a great part of my losses in stock last year to not having fenced according to my existing lease.

Hogarth has described "the curved line to be the line of beauty," now, I, looking at the curved line in travelling stock reserve 381 extension, can only see something a good deal off the square. A tank has been sunk outside the south-east corner of the common where I have made a cross on plan, and as this has been made since 29th October, the date of notification, and there being no reason why the road should not have been direct, I cannot help thinking it being a fishy affair, or that some ultimate dodge is to be worked.

I must tell you that Darchy has built a house on his run for Mr. Surveyor Tarrant (which edifice is looked upon by the selectors as a real valuable improvement and of real use in the working of the station), but how the rent is paid, in cash or curved lines is a secret. If ever I build a house for a surveyor, I shall expect my lines to fall in pleasant places.

Conditional

Conditional purchasers on the Darling look on that purchase as a purchase of a right to lease three times the amount of their land, and in no other way. We were willing to risk these leases being conditionally purchases knowing that away from the river it would only be by station dummies, and we think we could bowl them over.

For myself I can say that with 2,560 acres I can live comfortably; should I, however, lose 820 acres of the very pick of the lot, I could not grow sufficient wool and stock to pay the rent alone. You can guess I am very anxious.

Yours, &c.,

E. Quin, Esq., M.L.A., Sydney. CHAS. WM. PORTER.

No. 49A.

Minute Paper for the Executive Council.

Recommending revocation of reserve and reservation of other Crown lands.

Department of Lands, Sydney, 2 October, 1884.

It is recommended to His Excellency the Governor, and the Executive Council, that the temporary reservation of the portion of land within described, and particularized in a schedule annexed, be now revoked, under the 6th section of the Crown Lands Alienation Act of 1861, the revocation to take effect at the expiration of thirty clear days from the date of notification in the *Government Gazette*.

It is further recommended that the portion of land also within described and particularized in a schedule annexed, be reserved from sale under the 4th section of the Act quoted.

J. S. FARNELL.

The Executive Council advise that the recommendation in each case, herein set forth, be approved.—Alex. C. Budge, Clerk of the Council. Min. 84–44, 7/10/84. Approved.—A.L., 7/10/84. Confirmed, 14/10/84. Land Agent informed, 20/10/84. Gazetted, 20/10/84.

Schedule of reserves to be revoked.

Number of papers, leases 84–5,693; number of reserve, 381 extension; county Perry; area to revoke, about 3½ square miles; when notified, 14 November, 1883.

Schedule of reserves to be proclaimed.

Number of papers, leases 84–5,692; number of reserve, 381 extension; county, Perry; area, about 2,368 acres; purposes of reservation, for travelling stock.

No. 50.

The Surveyor-General to The Under Secretary for Lands.

5 October, 1884.

A tracing is enclosed showing, by red hatching, travelling stock reserve 381 extension, cancelled 20th October, 1884, and by green tinting, travelling stock reserve 381 extension, notified same date in lieu.

County of Perry, parish of Pooncarie—for the information of the Crown Lands Agent at Wentworth.

G. LEWIS

(For the Surveyor-General).

It is submitted that after the land agent has been informed, these papers be returned to Mr. Burt, Lease Branch. Land agent with tracing, 7/11/84.

Mr. Curry,—Travelling stock reserve 381 extension has now been charted, so as to admit of C. W. Porter increasing the area of prelease 2, of 78, across the run boundary. A fresh application will be required for 820 acres.—J.B., 17/12/84.

May be advised by telegram.—H.C., 17/12/84. Yes.—F.H.W. (for the Under Secretary), 17/12/84. Telegram to C. W. Porter, 17/12/84.

No. 51.

Gazette Notice.

Revocation of Temporary Reserves.

Department of Lands, Sydney, 20 October, 1884.

It is hereby notified, for general information, that His Excellency the Governor, with the advice of the Executive Council, has been pleased to revoke, under the 6th section of the Crown Lands Alienation Act of 1861, the temporary reservation from sale of the portions of land hereinafter described,—the revocation to take effect at the expiration of thirty clear days from this date.

JAMES S. FARNELL.

Darling District.

No. 381 extension. County of Perry, parish of Pooncarie, Tarcoola and Letheroe Runs, area about 3½ square miles. The Crown lands within the following boundaries: Commencing at the point of intersection of the north boundary of water reserve No. 527, notified 15th January, 1883, with the east boundary of travelling stock reserve No. 537, notified 25th April, 1883; and bounded thence on the south-east by a line bearing north-easterly to the south-east corner of water reserve No. 9A extension, notified 15th January, 1883; thence on the east by the east boundary of that water reserve north to its north-east corner; thence by a line parallel to and distant 1 mile from the track from Pooncarie to Euston, forming the centre of travelling stock reserve No. 381, notified 19th August, 1878, north-westerly to the east boundary of Pooncarie temporary common; thence by part of the east boundary of that common south to its south-east corner; thence by the south boundary of that common west to the track from Pooncarie to Euston, forming the centre of travelling stock reserve No. 381 aforesaid; thence by that track to its intersection with the north boundary of water reserve No. 9A extension aforesaid; thence by a line south to the north-east corner of water reserve No. 9A, notified 22nd December, 1865; thence by the east boundary of that reserve and its southern prolongation south, to the point of commencement.

The above was notified on 14th November, 1883, as travelling stock reserve.

Travelling stock reserve No. 381 extension, notified this day, is in lieu of the above.

No. 52.

Gazette Notice.

RESERVES FROM SALE FOR TRAVELLING STOCK.

Department of Lands, Sydney, 20 October, 1884.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that in pursuance of the provisions of the 4th section of the Crown Lands Alienation Act of 1861, the land specified in the schedule appended hereto shall be reserved from sale for travelling stock.

JAMES S. FARNELL.

Darling District.

No. 381 extension. County of Perry, parish of Pooncarie, Letheroe Run, area about 2,368 acres. The Crown lands within the following boundaries: Commencing on the east boundary of the Pooncarie temporary common, at the south-west corner of portion No. 36; and bounded thence on part of the west by part of that boundary of the common south to its south-east corner; thence on part of the south by part of the north boundary of Porter's pre-emptive lease No. 2 of No. 78, bearing east to its north-east corner; thence by its east and north-east boundaries south and south-east to the south boundary of water reserve No. 9A extension, notified 15th January, 1883; thence by part of the south boundary of that reserve east and a line partly forming its east boundary north to its intersection with the north-east boundary of travelling stock reserve No. 381, notified 19th August, 1878; thence by part of the north-east boundary of that travelling stock reserve bearing south-easterly to its intersection with a line parallel to and 1 mile in a direct line east of the east boundary of Porter's pre-emptive lease aforesaid; thence on the east by that line, and its prolongation north to a point east of the point of commencement; and thence on the north by a line west partly forming the south boundaries of portions Nos. 38, 37, and 36 to that point.

The above is in lieu of travelling stock reserve No. 381 extension, cancelled this day.

[Ls. 84-5,692.]

No. 53.

Mr. C. W. Porter to The Under Secretary for Lands.

Wondenbro, Pooncarie, 9 December, 1884.

Sir,

I have the honor to request that a tracing of my prelease, 2 of 78, district of Wentworth, may be at once forwarded to the Local Land Office for public inspection. I notice that travelling stock reserve, No. 381, was altered on 20th October last, and judging from the description in the *Gazette*, my prelease has been returned to its prior form.

I have paid £6 as usual for the full prelease, and have the Land Agent's receipt.

I have, &c.,

CHAS. WM. PORTER.

Prelease, 78-2, of 1,920 acres, county Perry, gazetted 17th May, 1878, renewed for 1884 in the name of C. W. Porter.

No. 54.

Telegram from The Under Secretary for Lands to Mr. C. W. Porter.

17 December, 1884.

IF application be at once made to Crown Lands Agent, and rent paid for prelease for about 820 acres adjoining your prelease, 78-2, of 1,100 acres, it will, if received here in time, be dealt with on its merits.

H. CURRY
(For the Under Secretary).

No. 55.

Telegram from Mr. C. W. Porter to The Under Secretary for Lands.

18 December, 1884.

EIGHT hundred and twenty acres applied for. Rent paid.

CHAS. WM. PORTER.

Application in provisional *Gazette*.—J.P.C., 31/12/84. Mr. Curry. Design for lease No. 84-18 attached to lease application 84-15.—J.B., 17/2/85.

No. 56.

Application by Mr. C. W. Porter.

M.

[Occupation Act, 1861, and Lands Act Amendment Act, 1875.]

To be used in claiming to lease adjoining lands under pre-emptive right.

District of Wentworth.

RECEIVED this 23rd day of December, 1884, at — o'clock, together with the sum of £1 5s. 8d.

A. N. BARNETT,
Land Agent.

Sir,

Sir, Wentworth, 23 December, 1884.

In pursuance of the provisions of the Crown Lands Occupation Act of 1861, and the Lands Acts Amendment Act, 1875, and Regulations thereunder, I, Charles William Porter, do hereby apply to be allowed to lease the sections or portion of Crown lands hereunder described, at the fixed rent of £2 per section, which I hereby tender.

The land in virtue of which I claim to exercise a right of pre-emption, is situated as follows, and is now in my possession, viz.:—County of Perry, parish of Pooncarie, situated near the village of Pooncarie, containing 640 acres, being portion 2, conditional purchase 78-3, on the 24th day of January, 1878, by Mary Ann Porter, at Wentworth (standing in the name of Charles William Porter).

I am, &c.,
C. W. PORTER
(*Per* N. DEWHURST).

To the Land Agent for the District of Wentworth.

Description of the section or portions applied for.

About 820 acres, county of Perry, parish of Pooncarie:—Commencing at the south boundary of the village Pooncarie, at the north-east corner of my prelease No. 2, of 1878, and bounded thence by lines east and south to the north-eastern boundary of the aforesaid prelease; and by that boundary north-westerly, to the point of commencement.

Applicant was duly warned that the area applied for appeared to come within travelling stock reserve 381, and that a prelease, No. 2, of 1878, had been already granted in virtue of his conditional purchase, portion 1, parish of Pooncarie.—A.N.B., 23/12/84.

Provisionally gazetted. Approved, 31/12/84. Conditional lease, No. 4,342, gazetted under clause 52, Crown Lands Act of 1884, 16/4/86.

No. 57.

Office Memorandum.

Prelease application No. 15, District of Wentworth.

THE enclosed prelease application is forwarded to Mr. Brown for the following purposes:—

1. In order that its number may be quoted against each of the conditional purchases in virtue of which it has been made.
2. That particulars, as indicated by the headings of the columns of the following schedule, may be furnished of the conditional purchases.
3. That the number of any prior lease application made in virtue of any of the purchases may be stated.
4. That the selections may be classified according to series or groups.
5. That there may be furnished a copy of the application relating to any of the conditional purchases not yet measured.

W.H.H., 29/12/84.

Number conditional purchase, 78-3; section under which made, 13; area, 640 acres; present holder and date of transfer, Chas. Wm. Porter; state of conditional purchase, good; catalogue number of plan or registration number of surveyor's report, P 26-2,092; number of previous lease applications, 78-348.

All action, as indicated above, has been taken. The different series or groups of conditional purchases are shown by distinguishing brackets. Mr. for copies of applications of conditional purchases.—HERBERT CROFT, 8/1/85. Copies herewith.

Prelease Branch,—Mr. Burt, 9/1/85.

No. 58.

Mr. C. W. Porter to The Under Secretary for Lands.

Sir, Wondenbro, Pooncarie, 10 February, 1885.

In forwarding my application for conditional lease, I have the honor to inform you that travelling stock reserve 537, through my prelease, has never been used for the last fourteen years to my recollection, all stock going out to where travelling stock reserve 381 now is, and so round to the river. Water reserve 9A extension has been without water since gazetted. The Local Land Board, however, will advise you as to the uses of both.

I have, &c.,
CHAS. WM. PORTER.

[*Enclosure.*]

[Crown Lands Act of 1884—Part III, section 52.]

Application for the conversion of a pre-emptive lease into a conditional lease within the Division.

Pooncarie, 10 February, 1885.

IN accordance with the provisions of the Crown Lands Act of 1884, I, Charles William Porter, being the holder of the pre-emptive lease specified in the annexed schedule, hereby apply to convert the available Crown land within the same into a conditional lease of 1,920 acres, in virtue of my conditional purchase also specified hereunder; and I hereby agree to pay any sum that may be demanded upon the determination of the rental of such conditional lease.

I am the absolute owner of the conditional purchase by virtue of which this application is made.

CHAS. WM. PORTER.

To the Under Secretary for Lands.

SCHEDULE.

Pre-emptive Leases.

No. of lot, 39; No. of prelease, 78-2; date of Gazettal, May 17th, 1878; district Gazetted, Wentwroth; name of original lessee, C. W. Porter; county, Perry; area, 1,920 acres. Conditional

Conditional Purchases

No. of conditional purchase, 78–3; land district, Wentworth; date of application, January 24th, 1878; area, 640 acres.

No. of conditional purchase, 78–3; district, Wentworth; area, 640 acres; date of purchase, January 24th; state of purchase, good; name of present holder, Mary Ann Porter, now Chas. William Porter by Ministerial approval on Charting Branch. Explanation attached to 80–42,962,

O.B., 23/3/85.

C.S. Branch, 13/3/85. Mr. Burt, 24/3/85. Alienation, &c., noted on tracing.—T.T., 31/3/85. Mr. Curry. Water reserve No. 9A, notified 15/1/83, embraces part of the prelease. Dealt with in Lease Branch.—J.B., 7/4/85.

C. S. Branch. Was not the conditional lease transferred to C. W. Porter?—H.C., 9/4/85. Yes; *vide* schedule.—O.B., 2/5/85. Lease Branch. Mr. Burt.—T.W., 6/5/85.

No. 59.

Office Memorandum.

Preemptive lease No. 78–2; Gazetted 17th May, 1878; nominal area, 1,100 acres; county of Perry, parish of Pooncarie; Division, Western; district, Wentworth; in the name of C. W. Porter (from Mary A. Porter) and renewed for 1884.

W.H.H., 17/11/84.

The above pre-emptive lease was granted in virtue of the following portions. Such of the portions as represent conditional purchases are distinguished from those of a different character.

No. of portion, 1; area, 640; parish, Pooncarie; No. of conditional purchase and character of purchases, C.P. 78–3.

J.B., 17/2/85.

The enclosed tracing shows the present position of the lease, together with a design for a conditional lease, which appears to recommend itself, confining the applicant to vacant land within the pre-emptive lease.

No. 60.

Office Memorandum.

6 May, 1885.

Mr. C. W. Porter has applied to convert prelease 78–2 into a conditional lease. He has described it as containing 1,920 acres. It however contains only 1,100 acres.

The lease was reduced in area, and after much correspondence an arrangement was made to cancel part of a reserve which stood in the way of an extension of area, and afford Mr. Porter an opportunity of obtaining a lease of an additional area. The arrangements were carried out, Mr. Porter was advised, and upon his putting forward a formal application, a lease of 820 acres was at the end of last year provisionally gazetted. It is submitted whether it would be competent for the Board to accept the application under consideration as applying to both leases, should the supposition that Mr. Porter intended it to embrace both be found correct.

H.C.

There does not appear to be any objection to the course proposed, and if the Board recommends the granting of 1,920 acres, the lease will have to be shown by tracing.—J.R.E (for the Under Secretary), 7/5/85.

No. 61.

Mr. Surveyor Conolly to The District Surveyor, at Hay.

Sir,

Sydney, 10 June, 1885.

In compliance with your memorandum of instructions, dated 4th June, 1885, I have the honor most respectfully to report on application by C. W. Porter for conversion of prelease No. 78-2, gazetted 17th May, 1878, parish of Pooncarie, county of Perry, into a condition lease, in so far as travelling stock reserve 381, notified 19th August, 1878, and water reserve 9A extension, notified 15th January, 1883, would be thereby affected. *Tracing herewith. See Appendix L. See Appendix M.

I am of opinion travelling stock reserve 381 should not be curtailed, nor water reserve 9A extension be reduced, both being necessary for travelling stock. The application does not appear, however, objectionable on this account. Section 108, Victoria 48 No. 11, and section 10, 48 Victoria No. 18.

I have, &c.,
T. W. CONOLLY,
Government Surveyor.

Forwarded to the Chairman, Local Land Board, Hay, with my report No. 85-380.—R. M'Donald, District Surveyor, 28/10/85.

No. 62.

The District Surveyor at Hay to The Chairman, Land Board, Hay.

Sir,

District Survey Office, Hay, 28 October, 1885.

In reference to your letter of 19th May, 1885, forwarding to me for report the application by C. W. Porter for the conversion of the available area within his prelease 78-2 and 84-18, I do myself the honor to inform you that prelease 78-2 was originally granted for 1,920 acres, as shown by blue edging on enclosed tracing "B," but it was afterwards ascertained that the lease was within two runs and it was regazetted for 1,100 acres, being the area (about) on the west of the run boundary.

In consequence of representations made by applicant against the reduction, the Secretary for Lands decided on the 8th July, 1884, that applicant should obtain his full area (*vide* 84-5,692 leases enclosed). In accordance therewith a fresh application was made for the area, about 820 acres east of the run boundary, which was provisionally gazetted on the 31 December, 1884, as prelease No. 84-18.

The

The application for conversion specifies an area of 1,920 acres, being the combined areas of the leases, but only prelease 78-2 is quoted in the Schedule, but probably the application should be treated as in right of both preleases.

It will be observed, on reference to the tracing "B," that travelling stock reserve No. 381, notified 19th August, 1878, passes through the lease, and that about 600 acres are embraced by water reserve No. 9A extension, notified 15th January, 1883. Mr. Surveyor Conolly reports that travelling stock reserve No. 381 should not be curtailed, nor water reserve 9A extension reduced, both being necessary for travelling stock, but that the application does not appear objectionable on that account in view of section 108.

There would appear to be some question as to which track forms the basis of the travelling stock reserve. The track shown by dotted sienna lines, passing through the lease, was traversed by Licensed-Surveyor Tarrant, in 1883, as being part of the main track from Pooncarie to Euston, but a recent survey by Licensed-Surveyor Christie of the track shown by dotted black lines, is considered by him the basis of the travelling stock reserve. The former, however, is evidently the centre of the travelling stock reserve, the latter being apparently a divertion from the main track to Tarcoola station.

I have, &c.,
ROBERT M'DONALD,
District Surveyor.

No. 63.

The Chairman, Land Board, Hay, to The Under Secretary for Lands.

Crown Lands Act of 1884—(Part III, Section 52).

Recommendation by the Local Land Board on an application for the conversion of a pre-emptive lease into a conditional lease, under the 52nd section of the Crown Lands Act of 1884.

WHEREAS, on the day of , 188 , an application by Charles Wm. Porter, of Pooncarie, was received for the conversion of the pre-emptive lease therein specified into a conditional lease of 1,920 acres, subject to the provisions of the Crown Lands Act of 1884, and the said application having been duly inquired into by the said Board, it is recommended that no area be allotted in satisfaction thereof, except any area not included in travelling stock reserve 381, and which may adjoin the basis, or be over 40 acres.

Given under my hand, this 25th day of November, 1885.—

A. J. PARK,
Chairman.

Mr. Shaw,—What reserves were in existence when lease 84-18 was granted, in so far as the land in that lease is concerned?—H.C., 20/1/86. Is the land indicated by red tint on tracing B herewith (prelease 84-18) within any reserve? Was it in any reserve on the 23rd December, 1884?—M.S., 25/8/86. Mr. G. Lewis. The land in question is not, and was not within any reserve upon the 23rd December, 1884.—W.M., (*pro* G. LEWIS), 19/2/86. Mr. Shaw, Lease Branch. Conditional lease under clause 52, Crown Lands Act of 1884, No. 4,342, *Government Gazette*, 16/4/86. Conditional lease No. 4,342, regazetted as to difference on rent, 29/11/87.

No. 64.

Mr. C. W. Porter to The Chairman, Land Board, Hay.

Sir, Wentworth, 29 November, 1885.

I have the honor to give you notice that I intend to appeal to the Minister for Lands that he will not follow the recommendations of the Land Board, and refuse to convert my prelease No. 78-2 into a conditional lease under the Lands Act of 1884.

I have, &c.,
C. W. PORTER
(By his Agents,—READ AND WILKES).

No. 65.

Mr. C. W. Porter to J. P. Abbott, Esq., M.P.

Sir, Wondenbro, Pooncarie, 4 December, 1885.

The action of the Local Land Board at Wentworth, by their recommendation not to convert preleases into conditional leases where the old travelling stock reserves run at the back of conditional purchases, must be my apology for troubling you with this letter.

It is too late now to point out that a prelease was as much a condition of a purchase as the payment of the balance of purchase by instalments, residence, and the erection of improvements, and that this right of lease was the inducement to so conditional purchase.

To my thinking, the Land Board have mixed up the Central with the Western Division. In the Central I can well understand that these leases, carrying a right of purchase, land reserved from sale could not be included in them; but in the Western Division, where not 1 inch is more reserved from sale than is the whole, and where a purchase under any conditions cannot be made, I fail to see why leases cannot be granted. As a matter of fact, the Land Act of 1884 revokes, or rather absorbs, reserves from sale of whatsoever denomination in the Western Division by creating the division one, and only one, reserve, and leaves all land open for lease.

As to travelling stock, their rights are well protected by 29 Victoria No. 2, section 30, and 41 Victoria No. 19, section 16, which gives them a most decided right of 1 mile in width, except through purchased land, and with perfect liberty to camp where they may please on such mile-wide road, without hindrance from pastoral, homestead, or conditional lessee, they fulfilling their part of the contract by travelling the specified distances. Such being the case, reserves for their use are altogether unnecessary, and would merely be reserves from sale within a reserve from sale.

On

On the resumed portions conditional purchasers can take up homestead leases to include the land previously held by them as preleases, and, if their means would allow them to do so, would be in a far better position than previously. This, however, would require much money to fence and stock. On the pastoral lease no such escape exists, and the decision of the Land Board, if your approval should follow, would be utter ruin to a great number of families. Nothing would be left for them to do but surrender their selections (where they have made homes) at a valuation that would not, in all probability, meet one half the cost of them. The fencing on lease would be lost (5 miles in my own case), and then stock have to be sacrificed, 1 mile of country being quite inadequate to carry the stock for 4 miles.

To the best of my ability I have placed the matter of travelling stock and conditional purchaser (for that is the issue) before you, feeling sure, from your clear-headed judgment and strict impartiality, the ruling of the Land Board will not be upheld.

Of course all this is sending coals to Newcastle, as what I have said is nothing new to you; but, if it bores you reading it, my excuse is that it has eased my mind in writing it.

I think, however, you will be interested in the following way to work the Act of 1884:—

One William Lancaster, alias Billy the Pig, dummied about 400 acres of land for Michael Darchy, the manager and one of the trustees under the will of the late Thomas Darchy, the owners of Tarcoola Station. On the division of runs this selection was on the pastoral lease, consequently there was no further necessity to keep Lancaster on the land, where he lived, having been paid by the Government as a rabbiter on Tarcoola, and he was ordered to the head station to be paid-off. On his way there he stated that if Darchy did not ante-up well he should give himself up to the police for dummying (he never made any secret of his position). However, on his arrival at the station, and proposing this ante-up business, Darchy went for his necktie and made him sign, as he says, some papers, so that Darchy could get his money back from the Government. This, I take it, means a surrender. This is all hearsay, but very reliable. Should such a surrender come before you, you will be very able to decide if sub-section 3 section 75 was made to meet such a case. This Lancaster is well-known, and could very easily be found if required. Senior-Sergeant Keelty, of Wentworth, could readily trace him, having known him for years, and these men have a stated track in which they seek work.

I have, &c.,
CHAS. WM. PORTER.

P.S.—Sections 108 and 109 of Act 1884 deals with reserves from sales and stock routes.

Conditional Sales Branch. See last part of the letter enclosed.—H.C., 15/12/85. A copy has been made and registered conditional sales.—H.R., 24/12/85. Mr. Curry. Mr. Wiley for papers.—H.C., 5/1/86.

No. 66.

Office Memorandum.

Ls. 85-13,942, Board at Hay.

Conversion section 52, 48 Vic. No. 18.

Pre-emptive Lease No. { 78-2 of 1,100 acres. / 84-18 of 820 acres.

Applicant, Charles William Porter.

THE Board recommend the lease in a general way, subject to a favourable decision on the facts explained. The case is submitted.

For approval, of a conditional lease of about 1,920 acres to applicant at an annual rental of 2d. per acre, but subject to further appraisement as to future annual rental, if thought desirable; and subject to the right of resuming, at any time, so much of the lease as may be required for roads found to be necessary in the public interest.

Both pre-emptive leases were not specifically mentioned in the application, but the fact of the applicant having referred to the area as 1,920 acres, points to the conclusion that the application refers to both.

H.C., 23/2/86.

C.O., 25/2/86. Approved.—G.S., 26/2/86. Conditional lease, Crown Lands Act, 1884, No. 4,342, *Government Gazette*, 16/4/86; lessee informed, 19/4/86.

Mr. Licensed-Surveyor H. Tarrant for measurement, in accordance with approval (if unobjectionable) of 1,920 acres in one block, the boundaries to conform to the original boundaries of the preleases.—R. M'DONALD, District Surveyor.

Mr. Licensed-Surveyor H. Tarrant. District Survey Office, instruction No. 86-35, 1/6/86. Transferred to Mr. Licensed-Surveyor J. Tarrant, 2/8/86. Returned to the District Surveyor at Hay with my letter, No. 86-73, 20th November, 1886.—JOSEPH TARRANT, Licensed Surveyor. Conditional lease No. 4,342; regazetted as to difference in rent, &c., 29/11/87.

No. 67.

The Under Secretary for Lands to Mr. C. W. Porter.

Sir, Department of Lands, Sydney, 19 April, 1886.

I am directed to invite your attention to a notice in the *Government Gazette* of the 29th November, 1887, to the effect that under the provisions of the 52nd clause of the "Crown Lands Act of 1884," a conditional lease, No. 4,344, of an approximate area of 1,920 acres, has been approved by the Secretary for Lands, subject, however, to any alteration of area, or reservation, or resumption, for any roads that may have been, or may be, found necessary or desirable, and subject also to any other action or limitations, which may have been, or which may be, found necessary or expedient. Land District, Wentworth.

The rent has, pending its ultimate settlement after inspection of the land, been calculated at the rate of 2d. per acre per annum; this rate may, however, be exceeded, but if it should be exceeded, due notice and information will be given you. The

The rent for 1886, £16, together with the balance of rent for 1885, £10, must be paid either to the Under Secretary for Finance and Trade, or to the Crown Lands Agent of the District, on or before the 16th May next, subject, if not paid during the prescribed term to the penalties imposed by the 96th clause of the "Crown Lands Act of 1884." For 1887 and any following year the rent must be paid during September of the year preceding that for which it may be intended, subject in default to the penalties referred to.

It must be distinctly understood that the lease may, without any preliminary notice, be cancelled, if found to represent an area in excess of what may be held under the Act before mentioned, or to have been obtained or granted contrary to any of the provisions of that Act.

When referring to the lease, or forwarding any rent for it, you are particularly requested to use the new number and not the original number of the pre-emptive lease.

I have, &c.,

H. CURRY
(For the Under Secretary).

No. 68.

Mr. C. W. Porter to The Under Secretary for Lands.

Sir, Wondenbro, Pooncarie, 5 October, 1886.

I have the honor to address you concerning the alteration made by Mr. Licensed-Surveyor Tarrant when measuring my prelease, now converted into a conditional lease. His letter to me (enclosed herewith) will show that his starting point is totally disconnected with my conditional purchased land, and by starting from that point and altering the shape of conditional lease, he has cut out more than a mile of my fencing, which was placed on the lines of my prelease as granted, and the plan of which was placed in the Land Office at Wentworth. I was with Mr. Tarrant the first day he was out, and then complained to him of the alteration in shape. I could only learn from him that that was the land now given to me. The accompanying sketch will better illustrate my meaning, although drawn without any regard to accuracy. The lines in ink show the shape of prelease, and the pencil lines the alteration in survey by Mr. Tarrant. By this alteration the northern boundary of 9A reserve, the southern boundary of Michael Darchy's conditional purchase, and the northern boundary of Phelps' homestead purchases have all to be shifted about 3½ chains to the north. My fence runs east from the point marked "A," which is the south-east corner of M. Darchy's conditional purchase, as laid out by Mr. Surveyor Donovan, and if the present survey stands I shall have to shift this fence 3½ chains north, and this means expense. In the angle marked "B" there is also 36 chains, which will also have to be shifted. The line marked "C" was not chained by Mr. Tarrant, having only been pegged until it intersected my fence on the northern boundary of my lease, and very likely that northern boundary is 3½ chains further north, should it only be an overlapping of different surveys. I think I am not asking too much to have the mistake rectified at Mr. Tarrant's starting point, which is only a useless water reserve, having no water near it. You will please notice that on the plan of the prelease the east line runs north from the run boundary-line, marked "D," at a point where it will give me the 1,920 acres, and my fencing already erected is placed as part of my plan to fence and subdivide the whole of the lease; and again, if the present survey stands I shall have to shift much other fencing to make the best of land.

My request, therefore, is this,—to let the triangular piece remain as surveyed, with the exception of the northern line of 9A extending the 3½ chains on my fenced land, and that the east boundary should start north from the line marked "D," so as to complete my full lease. I do not ask for fresh survey; a plan, with the length of the lines given, is all that I should require; I can then easily run the lines without encroaching on my neighbour.

I am most anxious to receive an early reply, so that I can start fencing as soon as possible and secure the grass which I have been paying for so long without being able to fence, my lease having been in hot water for years.

I have, &c.,

CHAS. WM. PORTER.

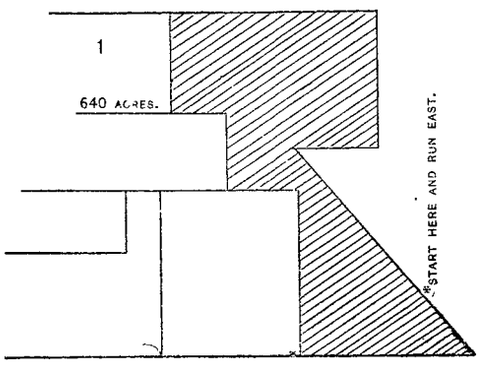
[*Enclosure.*]

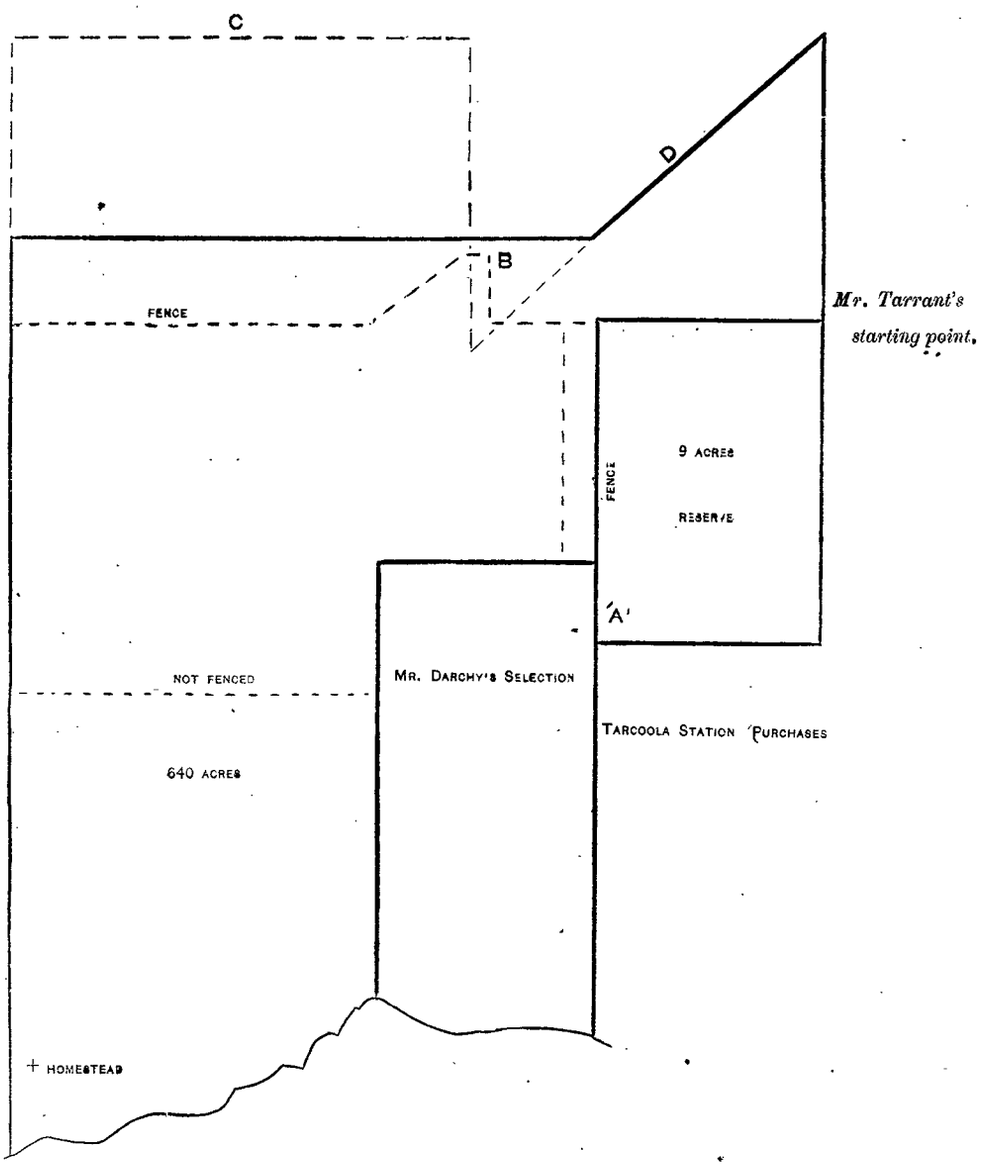
Dear Sir, Tarcoola, 9 August, 1886.

I am starting the measurement of your prelease in the morning. I shall start at the south-west corner. See sketch below.

I have, &c.,

J. TARRANT,
Licensed Surveyor.





No. 69.

Office Memorandum.

FORWARDED to the District Surveyor at Hay in connection with previous papers.

F. W.

B.C., Lands, 16/10/86. ——— (For the Under Secretary).

Mr. Licensed-Surveyor Tarrant for report, and in connection with instructions No. 86–35, of 1st June, transferred to him by Mr. Licensed-Surveyor Harley Tarrant.—ROBERT M'DONALD, District Surveyor, 3/11/86.

Returned to the District Surveyor, with papers, leases 86–2,064. My letter, No. 86–73, of 20/11/86.—JOSEPH TARRANT, Licensed Surveyor. The fence referred to in the enclosed letter is within reserve 9A, and consequently not on land that applicant can claim any legal right to.—WILLIAM ORR, Acting District Surveyor, 12/10/87. The Under Secretary for Lands.

No. 70.

Mr. Licensed-Surveyor J. Tarrant to The District Surveyor at Hay.

(No. 86–73.) Conditional Lease.

Sir, Wentworth, 20 November, 1886.

I have the honor to transmit herewith the plan of an area of 1,920 acres, numbered C P L, in the parish of Pooncarie, county of Perry, which I have measured for conditional lease No. 86–4,342, of the Wentworth Land District, applied for by Chas. Wm. Porter, in connection with conditional purchase No. 78–3, being portion numbered 1, in the parish of Pooncarie, county of Wentworth.

This survey has been effected in accordance with instructions No. 86–35, dated 1st June, 1886, issued by the District Surveyor at Hay.

Rental and capital value.—After careful consideration, I am of the opinion that the annual value of the land applied for is 2d. per acre, and the capital value of the same is £1 5s. per acre.

I

I have also the honor to furnish the following information as to :—

1. Proximity to railway and township.—Adjoins Pooncarie township reserve.
2. Objections to the lease on the ground of mining occupation or otherwise.—None.
3. Character of soil.—Chiefly red sandy soil.
4. Grazing capabilities.—About 7 acres to one sheep.
5. Agricultural capabilities.—Good ground for crops if irrigated.
6. Nature of timber.—Box and light scrub.
7. Whether densely or thinly timbered.—Thinly.
8. The extent of scrub land.—Lightly timbered, with scrub throughout.
9. Whether any of the scrub or brushwood growth is suitable for feeding stock in time of drought.—All scrub in lease is good as sheep feed.
10. The approximate proportion of plain, open forest, thickly timbered, and scrub country.—Light scrub throughout.
11. Improvements, their value, nature, date of erection, and ownership at date of application.—About 28,200 links; 5-wire fence (full value), at £30 per mile, property of C. W. Porter, £105 15s.; about 2,700 links 5-wire fence (full value), at £30 per mile, property of run lessee, £10 2s. 6d.; about 11,300 links 5-wire fence, at £30 per mile, the joint property of Porter and run lessee, on common boundary of portion 2, £42 7s. 6d.

In addition to the above I may state that the survey has been made in exact accord with sketch supplied me, with prelease papers herewith. The north boundary of water reserve 9A is in its correct position, which throws the fence about 3½ chains to the south. This is what applicant complains of in his letter—Paper, Leases, 86-7,195.

I have, &c.,
JOSEPH TARRANT,
Licensed Surveyor.

Received, District Survey Office, 27/11/86. Account 86-28, report on value land forwarded, 1/12/86. C.P.L. 124, Hy. A.G. Plan and action not yet complete by this office. Papers to be returned.—A. R. GALE (for District Surveyor), 28/2/87. Chas. Wm. Porter notified to attend Court at Wentworth, 4/4/87.—W.D., 8/3/87. Memo to surveyor, *re* reference to corner, 28/7/87. Examined and charted.—R. M. GALLAWAY, 28/7/87. Memo. returned, 4/8/87. Plan approved.—WILLIAM ORR, Acting District Surveyor, 12/10/87.

No. 71.

The Chairman, Land Board, Hay, to Mr. C. W. Porter.

Crown Lands Act of 1884.

Notice to appear at Local Land Board.

New South Wales, }
to wit. }

You are hereby notified to attend at the Court-house at Wentworth, on the 4th day of April, 1887, at 10 o'clock in the forenoon, when the matter or question stated at the foot hereof will be investigated.

On proof of due service of this notice, the investigation may proceed whether you appear in Court or not.

Given under my hand, at Balranald, this 8th day of March, 1887,—

A. J. PARK,
Chairman.

Matter for investigation.

To appraise the rent of your converted preleases, Nos. 78-2 and 84-18, for 1,920 acres, in the county of Perry, parish of Pooncarie, Land District of Wentworth.

[*Enclosure.*]

Balranald, 9 March, 1887.

RECEIPT for registered, No. 336, of 9th March, 1887, Land Office, Wentworth,—

Addressed,—
CHAS. WM. PORTER,
Pooncarie.

No. 72.

Decision of Land Board, Hay.

Rent of conditional lease.

No. 4,342, under the 52nd clause of the Crown Lands Act of 1884.

Land District of Wentworth; name, Charles William Porter; area confirmed or gazetted, 1,920 acres; area measured, 1,920 acres; rent recommended on area measured, £20.

WHEREAS the question of the annual value of the land represented by the conditional lease above specified, came before the Land Board held at Wentworth, on the 4th and 6th April, 1887, due notice of which inquiry was given to Charles William Porter, and during which inquiry there were present in connection with the matter, the following persons :—Charles William Porter, and William James Holding, Inspector of Runs.

And whereas after taking into consideration the report of Mr. Licensed-Surveyor Joseph Tarrant, made after an inspection of the land, and the evidence of Charles William Porter and William James Holding, the Board concluded 2½d. per acre to be the annual value of the land while under conditional lease, and accordingly recommend the rent to paid for it at this rate. Depositions now taken, as well as the

the former papers in the case, are enclosed. When the question was in the first instance dealt with, the land had not been inspected by an authorized valuator; and the following is a brief explanation of the manner in which the question was then dealt with:—

November 20th, 1885, applicant not present, and no proof of service of notice, and was, in consequence postponed.

November 25th, 1885, applicant not present, Mr. Wilkes appeared for him.

Refusal recommended, except of any area not included in travelling stock reserve 381, and which may adjoin the basis and be over 40 acres.

A. J. PARK, Chairman of Board.
M. S. LOVE, P.M., Member of Board.

[*Enclosure.*]

THIS deponent, on oath, states: My name is *Charles William Porter*; I am a selector; I know prelease 78-2, and 84-18, granted in virtue of conditional purchase 78-3, which was taken up by my wife in 1878, for which reason this Board on 31st March, 1887, said it ought to have been voided; I object to the form of the lease as surveyed, because it differs from the former lease as held by me, without improving it, and also excludes 36 chains of five-wire fencing worth £30; there is no fencing on the lines, all being within my boundaries; some was erected by the pastoral lessee three or four years after I got the land as a lease; I don't claim, and would not pay for it as it is useless; it may be removed; the country is fair sheep country, but no permanent water; the carrying capacity is 6 to 7 acres to a sheep, fenced and with access to water across my conditional purchase; I have no voluntary evidence.

Sworn before us, at Wentworth, this 4th April, 1887,—
A. J. PARK,
M. S. LOVE.

CHAS. WM. PORTER.

THIS deponent, on oath, states: My name is *William James Holding*; I am Inspector of Runs for the District of Wentworth; I know conditional prelease 78-2 or 84-18, Chas. Wm. Porter, on the Darling River, but separated therefrom by applicant's conditional purchase; the river is navigable at this place; no objection that I am aware of; gray soil and red sand, mostly the latter; grazing capacity, 6 acres to a sheep provided they have access to water over conditional purchase, and the land fenced; agricultural capabilities limited; timber, pine, and oak, no box; it is thinly timbered, being a nice piece of open country, with some undulating sand hills; there is no scrub, but some edible bushes, not thick enough to call scrub; sheep feed is grass, good herbage, and some salt and blue bush.

Mr. Porter here says he has no questions, and that the above is a very fair description, and he leaves it to the Board to appraise the rent.

Sworn before us, at Wentworth, this 4th April, 1887,—
A. J. PARK,
M. S. LOVE.

W. J. HOLDING, Inspector.

52nd clause, lease, Wentworth. Evidence of the Inspector given in open Court. The Board recommended rent at 2½d. per acre.—F.W., 27/10/87. Rent finally determined at 2½d. per acre.—T.G., 31/10/87. Area measured, 1,920 acres. Rent approved, £20. Conditional lease No. 4,312. Regazetted as to difference in rent, &c., 29/11/87. Chas. Wm. Porter informed, 30/11/87.

No. 73.
Office Memorandum.

District Survey Office, Hay.

MEMORANDUM of subjects requiring explanation or completion in connection with the survey and plan of CPL, 86-4,342 (C. W. Porter), transmitted by Mr. Licensed-Surveyor J. Tarrant, letter No. 86-73 of 20th November. Instructions issued to Licensed-Surveyor H. Tarrant on 1st June, 1886, No. 35, and on which Mr. J. Tarrant's report in explanation is requested. { Parish of Pooncarie. County of Perry.

Subject.					Report.
On plan of above survey the references to corners are given as follows:—					The table, as I have now filled it in, is correct.—J. TARRANT, Licensed Surveyor, 2/8/87.
Cor.	Bearing.	From.	Links.	No. on tree.	
A.	193° 47′	Box.	93	↑ CPL	
B.	187° 30′	„	9	↑ CPL	

Numbered posts at other corners.

It will be thus seen that the bearing to corner B has been omitted, and that neither bearing or distance to corner A have been given. In the latter case it may be that the gum-tree is at the corner, but if so it should be so stated.—A. R. GALE (*pro* Acting District Surveyor), 28/7/87.

No. 74.
The Under Secretary for Lands to Mr. C. W. Porter.

Conditional Lease.
Clause 52 of Crown Lands Act of 1884.

Sir, Department of Lands, Sydney, 30 November, 1887.

I am directed to inform you that your conditional lease, No. 4,342, in the county of Perry, land district of Wentworth, the area of which was provisionally gazetted as 1,920 acres, has been found on measurement to contain 1,920 acres, more or less, and that the Secretary for Lands has approved of the annual rent of the land at £20, being at the rate of 2½d. per acre per annum. This rental will apply

to

to the lease from the 1st January, 1885, and any amounts paid in excess thereof will be refunded to you upon application to the Colonial Treasurer, to whom any letter respecting the account should be addressed.

This letter is written on the assumption that the rent on the lease has, so far, been paid up.

I have, &c.,
FREDK. WILLIAMS
(For the Under Secretary).

No. 75.

Mr. C. W. Porter to The Under Secretary for Lands.

Conditional lease, 4,342, Wentworth.

Sir, Wondenbro, Pooncarie, 10 January, 1888.

I have again the honor to draw your attention to my letter of 5th October, 1886, and to the one of 13th January, 1888.

You will understand that the lines of my prelease were fixed by the Department and not on those of my application, and to shift them again, as was done by Mr. Surveyor Tarrant, is inflicting a very great hardship on me. I have been paying the exorbitant rent of 2½d. per acre for four years for land I have been unable to use in the slightest degree, and I cannot think that the Lands Department issued the plan on which my conditional lease was surveyed.

I have had the wire lying idle for some considerable time, and as a bad season seems to be inevitable, unless I can get the remainder of my land fenced, my losses in stock, owing to this cause and the ravages of rabbits, will about smother me.

Hoping for a speedy and favourable reply,

I have, &c.,
CHAS. WM. PORTER.

The case is fully explained by the District Surveyor in his memo. of the 5th March on 88-421 L., and it is presumed the decision given thereon will not be disturbed.—F.W., 30/4/88. Certainly not.—T.G., 16/5/88. Mr. Thompson. C. W. Porter informed, 22/5/88. Register noted.—A.J.W., 5/6/88. Mr. Williams. The Chairman of the Land Board, Hay.—F.W. (for the Under Secretary), B.C., Lands, 6/1/88.

No. 76.

Mr. C. W. Porter to The Under Secretary for Lands.

Sir, Wondenbro, Pooncarie, 13 January, 1888.

I have the honor to draw your attention to my letter to you of the 5th October, 1886, wherein I ask that my conditional lease might be given to me on the same lines as when it was a prelease. I am aware that that part adjoining reserve 9A will have to be moved on account of that reserve coming further north than I was given to understand by Mr. Surveyor Tarrant when he gave me the boundary. This matter is very trifling compared with the alteration in the line connecting the triangular piece with the rest of the lease. I pointed this out to the Chairman of the Wentworth Board last April. He quite agreed with me as to the uselessness of the alteration, and said he would forward a recommendation to the Minister to have it given as it was originally. Awkward as it looks on the plan, that is nothing to what it actually means on the ground. I trust, therefore, that my request as regards this part will be granted to me as asked in my letter above referred to.

I have also the honor to ask that the £10 deposited by me, on my appeal connected with my conditional purchase, may be refunded to me. I believe this is the usual course when expenses have not been incurred.

I have, &c.,
CHAS. WM. PORTER.

District of Wentworth, Conditional Lease 4,342.

52nd clause, Wentworth Conditional Lease of 1,920 acres measured, stands good in the name of Charles W. Potter. Papers, 5,280. Records. Please attach above papers, then to Mr. Williams.—H.W.T., 19/1/88. Ls. 87-5,281, noted to Chairman. Hay, 7/12/87.—S.B., 19/1/88. Register noted.—J.H.M'L., 19/1/88. Extract of latter part of letter made and sent to Conditional Sales Branch for action.—A.F.W., 1/2/88. Will the Chairman be good enough to return the papers in the case.—F.W. (for the Under Secretary), B.C., Lands, 1/2/88. The Chairman of the Land Board, Hay. Papers herewith may be returned to the Under Secretary for Lands as requested.—C.H.D., 9/2/88. Mr. Boot. The Under Secretary.—A. Boot (*pro* Chairman), B.C., Hay, 10/2/88. Will the District Surveyor be good enough to furnish a report as to the advisableness of the alteration in the lease now desired.—F.W. (*pro* Under Secretary), B.C., Lands, 21/2/88. The District Surveyor, Hay. District Survey Office, Hay, 28/2/88. Mr. Gale.—T.B., 29/2/88.

In his letter of 5th October, 1886 (Ls. 86-7,195), C. W. Porter protests against the form of measurement of his conditional purchase lease 4,342, on the grounds that fence marked CD on tracing A. herewith is excluded, and the triangular piece of land, BEF, is, he considers objectionable. In reference to above letter, Mr. District-Surveyor Orr reported on 12th October that the fence was within reserve 9A, and consequently not on land that applicant could claim any right to. In this letter Mr. Porter appears to be willing to accept the north boundary of water reserve 9A as the boundary of his lease, but still protests against the exclusion from his lease of the triangular piece of land before mentioned, and claims that his boundary should be somewhat as shown by broken blue line on tracing A. The boundaries of the lease as measured are shown by blue edging on tracing A, and are exactly in accordance with boundaries of the original preleases. No action can now be taken, it is submitted, to alter the boundaries of the lease, as the land asked for was not within the boundaries of the prelease, and, being within a leasehold area, cannot be interfered with.—John Broughton, Acting District Surveyor, 5/3/88. The Under Secretary for Lands.

Submitted for approval.—F.W., 14/3/88. S.F. Submission approved.—J.J., 4/4/88. Mr. Thompson, 4/4/88. Mr. Porter informed, 11/4/88.

No. 77.

No. 77.

The Under Secretary for Lands to Mr. C. W. Porter.

Sir, Department of Lands, Sydney, 11 April, 1888.

With reference to your letters of the 5th October, 1886, and 13th January last, protesting against the form of measurement of your conditional lease noted in the margin, I am directed by the Minister for Lands to inform you that no action can now be taken to alter the boundaries of the lease in question, as the land asked for was not within the boundaries of a pre-emptive lease; and, being within a leasehold area, cannot be interfered with.

Wentworth, C.L. 4,342.

I have, &c.,
F. H. WILSON,
(For the Under Secretary).

No. 78.

Mr. C. W. Porter to The Under Secretary for Lands.

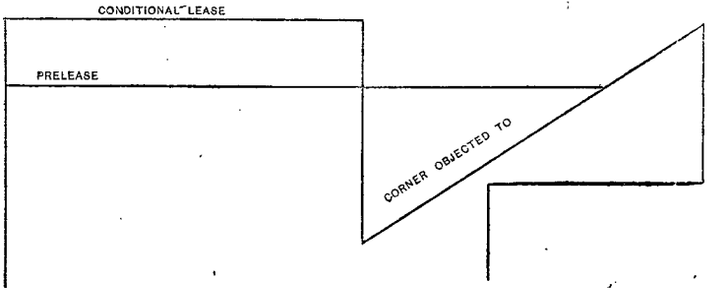
Conditional Lease 4,342.

Sir, Wondenbro, Pooncarie, 24 April, 1888.

I have the honor to acknowledge receipt of your letter of the 11th April, wherein you state that no action can now be taken to alter the boundaries of the lease in question, as the land asked for was not within the boundaries of the pre-emptive lease, and being within a leasehold area, cannot be interfered with.

How the Department arrives at the conclusion I am at a loss to understand. The land asked for by me is that given me as a prelease, and as the runs were divided long before my lease was surveyed by Mr. Tarrant (11th August, 1886), I think I can fairly say that the alteration made by that survey attempts to give me land belonging to the leasehold area.

A tracing of my lease was duly forwarded to the Wentworth Office for inspection, and that only is the land I ask for. In my letter of 13th January, 1888, I say: "I am aware that that part adjoining reserve 9A will have to be moved, on account of that reserve coming further north than I was given to understand by Mr. Surveyor Tarrant when he gave me the boundary. This matter is very trifling compared with the alteration in the line connecting the triangular piece with the rest or the lease. I pointed this out to the chairman of the Wentworth Board last April. He quite agreed with me as to the uselessness of the alteration, and said he would forward a recommendation to the Minister to have it given as it was originally.



"Awkward as it looks on the plan, that is nothing to what it actually means on the ground. I trust, therefore, that my request, as regards this part, will be granted to me."

I have again the honor to make the same request.

I have, &c.,
CHAS. WM. PORTER.

No. 79.

The Under Secretary for Lands to Mr. C. W. Porter.

Sir, Department of Lands, Sydney, 22 May, 1888.

Referring to your letter of the 24th ultimo, respecting your conditional lease noted in the margin. I am directed by the Secretary for Lands to inform you that the decision conveyed to you in my letter of the 11th ultimo cannot be disputed.

Wentworth, C.L. No. 4,342; 1,920 acres; C. W. Porter.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 80.

J. P. Abbott, Esq., M.P., to The Under Secretary for Lands.

Sir, 6 and 7, Wentworth Court, Sydney, 24 September, 1888.

I have the honor to forward to you a letter with a tracing* received by me from Mr. C. W. Porter, of Wondenbro, Pooncarie, in reference to his conditional lease, which appears to have been dealt with as an application for the conversion of a prelease held by him at the date of the passing of the present Land Act. I shall be glad if you will inform me why Mr. Porter was not given his prelease as a conditional lease. I shall also be glad to know whether it cannot now be given to him; and, if not, why not. I may add that I mislaid Mr. Porter's letter, hence the delay in my inquiries.

*See Appendix N

I have, &c.,
J. P. ABBOTT.

Records,—Please attach Ls. 87-5,281, 88-421, 88-2,380, and forward to Mr. Williams. Papers Ls. 87-5,281, 88-421, and 88-2,380, with Ls. 88-2,882, noted to Chairman, Hay, 7th June, 1888.—S.B., 28/9/88. Mr. Williams. Will the Chairman of the Land Board at Hay be good enough to attach the papers in the case and return them to this Department at an early date.—F.W. (*pro* Under Secretary), B.C., Lands, 2/10/88. Papers attached.—C.H.D., 22/10/88. The Clerk-in-charge. The Under Secretary for Lands accordingly.—B. J. ATTERBURY (for the Chairman), B.C., 23/10/88.

[*Enclosure.*]

[*Enclosure.*]

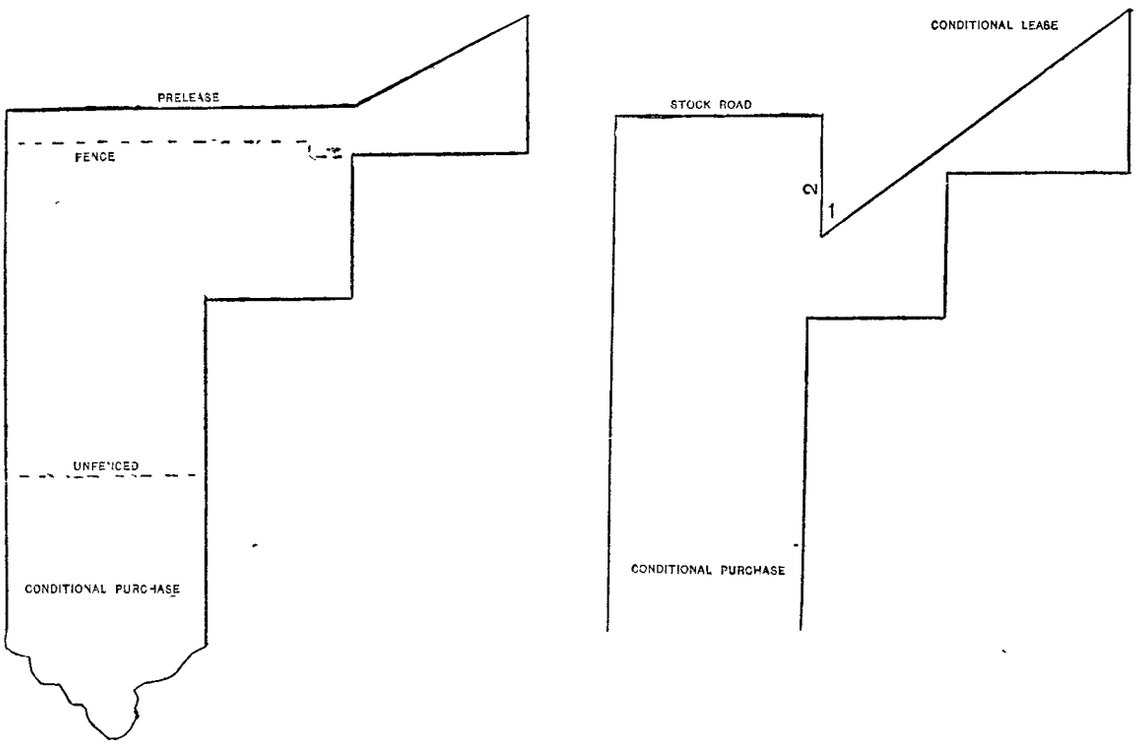
Wondenbro, Pooncarie, 27 July, 1888.

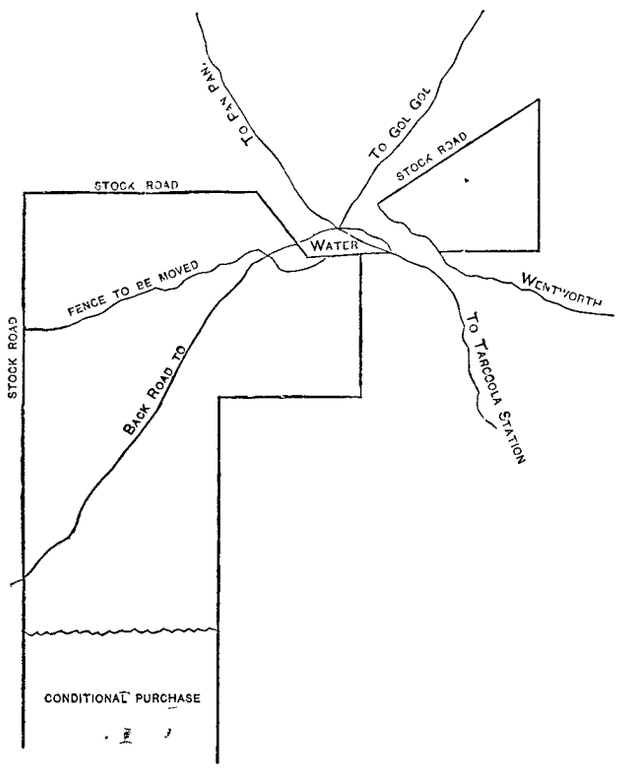
Dear Sir,

I think I can fairly ask a member for this electorate for assistance under the following circumstances connected with my conditional lease, late a prelease, and shall feel under considerable obligation if you will see the Under Secretary for Lands on the subject.

It would be useless to enter into a history of all the alterations made in my prelease since it was gazetted in 1878. It was definitely settled, as I supposed, in 1882, as on plan herewith; 820 acres were taken from it in June, 1884, and only recovered and gazetted at the end of December in that year.

The plan herewith drawn, without any attempt at accuracy, shows the prelease as it was when the present Act came into force, and also when the division of runs took place. A Mr. Tarrant surveyed it as a conditional lease in July, 1886, when he made the alteration shown in plan of conditional lease, thus cutting out about half a mile of my fence, and debarring me from water for a back paddock (water shown by figure 1), which water is only there after high floods in the Darling and lasts about two years, but is of great value to me. The only reply I could get from Tarrant when he was surveying was that it was the way the Lands Department had given it to me, at that time, and up to the present, I believe that statement to be false, and that the Lands did not know of the alteration until they received his plan.





On the lower plan is a rough sketch of how I intend to fence, leaving ample water supply (so long as it lasts) for stock and station, and also an open roadway, instead of fencing in the three-cornered piece altogether.

About 3 chains south from the line surveyed as conditional lease (which line I have marked 2) there is a station fence, up to which I wish to fence. This will give me access to a very small portion of the water, but ample for my wants. I shall also save the removal of the half mile of fence, and save some very considerable distance of new fencing. I

I base my right, to the prelease shape as follows :—It was mine on the passing of the present Land Act ; I shall not have to move any fence ; shall have less fence to erect ; and that in either case it only means 1,920 acres.

I pointed this out to the Chairman of the Local Board, who could not see why the alteration was made, or the use of it inquiring if the water was permanent. This not being the case he promised to communicate with the Minister.

I have myself written to the Under Secretary, and received a reply that Tarrant's survey could not be disturbed, as the land applied for was portion of leasehold, half of Tarcoola. How, why, or for what reason, the leasehold half, the Under Secretary did not attempt to show.

If you can get the head of the Lands Department to cause a return to the prelease area I shall feel for ever obliged. I do not want a fresh survey. A plan showing how far the east line comes west from Tarrant's survey corners will be sufficient for me to fence by. I will take good care not to trespass on the pastoral lessee.

Rents of conditional leases.—I think I may also draw your attention to this matter, and will mention my own case, the other lessees being as one with me. The best runs in the district were appraised by Mr. Holding, the Government Appraiser, as able to carry one sheep to 8 acres, and were rented by Land Board at 1d. per acre, which has been considerably reduced on appeal. At 1d. this would mean 8d. per sheep. My lease was, with the assistance of conditional purchase, estimated at one sheep to 6 acres, and the rent fixed at 2½d. per acre, which, taking out all the grazing value of conditional purchase, would leave it for rent of conditional lease alone at 1s. 3d. per sheep. As the Tarcoola run is to be reduced at more than one-half, why not reduce the smaller lessee in the same proportion. It appears to me a queer way to encourage settlement to charge over 200 per cent. in excess of the pastoral tenants' rent, and I have not the right to appeal. Neither did I conditionally purchase under the present rentals, and never should have done so.

I have, &c.,
CHAS. WM. PORTER.

J. P. Abbott, Esq., M.P., Sydney.

No. 81.

Office Memorandum.

Conditional Lease 4,342, Clause 52.

With regard to Mr. J. P. Abbott's letter, registered 88–6,379 leases, Mr. Porter was granted a prelease in in the year 1878, No. 78-2, of 1,920 acres ; it afterwards in July, 1884, transpired that the lease encroached on a different run to that in which conditional purchase was situated. The lease was applied for before the act of 1880 came into operation, and the provisions of the act of 1875, are that if there is any land in the first run the boundary cannot be crossed, for this reason, the lease was reduced in area from 1,920 to 1,100 acres, the existence of a travelling stock reserve preventing a more liberal proposal, part of the travelling stock reserve was then cancelled to admit of the full area being granted, and Mr. Porter was invited to make a fresh application for the land, which he did ; and a lease of 820 acres was gazetted in his favour in December, 1884, thus making up the full area 1,920 acres, to which he was entitled in virtue of a 640-acre conditional purchase.

These two preleases were converted as one conditional lease and measured for 1,920 acres exactly in accordance with the boundaries of the preleases. The land sought to be included in the lease did not form part of the preleases on 31st December, 1884, and is on the leasehold area of the run, and it was decided too, by Mr. Secretary Garrett, in May last, that it cannot for this reason be now included in the conditional lease.

F. W., 12/11/88.

Inform Mr. Abbott fully.—S.F., 10/11/88. J. P. Abbott, M.P., informed, 12/11/88. Register noted.—W.H.M.C., 14/11/88. No reply to date—S.B., 1/12/88.

No. 82.

The Under Secretary for Lands to Mr. J. P. Abbott, Esq., M.P.

Sir, Department of Lands Sydney, 12 November, 1888.

Referring to the letter forwarded by you from Mr. C. W. Porter, of Pooncarie, dated the 27th July last, respecting the conditional lease noted in the margin, I have the honor to inform you that Mr. Porter was granted a pre-emptive lease in the year 1878, No. 78-2, of 1,920 acres ; but, as the lease over reached on a different run to that on which the conditional prelease by virtue of which the lease was granted was situated, it was reduced in area from 1,920 acres to 1,100 acres, and the existence of a travelling stock reserve preventing a more liberal proposal, part of that reserve was then cancelled to admit of the full area being granted, and a lease of 820 acres was gazetted in Mr. Porter's favour in December 1884, thus making up the full area to 1,920 acres to which he was entitled, in virtue of a 640-acre conditional purchase.

Conditional lease, No. 4,342, C. W. Porter.

I am to add that these two pre-emptive leases were converted as one conditional lease, and measured 1,920 acres exactly in accordance with the boundaries of the pre-emptive lease.

Mr. Porter however, desired an amendment of these boundaries to make this holding more compact, but as such an amendment would necessarily involve a departure from the pre-emptive lease boundaries, and as the land is within a leasehold area, it was decided by Mr. Secretary Garrett that the request should not be acceded to.

I have, &c.,
H. CURRY
(For the Under Secretary).

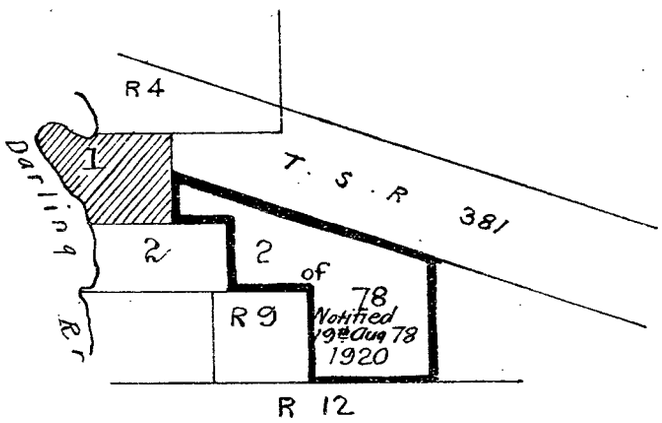
[Tracings A to P.]

[5*s.* 6*d.*]

Sydney : Charles Potter, Government Printer.—1889.

551—E

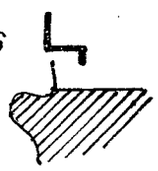
APPENDIX A. Enclosure to No. 1.



"Note"

Thick blue lines on original tracing shewn thus

Portions tinted blue ____ do ____ shewn thus



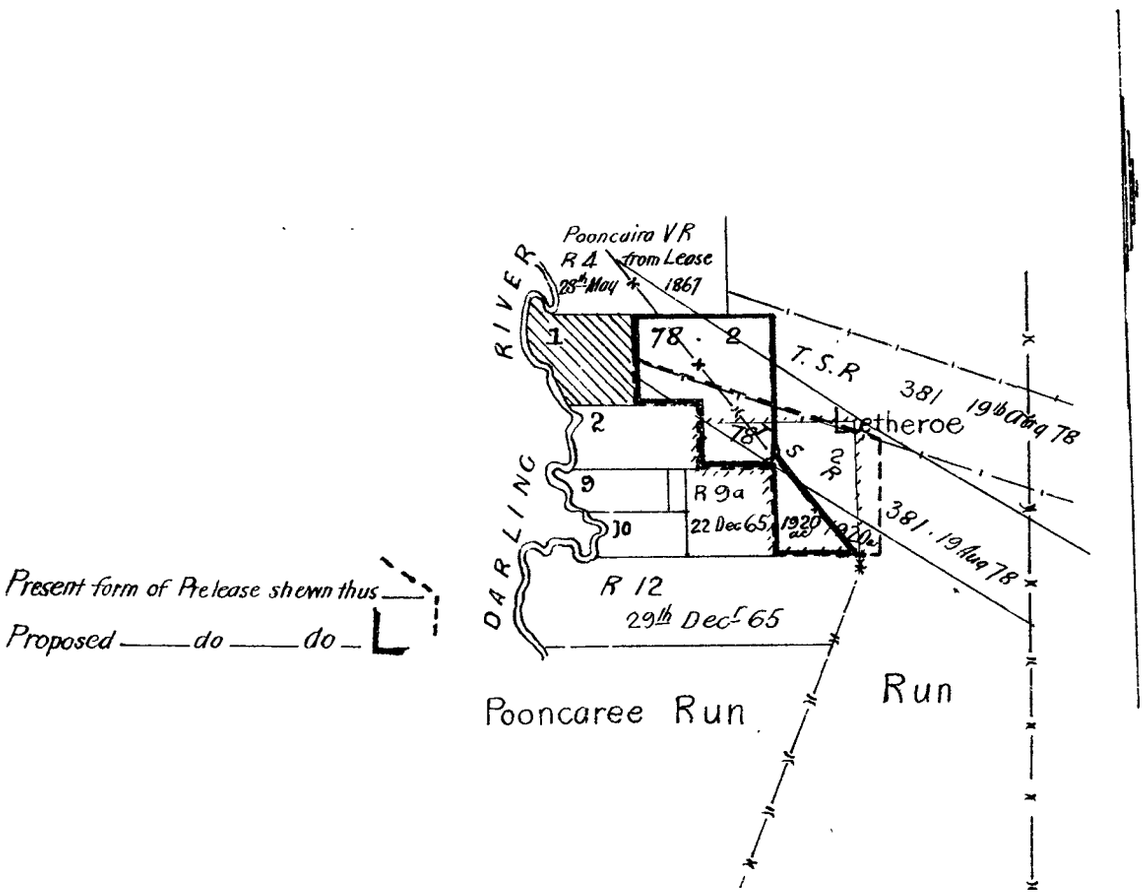
(Sig. 551)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

82/1847 Ls

APPENDIX B.

Enclosure to No 7.



"Note"

Thick blue lines on original tracing shewn by thick lines thus

Thick red lines — — — do ——— do — broken lines thus

Fine — do ——— do ——— do ——— do —

Proposed extension to WR 9a. (Misc: 82.11673) shewn thus

Portions tinted blue on original tracing shewn thus

(Sig. 551.)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY NEW SOUTH WALES

83. 5308 Ls

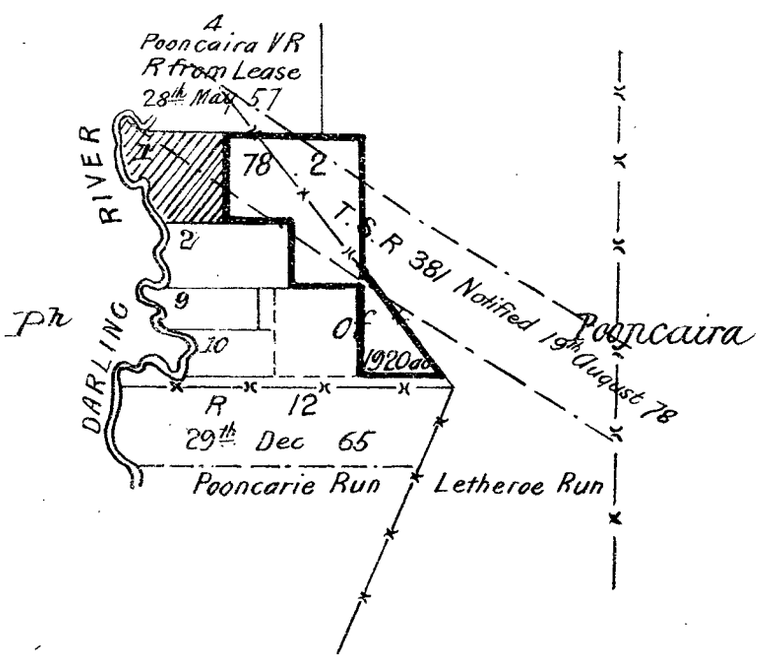
APPENDIX C. "A" Enclosure to No. 10.

Mary Ann Porter now C.W. Porter

County of Perry

Pre-emptive Lease No. 782

Gazetted 12th May 78.



"Note"

Blue lines on original tracing shown by thick lines thus

Portions tinted blue — do _____ shewn thus

(Sig. 551)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

Misc§ 82. 11673
Enclosure
Lands Dept

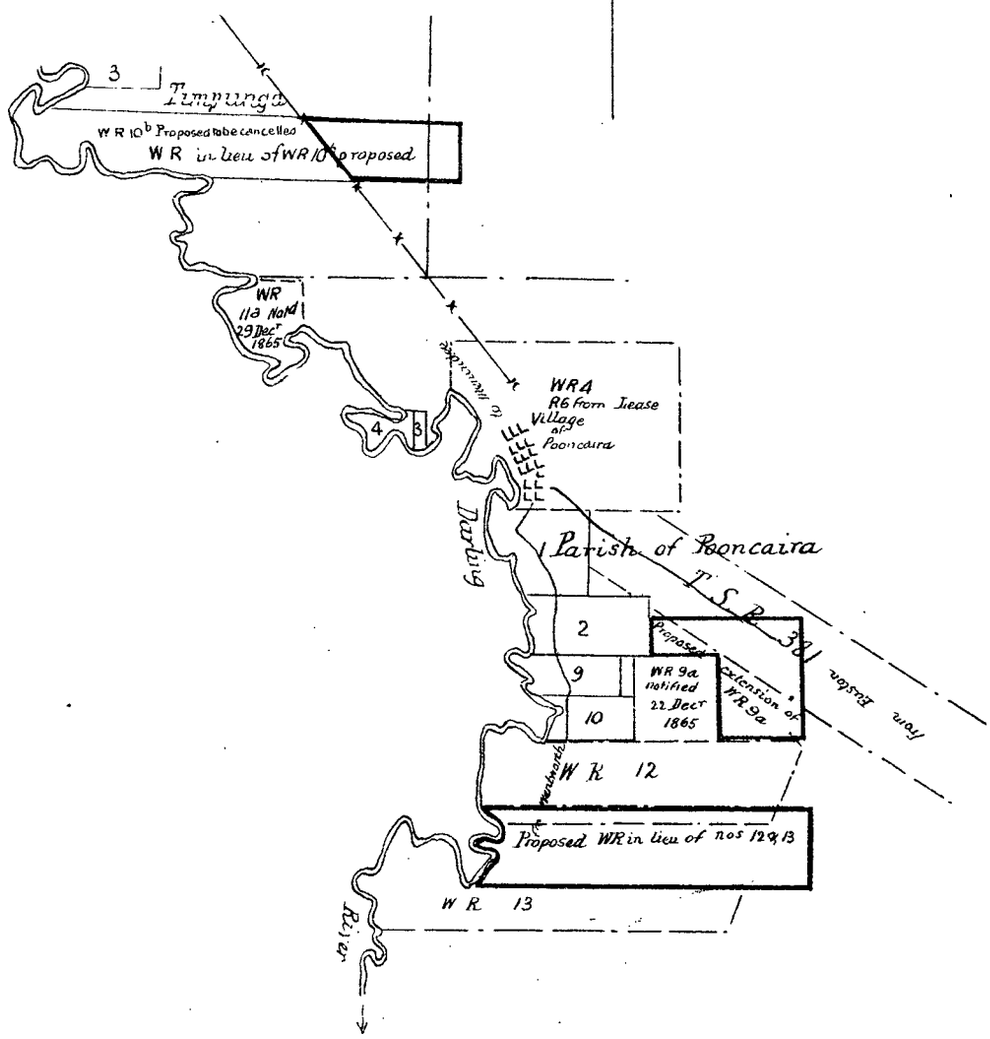
APPENDIX D.

Enclosure to No 8.

TRACING

Showing ... Reserves and proposed Reserves near Village of Pooncaira

County of Perry



Note Portions tinted red on original shewn thus ——

Accompanying my report No 82/55. 25 July

(Sig. 551)

sigd T.W. Conolly
Surveyor

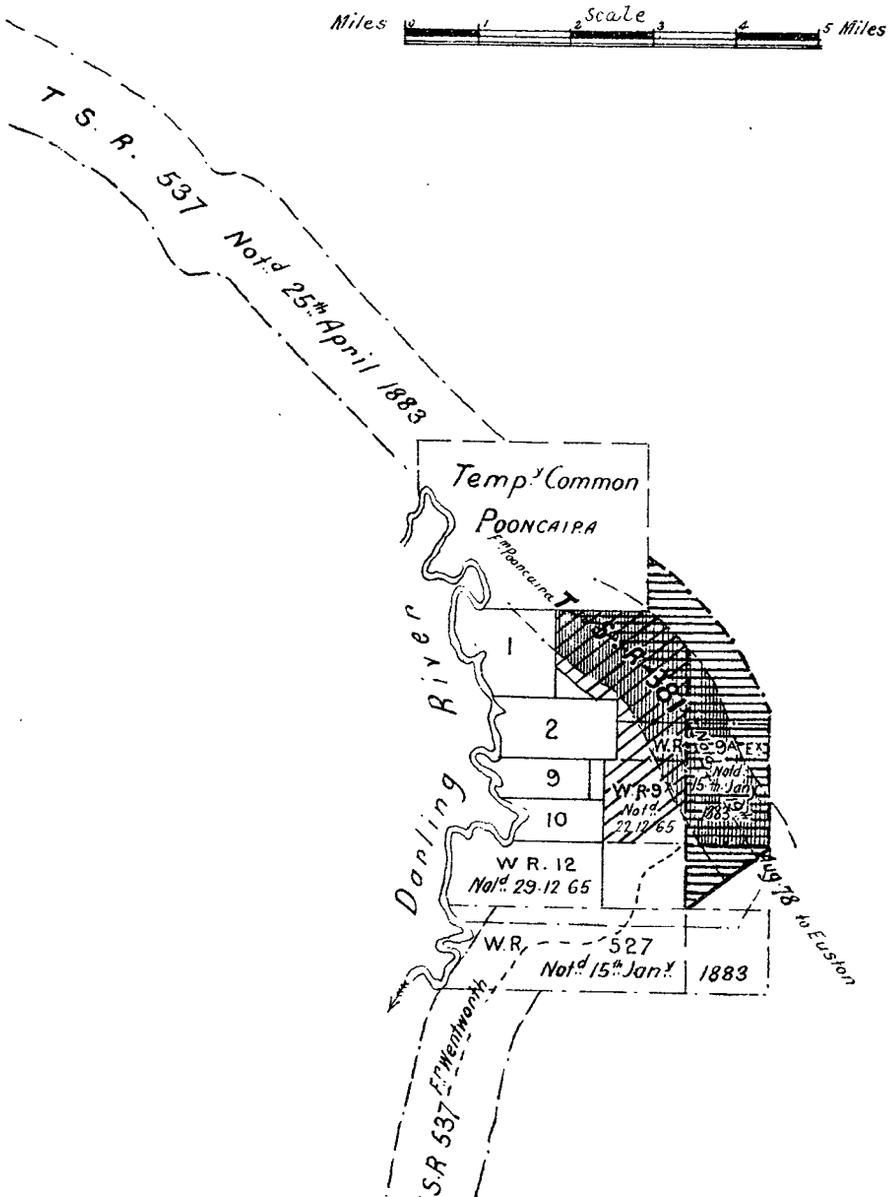
APPENDIX E. Enclosure to No 14.

A

TRACING

Shewing modification of T.S.R No 381
Notified 19th Aug: 1878
and of
T.S.R 537 Notified 25th April 1883, also Extension of T.S.R 381
in lieu thereof

Parish of Pooncaira County of Perry



Part of T.S.R 381 cancelled shewn in Blue On this tracing shown thus
Part of " " " 537 " " " Red " " " " thus
Part of " " " 381 re-notified " " Green " " " " thus
(Sig. 551.)

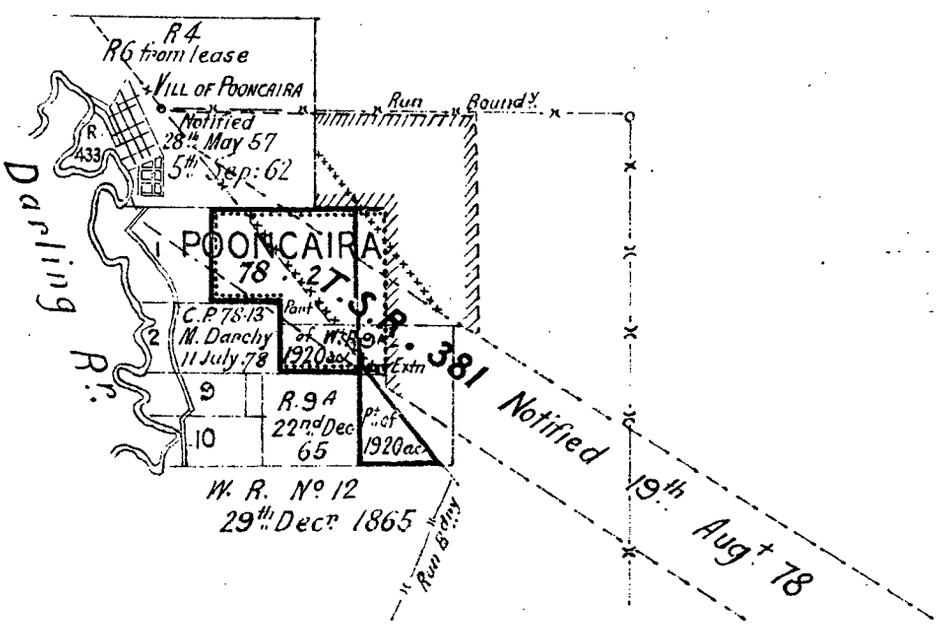
APPENDIX F.

Misc 83.2449

TRACING

Showing Pre-Lease as Charted by Blue lines - thus ——— on this Copy
As sought to be Amended Red dotted lines - thus ..... " " "
Deviation of T.S. Route Brown tint - thus " " "

NOTE
(Lines Marked thus + + + are firm Red lines on original)



(Sig. 551)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

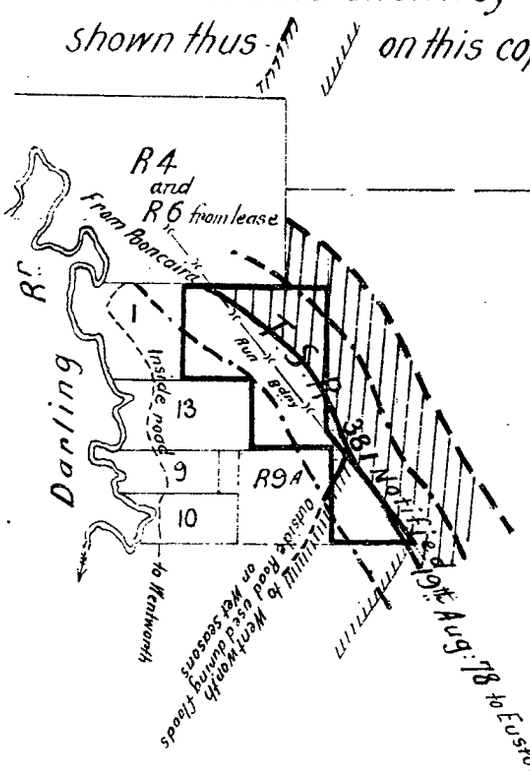
Mise 83.9430

APPENDIX G.

TRACING

Showing Pre-lease as Charted by Blue lines - thus → on this copy
Correct position of T.S.R 381 by Black lines - thus " " "
Position of proposed T.S.R from Wentworth to Menindee as referred to in my B.C. memo of this date shewn by Green edging - shown thus on this copy

Sigd: J. W. Conolly
Surveyor
25.6.83



NOTE
(Lines thus |||| are in Red on Original)

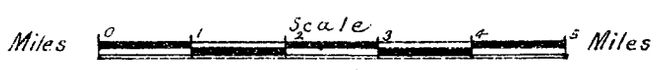


PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

(Sig.551.)

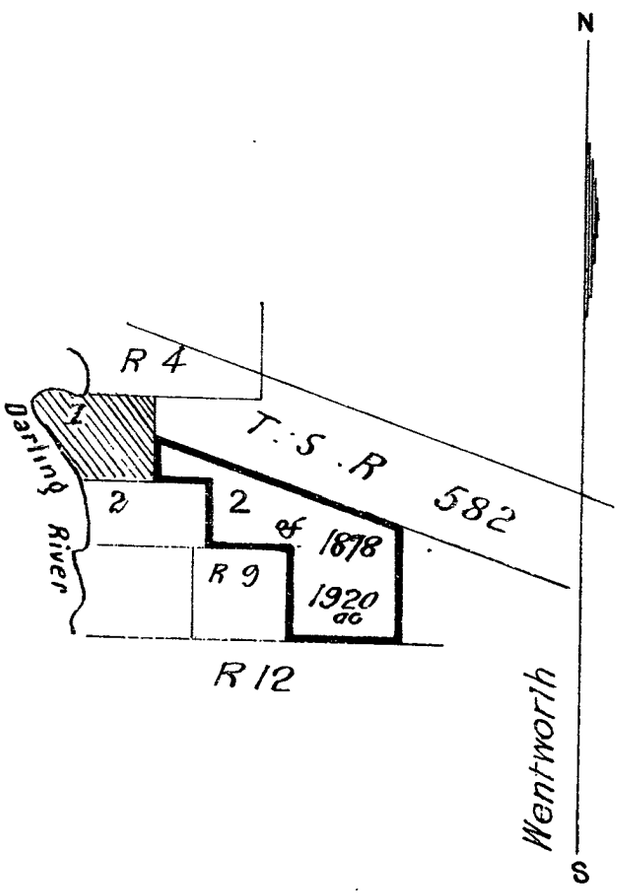
APPENDIX H. "B" Enclosure to No 23

Mary Ann Porter

County of Perry

Pre-emptive Lease No 2 of 78

Gazetted 17th May 1878



Note

Thick blue lines on original tracing shewn by thick lines thus

Portions tinted blue _____ do ____ shewn thus _____

(Sig. 551)

PHOTO-LITHOGRAPHED AT THE GOVT PRINTING OFFICE.
SYDNEY NEW SOUTH WALES

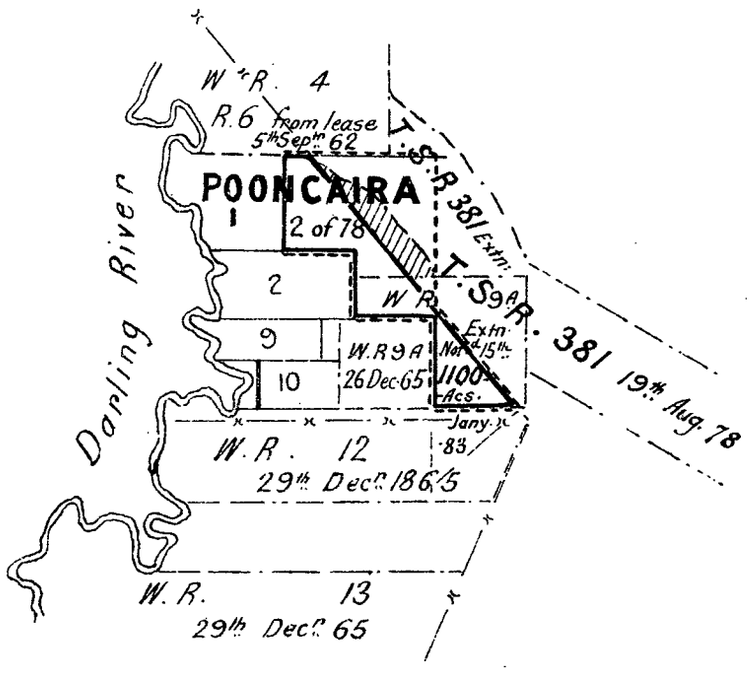
APPENDIX J. C Enclosure to No 23.

TRACING

shewing part of the County of Perry
Pre-emptive Lease No 2 of 78
Vacant Land shewn by Red tint about 210 ac Shewn thus //// on this Copy

Miles 0 1 Scale 3 4 5 Miles

Wentworth



NOTE

Portion 1 is tinted Blue on Original
Blue lines on Original - shewn in Stout Black ——
Red " " " " " " Broken - - - - -

(Sig 551)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE.
SYDNEY, NEW SOUTH WALES

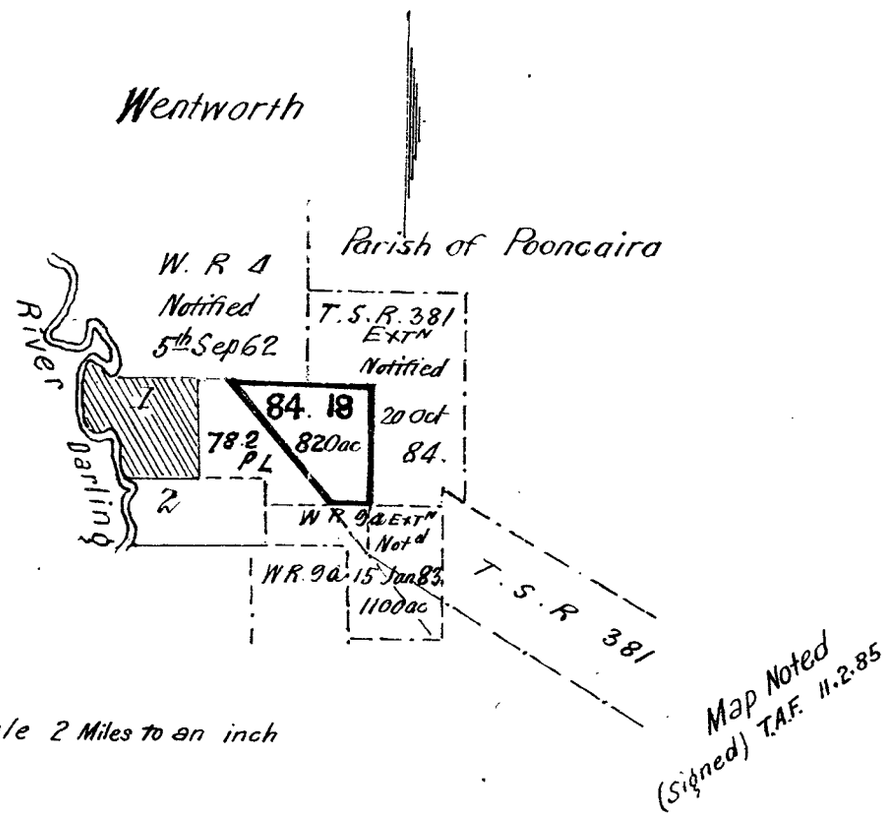
APPENDIX K. Enclosure to No 49.

Charles William Porter

County of Perry

Pre-emptive Lease No 84.18

Provisionally Gazetted 31st December 1884.



Scale 2 Miles to an inch

"Note"

Blue lines on original tracing shewn by thick lines thus

Portions tinted blue — do ———— shewn thus

(Sig. 551)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE
SYDNEY, NEW SOUTH WALES.

APPENDIX L. Enclosure to No 61.

Showing Pre-emptive Lease No 78.2 Gazetted 17 May 1878

Name of Lessee, C.W. Porter. Division of Colony, Western. Land Dist. Wentworth.

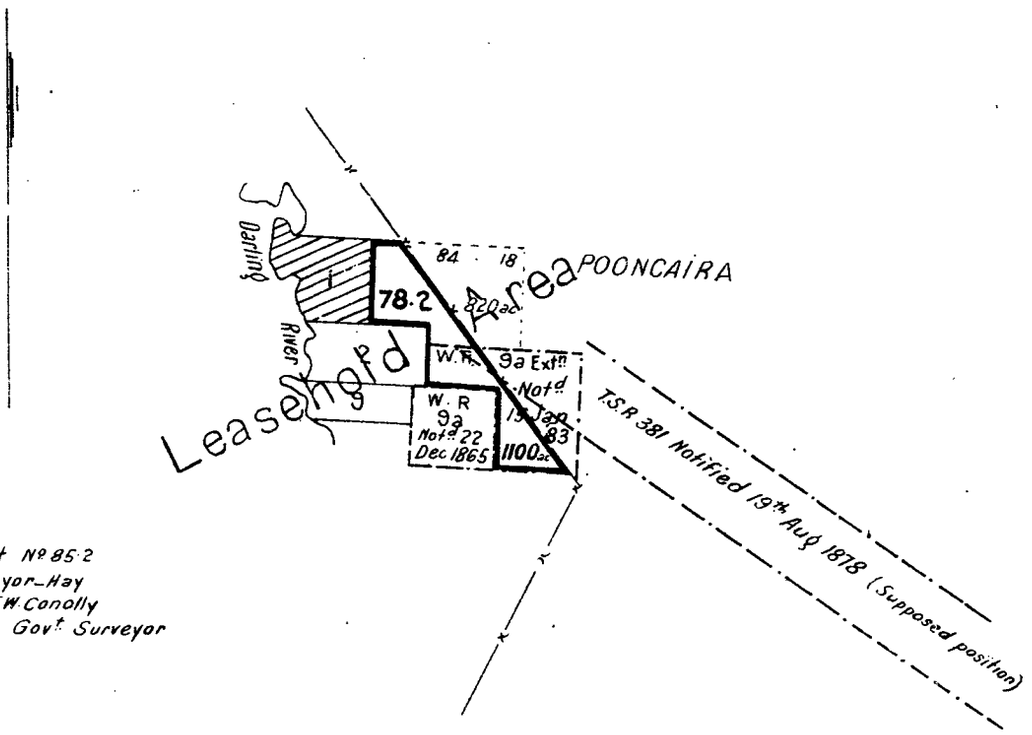
Parish of Pooncaira

County of Perry

Scale 2 Miles to an Inch.

See covering memo of Mr Curry with regard to additional lease of 820 ac portion of which is shown on paper tracing herewith. The land in each lease appears to be available

(Signed) A G



Attached to my report No 85.2
of 10 June to Dist Surveyor-Hay
(Signed) T.W. Conolly
Govt Surveyor

Area within stout black lines about 1100 ac apparently available

(Signed) T.A. Brown

Notes:
Blue lines and red edging on original shown here by stout black lines.
Portion tinted blue " " " " " hatching

(Sig 551.)

(Signature of Draftsman) G H Armstrong

24 Jan. 85

Examined H.F. Mitchell
1120 ac 30

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY NEW SOUTH WALES.

APPENDIX M.

Enclosure to No 61.

"B"

District Surveyor's Office

Hay

PARISH PONCAIRA
COUNTY PERRY

Scale

Miles 0 1 2 3 4 5 Miles

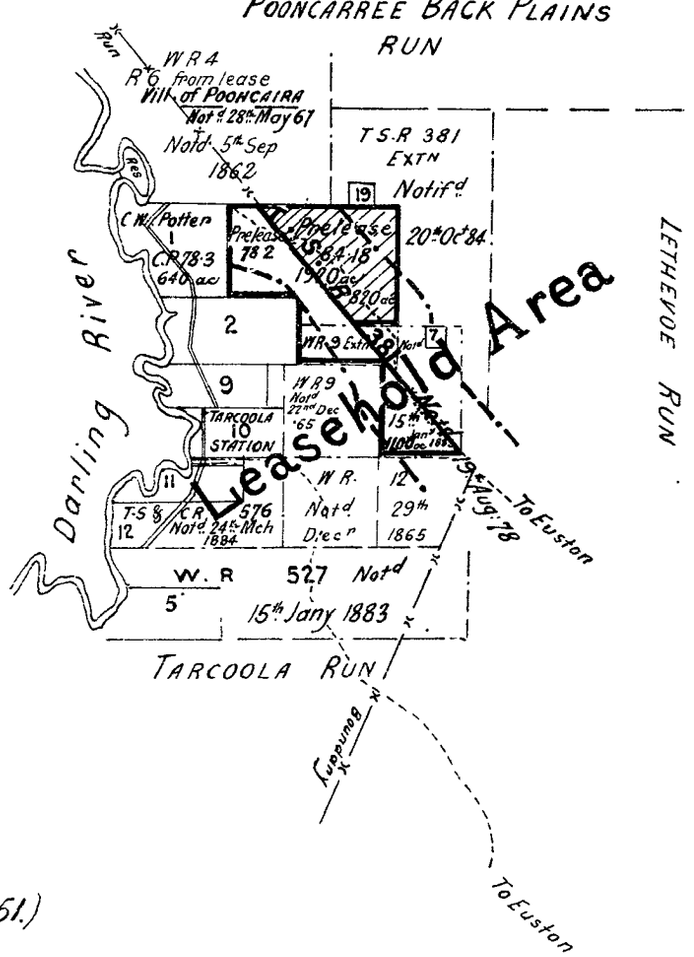
NOTE

Blue lines on Original - shown in stout black

Red " " " " thus -·-·-

Part tinted Red on Original " thus ////////

Reserve Boundaries " ———



(Sig. 551.)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES

CPL 124 Hy

LBD 86-6060

Sand Board District
N°87 2225
Hay

District Surveyors Office
3 March 87
Hay

APPENDIX. N. Enclosure to N° 80.

Wentworth

PLAN of CL 86 4342

COUNTY of Perry PARISH of Pooncaira

Applied for under the 52 Clause of the act of 1884
by - C W. Porter-

CL 86-4342 (Gov.t Gazette 16th April 86) in virtue of CP 78-3 por 1

Tracing for Board "A"

T. S. R. 381 Extn

WR N°4

Notd

5th September 1862

5 Wire fence

15342

with some Scrub

open country

Leasehold Area

CL 86. 4342

Tarcoola Pastoral Holding

8000

9862

Wire fence

Lake

Notified

Mary Ann Porter
now Charles William Porter
CP 78-3 dated 24th January

640ac ex road

River

5 Wire 6233 fence

sandy plain

scrub

2 PA 3 2092

M Dalchy
CP 78-13 dated 11th July

640ac ex road

5 wire fence

5462

Old Lake Bed

6463

5 Wire fence

4840

Box

Tank

WR N° 9A Extn

20th October 84

321°

90'

14927

Notified

Wire

Sandy plain

15th January 1883

1920 ac

Box & Scrub

7200

(9/65 on Ground) 9 JI2 1826

J L Phelps

320ac ex road

WR N° 9A

Notified

22nd December 1865

10 J3 1826

J L Phelps

312 ac ex road

Plan approved
W Orr
(sigd) A D S
12 10 87

T. S and CR 576

Notified 24th March 1884

WR 12

Notified 29th Decr 65

Value of Improvements Fence (Porters) £126-18-9 (Station) £31-6-3

Date of Survey 10th Augt 86
Azimuth taken from a - b

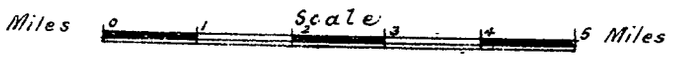
Cor A 193'47 Box 93lks marked CPL
B 187'30 do 9lks CPL
Posts at other corners
} Vide memo with papers

(Sig. 551)

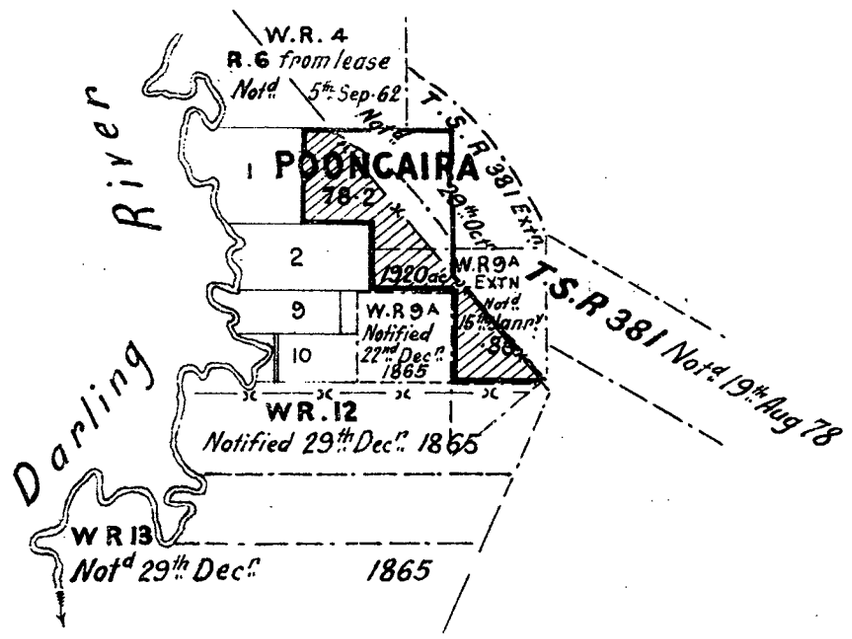
I hereby certify &c &c Letter of 20th November 86/75
(sigd) Joseph Tarrant LS

Note C.L boundaries shewn by blue edging on original, shewn thus
Reserve boundaries shewn thus — — . — —

APPENDIX O.



WENTWORTH



NOTE

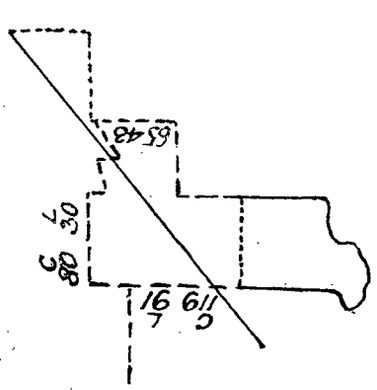
Portion N°1 is tinted Blue on Original

Blue line on Original is shown by stout black

The cross hatching is shown in Red on Original

Reserve boundaries thus. — — . — — .

APPENDIX P.



(Sig 551)

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CROWN LANDS.

(APPLICATION FOR ADDITIONAL CONDITIONAL PURCHASE MADE BY W. N. HILL, AT CONDOBOLIN.)

Ordered by the Legislative Assembly to be printed, 20 *August*, 1889.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 17th July, 1889, That there be laid upon the Table of this House,—

"Copies of all papers in connection with an application for an additional "conditional purchase of 600 acres of land, by William Newell Hill, in "the parish of Bolagamy, county of Gipps, made at Condobolin, on the "18th April, 1889, together with the evidence taken before the Local "Land Board at Condobolin, on the 8th July, 1889, in reference to said "application."

(*Mr. Cooke.*)

SCHDEULE.

NO.		PAGE.
1.	Application by William Newell Hill for the conditional purchase of 600 acres of land under the 47th section of the Crown Lands Act of 1884, situate in the parish of Bolagamy, county of Gipps. 18 April, 1889	1
2.	District Surveyor Sheaffe to Chairman Land Board, Condobolin, with enclosures. 14 June, 1889	2
3.	F. J. Scott to Chairman, Land Board, Forbes. 17 June, 1889	3
4.	The Chairman, Land Board, Forbes, to F. J. Scott. 17 June, 1889	3
5.	The same to William N. Hill. 19 June, 1889	3
6.	Decision of the Land Board, Condobolin, with minute. 8 July, 1889	4
7.	The Chairman, Land Board, Forbes, to the Under Secretary for Lands, with minute. 8 July, 1889	4
8.	The same to the same, with minute and enclosures. 11 July, 1889	4
9.	The same to the same. 17 July, 1889	6
10.	S. Hill to the same, with minutes. 17 July, 1889	6
11.	Office Memorandum, with minutes. 20 July, 1889	6
12.	The same, with minutes. 20 July, 1889	6
13.	The Under Secretary for Lands to Samuel Hill. 22 July, 1889	6
14.	W. N. Hill to Chairman, Land Board, Forbes	7
15.	The Under Secretary for Lands to M. Boulton, Esq., J.P. 8 August, 1889	7
16.	M. Boulton, Esq., J.P., to the Secretary for Lands. 16 August, 1889	7

No. 1.

Application by William Newell Hill.

[C.P. No. 13 of 1889.]

Crown Lands Act of 1884 (Part III, sections 26, 42, and 47).

Central Division, Land District of Condobolin; William Newell Hill; area, 600 acres.

To the Land Agent at Condobolin,—

Merringreen, Wollongough, 17 April, 1889.

I HEREBY apply for 600 acres of Crown lands as an additional conditional purchase, and I tender the sum of £60, being a deposit of 2s. per acre thereon. A description of the land applied for is on the back hereof, and the prescribed declaration is attached hereto. The land applied for partly improved. The nature and position of the improvements are as follows:—About three quarters of a mile of six-wire fence.

Extract to District Surveyor, 23rd April, 1889. Received and examined.—J.R.E., 23/4/89.

586— Description

[870 copies—Approximate Cost of Printing (labour and material), £7 9s. 11d.]

Description of the land applied for.

Central Division, county of Gipps, parish of Bolagamy, 600 acres: Commencing at a tree marked at the south-west corner of portion 9, parish of Bolagamy, county of Gipps; and bounded thence by lines running westward along the Humbug Creek; thence north; thence east; thence south, to point of commencement.

WILLIAM NEWELL HILL,
17 April, 1889.

Present and all previous holdings of the same series:—L.A. Nos.—74–839, 89–13. Date of applications.—30 July, 1874, and 18 April, 1889. Area.—40 and 600 acres. Total, 640 acres.

This is the application marked A referred to in the annexed declaration of William Newell Hill, made before me at Condobolin, this 17th April, 1889.

M. BOULTON, J.P.

This application (together with the deposit of £60) was lodged with me by Samuel Hill (agent, William Newell Hill), this 18th day of April, 1889, at 10 of the o'clock forenoon.

E. A. GRAINGER,
Land Agent at Condobolin.

[*Enclosure.*]

Crown Lands Act of 1884 (Part III, sections 24, 26, 42, and 47).

Declaration by applicant for a conditional purchase to accompany application.

I, WILLIAM NEWELL HILL, of Humbug Creek, selector, do hereby solemly declare and affirm that I am the applicant for the conditional purchase, as described in the application hereto annexed and marked A, and that the several answers to the questions in the schedule hereto are true and correct. And I make this solemn declaration as to the several matters aforesaid, according to the law in this behalf made, and subject to the punishment by law provided for any wilfully false statement in any such declaration.

WILLIAM NEWELL HILL.

Made before me, at Condobolin, this 17th day of April, 1889,—
M. BOULTON, J.P.

Crown Lands Act of 1884 (Part III, sections 24, 26, and 47).

Schedule.

1. What is your name? William Newell Hill.
2. What is your age? 16 years.
3. State year and date of birth. 16th April, 1870.
4. Are you married, single, a widower, or widow? Single.
7. Do you intend using the land now applied for solely for your own use and benefit? Yes.
8. Have you entered into any agreement, or arrangement, by which any person other than yourself can acquire any interest in the land you apply for? No.
9. Is there any understanding between you and any person in reference to the land applied for that will tend to defeat or evade the provisions of the Crown Lands Act of 1884? No.
10. Are you under any obligation that will prevent you from fulfilling the law in regard to the land you apply for? No.
15. If you hold conditional purchases, are they mortgaged or encumbered in any way; and if so, to whom? Yes; not mortgaged.
16. Do you understand the conditions of residence and fencing required by the Crown Lands Act of 1884? Yes.

WILLIAM NEWELL HILL,
Merringreen, Wollongough.

Signature of attesting witness:—M. BOULTON, J.P.

No. 2.

Mr. District-Surveyor Sheaffe to The Chairman, Land Board, Condobolin.

Conditional Purchase—Condobolin Land District.

REPORT of the District Surveyor, Forbes, upon application for conditional purchase No. 89–13, on 18th April, 1889, under section 42 of the Crown Lands Act of 1884, for 600 acres, parish of Bolagamy, county Gipps, by William Newell Hill, Bolagamy Pastoral Holding, No. 260, 14th June, 1889.

Sir,

I have the honor to report that conditional purchase 89–13 is for 600 acres, as indicated by blue tint on accompanying *tracing, and that the description embraced alienated land not open to conditional purchase. The application is therefore submitted for disallowal.

*Appendix A.

I have, &c.,
G. H. SHEAFFE,
District Surveyor.

[*Enclosure.*]

Additional Conditional Purchase 89–13, Land District of Condobolin.

Crown Lands Act of 1884 (Section 42, C.P. No. 13, of 1889).

EXTRACT from an application for conditional purchase lodged with the Land Agent on the 18th day of April, 1889, at 10 of the clock forenoon, by

WILLIAM NEWELL HILL,
Merringreen, Wollongough.

Deposit paid, £60.

Description.

Central Division, county of Gipps, parish of Bolagamy, 600 acres. Commencing at a tree marked at the south-west corner of portion 9, parish of Bolagamy, county of Gipps; and bounded thence by lines running westward along the Humbug Creek; thence north; thence east; thence south to point of commencement.

Present and all previous holdings of the same series.—Conditional purchases—No. 74–8,391; date, 30th July, 1874; area, 40 acres. No. 89–13; date, 18th April, 1889; area, 600 acres. Total, 640 acres.

Improvements.

About ¾ of a mile of six-wire fencing.
Examined.—A.J.V.
Referred to the District Surveyor for report.
Land Board Office, Forbes, 23rd April, 1889.

A.J.V. (*pro* Chairman).

No. 3.

No. 3.

Caveat against Application.

Crown Lands Act, 1884 (Part III, section 30).

Additional Conditional Purchase 89–13, Condobolin.

TAKE notice that I, Francis James Scott, of Bolagamy, near Condobolin, selector, claiming a right to the land applied for by William Newell Hill, on the 17th day of April, 1889, at the Land Office at Condobolin, as an additional conditional purchase, object to the confirmation by the Local Land Board of the application for the said land. And I deposit herewith the sum of £10 to be dealt with by the said Board, as provided by the Crown Lands Act of 1884. My objections to the confirmation of the said application are as follows:—

1. That the application for the abovementioned additional conditional purchase was not signed by the said William Newell Hill in the presence of a Land Agent, Justice of the Peace, or a Commissioner for Affidavits.
2. That such application was not tendered by the said William Newell Hill in person or by an agent authorized in writing so to do, nor was such written authority delivered to the Land Agent at Condobolin with the application.

Dated this 17th day of June, 1889.

FRANCIS JAMES SCOTT,
Bolagamy.

No. 4.

Notice by Local Land Board of Meeting to deal with Caveat.

Crown Lands Act of 1884 (Part III, section 30).

Additional Conditional Purchase 89–13.

ON the 17th day of June, 1889, a caveat was lodged by you against the confirmation of an application made by William Newell Hill, for an additional conditional purchase, tendered at the Lands Office at Condobolin, on the 18th day of April, 1889. This is therefore to give you notice that the said application and caveat in reference thereto will be dealt with by the Local Land Board at the Court-house at Condobolin on the 8th day of July, 1889.

Dated this 19th day of June, 1889, at Forbes.

J. R. EDWARDS,
Chairman.

To Francis James Scott, care of C. P. Sowter, Solicitor, Forbes.

Declaration of Service.

I, FREDERICK STEPHENSON MURRAY, of Forbes, in the Colony of New South Wales, clerk, do solemnly and sincerely declare and affirm that on the 19th day of June, 1889, I served a true copy of the within notice upon the person to whom it is addressed by delivering it to Charles Pearson Sowter, solicitor, at his office at Forbes; and I make this solemn declaration as to the several matters aforesaid, according to the law in this behalf made, and subject to the punishment by law provided, for any wilfully false statement in any such declaration.

F. S. MURRAY.

Made and taken before me this 24th day of June, 1889, at Forbes,—

J. R. EDWARDS, J.P.

No. 5.

Notice by Local Land Board of Meeting to deal with Caveat.

Crown Lands Act of 1884 (Part III, section 30).

Additional Conditional Purchase 89–13.

ON the 17th day of June, 1889, a caveat was lodged by Francis James Scott, of Bolagamy, against the confirmation of an application made by you for an additional conditional purchase, tendered at the Lands Office at Condobolin, on the 18th day of April, 1889. This is therefore to give you notice that the said application and caveat and reference thereto will be dealt with by the Local Land Board at the Court-house, Condobolin, on the 8th day of July, 1889.

A copy of the objections alleged in the caveat is enclosed.

Dated this 19th day of June, 1882, at Forbes.

J. R. EDWARDS,
Chairman.

To William Newell Hill, Merringreen, Wollongough.

Declaration of Service.

I, FREDERICK STEPHENSON MURRAY, of Forbes, in the Colony of New South Wales, clerk, do solemnly and sincerely declare and affirm that on the 19th day of June, 1889, I served a true copy of the within notice upon the person to whom it is addressed by registered letter post at Forbes; and I make this solemn declaration as to the several matters aforesaid, according to the law in this behalf made, and subject to the punishment by law provided, for any wilfully false statement in any such declaration.

F. S. MURRAY.

Made and taken before me this 24th day of June, 1889, at Forbes,—

J. R. EDWARDS, J.P.

No. 6.

No. 6.

Decision of Local Land Board.

Crown Lands Act of 1884 (Part II, section 14, sub-section 4).

New South Wales, Condobolin, }
to wit. }

WHEREAS on the 8th day of July, 1889, it became a matter for investigation before us whether the application of the 18th April, 1889, by William Newell Hill for additional conditional purchase 89–13, Condobolin, 600 acres, should be disallowed, a caveat having been lodged by Francis James Scott, and having taken (seven p.p.) evidence and inquired into the said matter, we dismiss the caveat, as the caveator has not shown that he has any right to the land, and order a refund of the £10 deposited. We disallow the application, as there was no application and declaration as required by law lodged with the Land Agent, and order a refund of the deposit paid.

Given under our hands, at the Court-house at Condobolin, in the Colony of New South Wales, this 8th day of July, 1889,—

J. R. EDWARDS, Chairman.
M. BOULTON, Member.

Forward papers with letter to the Under Secretary.—J.R.E., 11/7/89. Mr. Viles.

No. 7.

Telegram from The Chairman, Land Board, Forbes, to The Under Secretary for Lands.

8 July, 1889.

IT was proved in Court to-day that, on the 18th April last, Mr. Matthew Boulton, Member of the Board, signed as a Magistrate a declaration for a conditional purchase, the applicant being 60 miles away at the time. Mr. Boulton admits that he was aware of the facts, but that, as the applicant's father had authority to lodge the application, he thought it made no difference. The papers will be forwarded as soon as possible.

J. R. EDWARDS,
Chairman.

May await receipt of papers and Mr. Boulton's explanation.—J.N.B., 9/7/89.

No. 8.

The Chairman, Land Board, Forbes, to The Under Secretary for Lands.

Sir, Local Land Board Office, Forbes, 11 July, 1889.

In reference to my telegraph message of the 8th instant from Condobolin, I now have the honor to submit the case, application conditional purchase 89–13, Condobolin, William Newell Hill, caveat by Francis James Scott. With the case there are depositions, pages 1 to 7 inclusive, exhibits A to E inclusive, and a written statement by Mr. Boulton, J.P.

The facts of the case are, that young Hill met with a severe accident, and on or about the 17th of April, when sundry papers are alleged to have been signed, young Hill states in his evidence, "I was so sick at the time that I hardly know my writing."

Samuel Hill, the father, swears that W. N. Hill signed the papers on the 17th of April. He swears only to the signing. Then the papers reveal that Samuel Hill travelled 60 miles, and took them to Mr. Boulton, who is a Magistrate, and a Member of the Land Board, and that he filled up the application, and, at any rate, the answers to the questions in the declaration, and attested the declaration as taken before himself as a Magistrate, and witnessed the application as an exhibit, which he had just filled. On the following morning Hill senior attended at the Land Office, and tendered the application and declaration to the Land Agent. It appeared before the Court on the 8th instant, for the first time, that a ballot took place, and that young Hill's application was successful. The Land Agent did not note the ballot on the application, or refer to it in any way, nor did he send on the authority for Samuel Hill to act for his son. Mr. Boulton's written statement herewith admits the correctness of the facts herein set out.

I beg to submit three issues :—

1. The Land Agent's action, which is a departmental matter.
2. Mr. Boulton's action as regards his position as a Member of the Local Land Board for Ministerial consideration ; and,
3. Mr. Boulton's conduct affecting his position on the Commission of the Peace, for consideration of the Government if thought necessary.

I have, &c.,
J. R. EDWARDS,
Chairman.

Submitted, as directed by the Minister on C.S. 89–18,131.—F.H.W., 18/7/89.

[*Enclosures.*]

In the matter of William Newell Hill, of Humbug Creek.

ON the 17th day of April last, Samuel Hill, father of the abovenamed claimant, called upon me at my residence in Condobolin, and stated that a reserve was thrown open for selection adjoining his property, and wished to take up an additional conditional purchase in the name of his son, William Newell Hill; but, owing to an accident, his son was unable to attend, and that he had brought the papers duly signed, knowing I was acquainted with his son's signature. After calling his attention to the irregularity of such a proceeding, I witnessed the signatures to application and declaration.

Condobolin, 9 July, 1889.

M. BOULTON, J.P.

Applicant

Applicant present.—Mr. Sowter, solicitor, appears for the caveator.

THIS deponent, *William Newell Hill*, being duly sworn, maketh oath and saith as follows :—I reside at Humbug Creek, near Wollongough ; I made an application for a conditional purchase, about the 17th April, this year ; the signature to the application produced is mine ; I did not tender that application myself to the Land Agent, but authorized my father to do so ; I gave him the application to tender, and I gave him a written authority ; I signed the application at my home, I think, about 60 miles from Condobolin ; the signature to the declaration produced is mine ; I signed it at my father's place ; I did not make it before Mr. Boulton ; I did not sign any declaration before Mr. Boulton ; I was very ill when I signed the application.

To Mr. Sowter : I met with an accident about the 13th April, when a horse fell on me ; I was suffering from bruises ; I suffered from my head, but don't known that it was concussion of the brain ; I was in the house about seven or eight days, from the 13th to the 20th or 21st April ; I was at home all that time, and was not in Condobolin during that time ; I see the letter produced and marked "A" ; I don't know whether I wrote it or not ; one of my brothers may have written it ; the signature is my name, but not my handwriting ; I don't remember if I wrote it or authorized it to be written ; I will not swear that it is not my handwriting ; I know my father's writing, it is not his ; the authority I gave my father with my application was signed by me ; I have now written my name and other words in Court on the paper produced and marked "B" ; I don't know Mr. Innes ; I gave no one but my father an authority to lodge an application for me ; I think the document produced and marked "C" is my writing ; I was so sick at the time that I hardly know my writing ; I will not swear it is my writing ; I am sure it is not my father's writing ; I recollect giving my father authority to take up the land for me ; I don't remember giving an authority to Mr. Innes ; I think the handwriting is mine ; my mind was in such a state that I may have written Mr. Innes' name in mistake ; I handed the authority to my father ; I remember giving one authority to my father, but don't remember giving two.

WILLIAM NEWELL HILL.

Sworn, this 8th July, 1889, at Condobolin, before us,—

J. R. EDWARDS, Chairman.
M. BOULTON, Member.

This deponent, *Edward Albert Grainger*, being duly sworn, maketh oath and saith as follows :—

By the Board : I am the Land Agent at Condobolin ; I received the application produced on the 18th April last from Samuel Hill ; I know it is necessary that an agent should tender an authority in writing with the application ; Mr. Hill gave me an authority which I now produce, marked "D" ; I overlooked the authority and placed it in my safe instead of sending it to the chairman with the application ; I am also Clerk of Petty Sessions, and have seen selector's signature on sheep returns ; I exhibit sheep returns and rabbit returns purporting to be signed by William N. Hill ; the signatures on the conditional purchase application and authority are "William Newell Hill" ; I see in the authority marked "D" that too large a space seems to have been left for the words "my father."

To Mr. Sowter : The conditional purchase application was tendered at 10 o'clock ; the authority was handed in at the same time.

To Chairman : The "N" in the signature to the authority is a capital "N" with a down stroke ; the capital "N" in the signature to the sheep returns has an up stroke.

E. A. GRAINGER.

Sworn, this 8th July, 1889, at Condobolin, before us,—

J. R. EDWARDS, Chairman.
M. BOULTON, Member.

THIS deponent, *Samuel Hill*, being duly sworn, maketh oath and saith as follows :—

By the Board : I reside at Humbug Creek, and am the father of William Newell Hill ; I remember the 18th April last ; my son signed some documents ; he had a fall from his horse some days before and was unable to attend ; he signed a declaration and a form to select 600 acres of land ; the application and declaration produced are the papers my son signed on the 17th April ; he signed those papers at my place, 60 miles from Condobolin ; my son also signed the authority produced marked "C ;" I anticipated a conflict for the land, and had the authority produced marked "D" for Mr. Innes to act, so that in case I could not act for my son that Mr. Innes would be prepared to do so ; I saw my son sign his name to the two authorities and to the application and declaration ; the signatures to the sheep returns produced are not my son William Newell Hill's ; they were written by my son Moses ; the signature to the paper produced, and marked "B," is my son, William Newell Hill's ; I came into Condobolin on the 17th April last ; I went to Mr. Boulton and told him that my son got a fall from a horse and was too ill to attend, and would he witness his signature ; he did so to the application and declaration now produced.

To Mr. Sowter : I have had dealings with Mr. Scott before this ; letters may have passed between us ; I now give a sample of my writing on the paper produced, and marked "E ;" I see the letter produced marked "A ;" it is either one of my son's writing ; it looks very much like the writing of my son William Newell Hill, but I won't swear it ; my son Moses writes much the same ; I did not see it written ; the declaration and application were signed at my place at Humbug Creek ; no magistrate, commissioner for affidavits, or land agent was present ; my son gave me an authority for Mr. Innes to act, and one for myself ; I saw him write the authority that Mr. Boulton signed ; I don't know that he signed the authority for Mr. Innes to act, but he gave it to me ; they are not in the writing of my son Moses nor in my writing ; I gave the authority to the land agent.

SAMUEL HILL.

Sworn, this 8th July, 1889, at Condobolin, before us,—

J. R. EDWARDS, Chairman.
M. BOULTON, Member.

Edward Albert Grainger, recalled :—There was a ballot for the ground ; William Newell Hill, Samuel Hill, two Mr. Scotts, junior, and Mr. Scott, senior, balloted ; I did not write the facts on the application ; I returned the deposits and applications to the unsuccessful applicants ; the land applied for was a reserve thrown open.

E. A. GRAINGER.

Sworn, this 8th July, 1889, at Condobolin, before us,—

J. R. EDWARDS, Chairman.
M. BOULTON, Member.

A.

Mr. D. Scott,—

Humbug Creek, Wollongough, 2 January, 1889.

Dear Sir,

I received from you a cheque for the amount of £5 17s., for calves. Thanking you very much, I remain

Yours faithfully,

WILLIAM NEWELL HILL,
Humbug Creek, Yarrandale.

B.

William Newell Hill, Yarrandale.

Received.

Yours faithfully.

C.

Humbug Creek, 17 April, 1889.

I, WILLIAM NEWELL HILL, authorize Mr. H. W. Gray Innes to apply to the Land Office, Condobolin, on the 18th, for an additional of 600 acres, to my 40 acres taken up at Forbes, July 30th, 1874.

WILLIAM NEWELL HILL.

D.

D.

Humbug Creek, 17 April, 1889.

I, WILLIAM NEWELL HILL, authorize my father, Samuel Hill, to apply on my behalf for 600 acres on Humbug Creek, joining my 40 acres selected at Forbes, 30th July, 1874.

WILLIAM NEWELL HILL.

E.

William Newell Hill, Yarrandale.

Received.

I am, yours faithfully.

No. 9.

Telegram from The Chairman, Land Board, Forbes, to The Under Secretary for Lands.

17 July, 1889.

I TELEGRAPHED full particulars of W. N. Hill's case from Condobolin, on 8th instant, and all original papers, with letter posted to you on 11th instant, as the matter was very special.

J. R. EDWARDS,
Chairman.

No. 10.

Telegram from Mr. S. Hill to The Under Secretary for Lands.

17 July, 1889.

CONDITIONAL purchase 89–13, Condobolin, Wm. N. Hill, L. B. 89–4,079. Papers forwarded to the Under Secretary on the 11th instant. Please forward copy on to Young and oblige. Wire cost of same.

SAML. HILL,
Care of Hy. Thurland,
"Royal Hotel," Young.

Papers now enclosed. It is submitted that copies be not furnished till action be taken by the Department upon the report by the Chairman.—W.H.C., 18/7/89. The Under Secretary.

After action on Mr. Boulton's case, as a member of the Land Board, extracts are to be made from the papers (and particularly the Chairman's letter) as to the Crown Land Agent's conduct in this case.—S.F., 20/7/89.

Inform that copies of the papers cannot be supplied at present.—S.F., 20/7/89. Telegram sent, 22/7/89.

No. 11.

Office Memorandum.

INFORM Mr. Samuel Hill, care of Mr. Henry Turland, "Royal Hotel," Young, that copies of the papers in *re* William Newell Hill's conditional purchase application 89-13, Condobolin, cannot at present be supplied to him. Wire.

S. F., 20/7/89.

Wire, 22/7/89-857. The copy may now be furnished Mr. Smith to copy at once, please, as the case comes on before the next Appeal Court.—S.F., 7/8/89. Copies herewith.—F.S., 8/8/89.

No. 12.

Office Memorandum.

MR. BOULTON'S explanation of his action in the matter of William Newell Hill's application for conditional purchase in the Condobolin having been appended to the papers, there is no necessity to refer to him for report.

There is no escape from the fact that Mr. Boulton, a magistrate of the territory, and an intelligent man, has given a false certificate; and his admission that, after calling Mr. Samuel Hill's attention to the irregularity of the proceeding, he signed the false certificate, aggravates the offence, inasmuch as it clearly shows that he was conscious of the misconduct, and yet was pliable enough to allow himself to be used in an attempt to defeat the objects and requirements of the statutes of the Colony.

But one course is open, namely, to remove Mr. Boulton from the position of member of the Local Land Board, unless the Minister will take a more merciful course of offering him an opportunity of resigning.

After disposal of the matter, so far as this Department is concerned, it would seem to be proper to forward the papers to the Principal Under Secretary, with a view to consideration being given to Mr. Boulton's position as a Justice of the Peace.

20/78/9.

S. F.

Mr. Boulton may be afforded an opportunity of resigning.—J.N.B., 7/8/89. Mr. Boulton (*per* Chairman) informed, 8/8/89.

No. 13.

Telegram from The Under Secretary for Lands to Mr. Saml. Hill.

22 July, 1889.

COPIES of papers in *re* William Newell Hill's conditional purchase application 89-13, Condobolin, cannot at present be supplied to you.

STEPHEN FREEMAN.

No. 14.

No. 14.

Notice of Appeal.

Form 62.—Crown Lands Act of 1884 (Part II, section 17).

Notice of Appeal to the Minister from decision of Local Land Board to be lodged with the Chairman.

New South Wales, } to wit. }

WHEREAS on the 8th day of July, 1889, a certain matter, wherein William Newell Hill, of Merringreen, applied for the confirmation of an additional conditional purchase made at the Lands Office, Condobolin, came before the Local Land Board at Condobolin, in the Colony of New South Wales, for confirmation, I being a party to such proceedings, and the said Board, after having inquired into the premises, decided that my application should be disallowed. And whereas I am dissatisfied with such decision, and intend to appeal therefrom to the Minister. These are, therefore, to give you notice of my intention to appeal as aforesaid, and I herewith tender the sum of £10 as security for the costs of such appeal. And the grounds of such appeal are annexed.

WILLIAM NEWELL HILL.

To the Chairman of the Local Land Board at Forbes.

RECEIVED the sum of £10 referred to above.

J. R. EDWARDS,
Chairman.

Forbes, 3rd August, 1889.

Grounds of Appeal.

1. That the decision of the Land Board at Condobolin was given against the weight of evidence and the reading and spirit of the Crown Lands Act of 1884.
2. That the application made and tendered by me was made by duly authorized agent on my account and on my behalf and in accordance with the terms of the Crown Lands Act of 1884.
3. And upon such other grounds as I may be advised at the hearing to adduce.

No. 15.

The Under Secretary for Lands to M. Boulton, Esq., J.P.

Sir, Department of Lands, Sydney, 8 August, 1889.

With reference to the explanation furnished by you in connection with your action in the matter of William Newell Hill's application for a conditional purchase in the Condobolin District, I have the honor to inform you that in view of the circumstances of the case, the Minister for Lands has approved of your being afforded an opportunity of resigning the position of member of the Local Land Board.

Forwarded through the Chairman Local Land Board Forbes.

I have, &c.,
STEPHEN FREEMAN,
Under Secretary.

No. 16.

M. Boulton, Esq., J.P., to The Secretary for Lands.

Sir, Condobolin, 16 August, 1889.

I beg to tender my resignation as member of Local Land Board, Condobolin.

I am, &c.,
MATTHEW BOULTON.

[One plan.]

Sydney: Charles Potter, Government Printer.—1889.

[9*d.*]

Reg. No. of Papers

APPENDIX A.

DIAGRAM Enclosure to No. 2.

in connection with C.P. Application No. 89 . 13 by Wm N. Hill

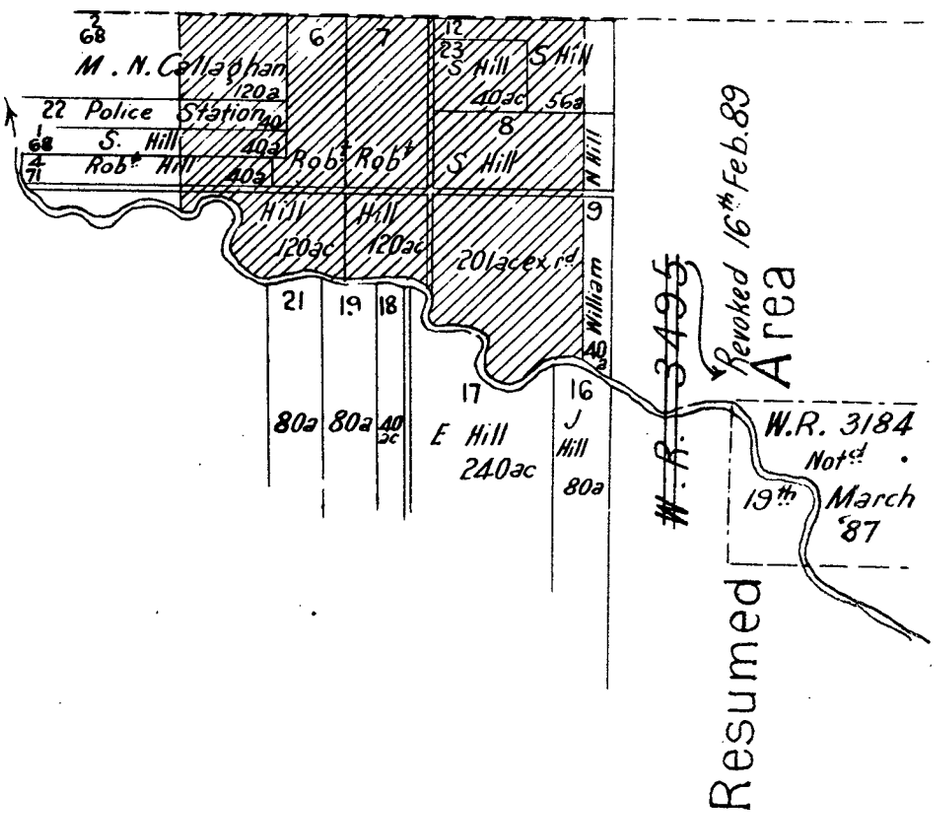
under Sec. 42 of the Crown Lands Act of 1884.

Parish Bolagamy County Gipps Dirision Central

to accompany Report to the Chairman of the Local Land Board at Condobolin

NOTE.- The area referred to as C.P. 89.13 in annexed Application is shown by hatching (blue tint on original)
Form of measurement recommended for is shown by . . . . .

T.S.R. 1461



(Signed)
G.H. Sheaffe

Exam. JGJ

(Sig. 586)

14. 6. 89

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE
SYDNEY NEW SOUTH WALES

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

LAND KNOWN AS LAMB'S FARM, LANE COVE.

(CORRESPONDENCE, &c., RELATIVE THERETO.)

Ordered by the Legislative Assembly to be printed, 2 May, 1889.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 25th October, 1888, That there be laid upon the Table of this House,—

"1. Copy of the deed of grant to Henry Lamb of 25 acres of land, known "as Lamb's Farm, situate in Lane Cove, district of Hunter's Hill, on the "19th November, 1794.

"2. Copies of all letters, minutes, reports, and plans relating thereto."

(*Mr. Lee.*)

SCHEDULE.

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14.	The Under Secretary for Lands to the Under Secretary for Finance and Trade. 15 August, 1885	10
15.	The same to the Crown Lands Ranger, Petersham. 15 August, 1885	10
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17.	The Crown Solicitor to the Under Secretary for Lands, with minutes. 18 August, 1885	10
18.	The Cumberland Ranger to the same, with minutes. 12 September, 1885	11
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20.	Messrs. Way and Way to the Under Secretary for Lands, with minute. 3 November, 1885	11
21.	S. M'Burney to the Minister for Lands, with minute. 26 November, 1885	12
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24.	The Under Secretary for Lands to the same. 30 January, 1886	13
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33.	The Cumberland Ranger to the same. 29 June, 1886	16
34.	The Metropolitan and Coast District Surveyor to the same, with minutes and enclosures. 14 July, 1886	16

[895 copies—Approximate Cost of Printing (labour and material), £31 9s, 0d.]

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No. 1.

Deed of Grant to Henry Lamb.

By His Honor Francis Grose, Esq., Lieutenant-Governor in and over His Majesty's Territory of New South Wales, and its Dependencies, &c., &c., &c.

WHEREAS full power and authority for granting lands in the territory of New South Wales to such persons as may be desirous of becoming settlers therein is vested in His Majesty's Captain-General and Governor-in-Chief (or in his absence the Lieutenant-Governor for the time being) in and over the said territory and its dependencies by His Majesty's instructions under the Royal Sign-manual bearing date respectively the twenty-fifth day of April one thousand seven hundred and eighty-seven and the twentieth day of August one thousand seven hundred and eighty-nine in pursuance of the powers and authority vested in me as aforesaid I do by these presents give and grant unto Henry Lamb his heirs and assigns to have and to hold for ever twenty-five acres of land to be known by the name of Lamb Farm laying and situate in Lane Cove in the district of Hunter's Hill the same twenty-five acres of land to be had and held by him the said Henry Lamb his heirs and assigns free from all fees taxes quit-rents and other acknowledgments for the space of five years from the date of these presents Provided that the said Henry Lamb his heirs or assigns shall reside within the same and proceed to the improvement and cultivation thereof such timber as may be growing or to grow hereafter upon the said land which may be deemed fit for naval purposes to be reserved for the use of the Crown and paying an annual quit-rent of one shilling after the expiration of the term or time of five years before mentioned.

In testimony whereof I have hereunto set my hand and the seal of the Territory at Sydney in the Territory of New South Wales this nineteenth day of November in the year of our Lord one thousand seven hundred and ninety-four.

Signed and sealed in our presence,— FRANS. GROSE.

J. FOVEAUX,
THOS. ROWLEY,
EDW. LAING.

Registered in the Secretary's Office—DAVID COLLINS, Secretary to the Governor.

Cancelled.

No. 2.

Memorandum by the Under Secretary for Lands.

THERE is a question in connection with the public lands of this Colony which I desire to bring under the notice of the Minister for Lands, as, if my impression with regard to the matter is correct, it is one I think of serious importance to the Government, and which should be dealt with without unnecessary delay.

The question I refer to is as to the position of the Crown with respect to lands which have been in the undisturbed possession of an individual for sixty years without the Crown having in any way asserted its rights.

I understand that in former years the law used to be that no length of adverse possession barred the right of the Crown, but that the law has since been altered in that respect so as to limit the Crown's rights by conferring a title upon an undisturbed possession after sixty years.

If this is the case, there are, it will be found, hundreds (possibly thousands) of cases in which the interests of the Crown will before long be in jeopardy, if indeed in some instances its rights have not lapsed already. I allude more especially to lands in the vicinity of or adjoining old grants, where the holders of such grants or those deriving their title from them have taken and been in possession of such adjoining lands for considerable periods, and who will therefore be in a position as soon as sixty years have expired to defeat any claim the Crown may then make to the said lands, unless the Crown should have in the mean time taken some action to assert its rights. The

The plan I would suggest for dealing with this matter, and the present time, when the surveyors are not fully employed, might be a favourable opportunity for it, is that all old grants, commencing in the first instance with those say 50 years old and upwards, should be carefully examined, and that surveyors be instructed to proceed to the various localities and measure all adjoining lands standing in the position I have indicated with a view to their being advertised for sale by auction. They could easily be withdrawn from sale after advertisement if it were not thought desirable eventually to alienate them, the object simply being for the Crown, by exhibiting its right or claim to the lands, to secure another sixty years of safety, and thus defeat the claims which would otherwise accrue of the present possessors.

The above recommendation (if approved) would, of course, take a considerable time to carry out, and I would therefore respectfully submit that the matter I have now brought under notice requires special and early consideration.

15th December, 1879. W. W. STEPHEN.

This Minute should be forwarded to the Surveyor-General for report.—J.H., 15/12/79. Surveyor-General.—W.W.S., 16/12/79.

Beyond the County of Cumberland I do not think a search would lead to results which would warrant the expense of inquiry. In Cumberland I think the general survey, when it is extended to and covers that county, will show some encroachments and other unauthorized occupations of Crown lands, and in the meantime if a schedule of all grants of forty years and upwards is supplied I will take the necessary steps to avoid any rights of the Crown from lapsing through expiry of the sixty years. I should also desire to be informed if possession for sixty years is held to bar the Crown from resuming unused roads and reservations of 100 feet around the waters of the coast and navigable waters. Also to be informed as to what may or may not be considered encroachments, &c., under the meaning of the Under Secretary's memorandum; for instance, in many cases very loose measurements have been used, and in most instances a larger area has been marked on the ground than accurate chaining would give, in few such cases would the area so discovered be in a saleable form? Further, I presume that no attempts need be made to resume any excess arising out of loose measurement when the grant is bounded by another grant, or defined and specified adjoining lands. Upon the whole I am not sanguine as to important results except in perhaps two or three cases, which will receive attention as soon as the general survey reaches the localities.—P.F.A., 26/12/79. The Under Secretary for Lands. B.C.

The report of the Surveyor-General on the matter within referred to is submitted. As my meaning has been somewhat misunderstood by that officer (as it appears to me), I would take leave to say a few words in further explanation. I did not mention anything about "encroachments." What I desired to convey was that there exists, or in all probability exists, Crown land which has in numbers of cases been in the possession or use of the grantees of lands adjoining, and that in the case of old grants such use of the Crown land without acknowledgment by way of payments of rent or otherwise would put the user in such a position that after sixty years the Crown could not oust him.

There are, I believe, lands which have been granted for fifty years and upwards in many of the counties besides that of Cumberland and therefore if any action requires to be taken at all, it will, of course, apply to those other counties also. With regard to the question as to whether sixty years possession bars the Crown from resuming reservations, &c., of 100 feet around the waters of the coast and navigable waters, a point on which the Surveyor-General desires information, I take it if people have held such reserved lands for sixty years without payment or acknowledgment of any kind, the right of the Crown to resume is gone, in the same way as it would be in the other cases referred to by me. Possibly the question is one which the Attorney-General might be asked to advise upon. It would be as well perhaps, however, not to give too much publicity to any action it may be thought expedient to take in this matter, lest persons now unaware of their position with regard to such lands might commence building up their titles in a way which might prove difficult to deal with. With reference further to the last part of the Surveyor-General's minute, I would point out that my memorandum was not intended to allude to excessive quantities of land within measured portions granted, but the Crown land outside or adjoining old grants, and which, although occupied, had never been granted at all to the occupant.—W.W.S., 6/1/80.

The last minute of the Under Secretary should be forwarded for the perusal of the Surveyor-General.—J.H., 22/1/80.

I think a reference should be made to the Crown Law Officers on the question at issue, and in case the opinion of the Under Secretary as to occupations of the 100 feet reservation being open to defeat by sixty years possession, steps will be necessary to be taken to secure some portions in the public interests also it is desirable that a list of grants be furnished me from the records of the Lands Department showing the dates of grants of all cases of fifty years and upwards. I would send a circular to surveyors in whose districts they were situated requesting their report.—P.F.A., 27/1/80. Under Secretary.

Perhaps as suggested by the Surveyor-General before any further action is taken, the point as to whether sixty years undisturbed occupation, bars the right of the Crown to resume 100 feet reservation, of the description alluded to, may be referred for the opinion of the Attorney-General.—W.W.S., 31/1/80. Approved.—J.H., 31/1/80. The Crown Solicitor.—W.W.S., B.C., 2/2/80.

No. 3.

P. J. Hourigan, Esq., to The Under Secretary for Lands.

Sir, 103, Elizabeth-street, Sydney, 22 August, 1883.

By a certain Crown Grant dated 19 November, 1794, 25 acres of land situated at Lane Cove, district of Hunters' Hill, known as "Lamb's Farm," under the hand of Sir Francis Grose, then Governor, &c., of New South Wales, was issued to one Henry Lamb. In the office of the Registrar of Deeds the said Crown Grant appears with merely the word "cancelled" written over it. I have therefore the honor to request that you will cause a search to be instituted in your office without delay with a view of ascertaining whether you hold or are in possession of any document or documents showing any cancellation of the said Crown grant with the consent of the grantee, the said Henry Lamb? An early reply will oblige.

I have, &c.,

P. J. HOURIGAN.

Mr.

Mr. M'Kern,—Did the grant issue for the land at Lane Cove? Is it not a fact that Lamb exchanged the Lane Cove land for land at Mulgrave Place, and if so would not that account for the writing of the word "Cancelled"? Please give any information available from your records.—R.H.D., 5/9/83.

A deed of grant dated 19 November, 1794, for 25 acres, in the district of Hunters' Hill, issued to Henry Lamb, and against the extract which appears in Cumberland Register No. 1, the word "Cancelled is written. Another grant dated April 10, 1798, for 25 acres at Mulgrave Place, also issued to Henry Lamb, but there is nothing to show that it was in lieu of the first 25 acres.—F.M'K., 12/9/83.

The above is all the information that can be obtained from the records in this branch.—F.M'K., 12/9/83. Mr. De Low. Mr. Watt,—Would you please give what information the plans, &c., may afford in this case?—R.H.D., 12/9/83.

Mr. De Low,—I have searched our old records carefully, and the only information I can find is a note to the effect that Lamb's grant was cancelled, a grant being given at the Hawkesbury in lieu. There is nothing to show the authority for the note mentioned. Mr. Thomas Lewis has suggested a search in the records of the Colonial Secretary's office.—F.H.W., 17/9/83.

The papers may be forwarded to the Principal Under Secretary as suggested.—R.H.D., 17/9/83. F.H.W., 18/9/83. Refer.—C.O., 18/9/83. The Principal Under Secretary.—C.O., B.C., 9/83. Cannot trace any grant under the name of Henry Lamb. Colonial Secretary's office. Have you looked through all the grants?—C.W., 20/9/83. Have looked through all the grants but cannot trace any grant under the name of Henry Lamb.—C.W., B.C., 24/9/83. The Under Secretary for Lands.

Search has been made, but no document has been found. It is, however, impossible to say that such document never existed as transactions of a similar character were often, in the early days of the Colony, effected without the authority being placed upon record. As Mr. Lamb received another grant of a similar area at Mulgrave about the time of the grant of the land at North Shore, it is not at all unlikely—indeed it is fair to assume—that the former was granted in lieu of the latter.—C.O., 29/9/83. P. J. Hourigan informed, 3/10/83.

No. 4.

Mr. F. W. Rutter to The Deputy Surveyor-General.

Sir, 14A, Exchange, Sydney, 21 September, 1883.

If you refer to the Registrar-General's Office you will, I think, learn that the 25 acres standing on the parish map of Willoughby, county Cumberland, in the name of H. Lamb, has been cancelled, and that an application to bring it under the Land Titles Act (with other land) has been refused.

It is worth while, in the public interests, to send up a draftsman with a tracing and examine the records. Date late in 1800 or shortly after.

I have, &c.,
FRED. WILLIAM RUTTER.

Mr. T. H. Lewis.—R.H.D., 27/10/83.

Mr. T. Lewis,—With reference to Henry Lamb's grant at Willoughby, I ascertained that the copies of the deed in the Registrar-General's Office and the Deeds Branch have the word "cancelled" written opposite, and that G. Tilley's, whose farm adjoined Lamb's, was also cancelled, and a note to the effect that a farm had been given at the Hawkesbury, "Mulgrave Place." I found that Henry Lamb and George Tilley have 25 acres each, adjoining, and with frontage to the Hawkesbury, in the parish of St. Matthews, county of Cumberland. I also ascertained at the office of the Registrar-General that applications have been received in the Lands Titles Branch for portions of Lamb's 25 acres (two 5-acre blocks, I think) under Torrens' Act, originally transferred from Gore. I forwarded particulars to Mr. Furber early in October for further investigation in his Branch.—W. M'INTYRE, 5/11/83.

The Surveyor-General,—The grant of 25 acres to Henry Lamb, dated 19th November, 1794, is written off in the Registrar-General's Office and on the copy in this office as "cancelled," that word being written on the copies in each of these offices. There is no statement of the reason of its being cancelled, though in most other cases of the same date such statement is made on the copies. It is necessary, however, to state the case of a grant to George Tilley of 25 acres, adjacent to Lamb's 25 acres, made on the same date (19th November, 1794), which possibly affects this case, as the two grants were probably treated in the same manner. Tilley's grant is written as "cancelled," but a note is also added, "grant given at Hawkesbury, Mulgrave Place," and on reference to the locality it is found that a grant of 25 acres was made to George Tilley, at Mulgrave Place, on the 10th May, 1798; that it adjoined a 25-acre grant to Henry Lamb made on the 10th April, 1798. It would thus appear that both grants were cancelled and the grants reissued for the same acreage in another locality, and that, as no subsequent alienation has taken place of the two blocks granted in 1794, they are still vested in the Crown. However, as far as Lamb's case is concerned, there is no other direct evidence of the cancellation of the deed of grant than the existence of the word "cancelled" on the copy, although the facts stated above form strong evidence in support of the cancellation. Perhaps the matter above stated should be communicated to Mr. Hourigan. See Miscellaneous, 83-15,901.—T.F.F., 18/2/84.

Under Secretary for Lands accordingly. It is suggested that, after conveying this information, inquiry should be made amongst the records of the Colonial Secretary's Office as to any facts that can be traced in connection with the case.—P. F. ADAMS, Surveyor-General, 20/2/84. The Under Secretary for Lands.

Submitted. The grant has been searched for at the Colonial Secretary's Office.—J.G.B., 7/3/84. See separate memorandum.

No. 5.

The Under Secretary for Lands to P. J. Hourigan, Esq.

Sir, Department of Lands, Sydney, 3 October, 1883.

With reference to your letter of the 22nd ultimo, relative to the cancellation of a grant of 25 acres of land at Lane Cove, known as "Lamb's Farm," alleged to have been issued to Henry Lamb by Sir Francis Grose, on the 19th November, 1794, I have the honor to inform you that although search has been made, it is impossible to say, at this late date, whether a document under Lamb's hand, showing his consent

to the cancellation as an exchange for lands elsewhere is in existence, or ever existed, as transactions of a similar character were often, in the early days of the Colony, effected without the authority being placed on record.

I may add that, as Mr. Lamb received in the early part of 1798 a grant for a similar area of land at Mulgrave Place, it is not at all unlikely, indeed it is but fair to assume, that the latter was given in lieu of the former, exchanges of that nature being frequent in those days, and effected in a similar manner.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 6.

Office Memorandum.

MR. HOURIGAN has already been informed partially to the effect of the Survey Office report, and I do not think it necessary to write further on the subject. It would, however, be wise to refer these papers to the Registrar-General for notatien in the event of any attempt being made to deal with the land.

C. O., 11/3/84.

Approved.—J.S.F., 2/3/84. The Registrar-General.—J. G. BLAXLAND (*pro* Under Secretary, Department of Lands), B.C., 18/3/84. Examiner of Titles.—E.G.W., 19/3/84.

Memorandum.—A certificate of title for 2 acres 1 rood 17 perches, portion of Henry Lamb's 25-acre grant, was, on the 13th March, 1884, issued to John Bede Magney and Herbert Edwin Weynton. The certificate of title is registered as of volume 688, folios 65 and 66.—H. D. MADDOCKS, 19/3/84.

Under Secretary for Lands.—E.G.W., B.C., 19/3/84. Submitted for the information of the Secretary for Lands.—C.O., 28/3/84.

The circumstances under which this certificate of title was issued should, I think, be inquired into, as well as any person's right to deal with the balance of the area of what is known as Lamb's Farm, the original grant to Lamb having been cancelled.—J.S.F., 31/3/84.

The Principal Under Secretary.—C.O., B.C., 8/4/84. The Registrar-General for report.—A.S., B.C., 12/4/84. C.W., 15/4/84.

Memorandum.—There is no proof whatever to show that Lamb's grant was legally cancelled. It is true that the record copy of the grant in the Registrar-General's department has written upon it the word "cancelled," but that will not in law enure a cancellation of the grant; therefore, under the circumstances, I am of opinion, that the certificate of title before referred to should remain intact; moreover it may be mentioned that the application under which the certificate of title issued was duly advertised in the *Government Gazette* and public papers, thus giving an opportunity of a *caveat* being entered by the Crown, or any person or persons forbidding the issue of the certificate of title.—H. D. MADDOCKS, Land Titles Office, Sydney, 18/4/84.

Mr. Examiner Maddocks' opinion herewith.—E.G.W., 18/4/84. Registrar-General.

It appears that a certificate of title has already been issued for 2 acres 1 rood 7 perches, part of the 25-acre grant to Lamb. The application has also been passed by the Board of Commissioners for 2 acres 1 rood 33½ perches, and certificate of title would, ere this, have been issued had not a *caveat* been lodged. Application may be lodged at any time for a portion or the whole of the balance left in Lamb's grant. In this event a notice will be forwarded to the Under Secretary for Lands to give him an opportunity to lodge *caveat* if the Government should see fit.—E. G. WARD, Registrar-General, 18/4/84.

Submitted.—C.O., 23/4/84. Seen.—J.S.F., 30/4/84. Forwarded for the information of the Surveyor-General.—J.G.B., 7/5/84. Mr. Furber, 12/5/84. The Surveyor-General.

The opinion of the Law Officers of the Crown should perhaps be obtained as to whether, under the circumstances of this case, this Department will be justified in lodging *caveat* against any application for title to the balance of the land in question; also, whether specific action should be taken to obtain possession of the land on the part or the Crown.—A. L. LLOYD, 7/6/84.

The facts of the case are, I think, sufficiently stated in the minute of 18th February, 1884, initialled T.F.F., to require a special minute for the guidance of the Crown Law Officers, and on it the case is submitted.—P.F.A., 16/6/84. Under Secretary for Lands.

No. 7.

Office Memorandum.

Lamb's grant of 25 acres, at Hunter's Hill, marked "Cancelled."

As many of the early transactions in connection with deeds of grant were effected through the Treasury, it is suggested the papers be forwarded to the Under Secretary for Finance and Trade, with a request that careful search be made in the early records of that Department, whether any particulars can be ascertained therefrom, as to the cancellation of the above, which it is assumed took place prior to 1800, in order to allow of an exchange being effected for 25 acres at Mulgrave Place, the deed of which issued in 1798.

R.H.D., 28/7/84.

The reference may be made.—C.O., 28/7/84. Approved.—J.S.F., 31/7/84. The Under Secretary for Finance and Trade.—F.H.W. (for the Under Secretary, Lands), B.C. Search has been made among all the old records of the office, but no trace can be found of any book or papers, which will throw any light upon the subject.—G.E. The Under Secretary for Lands.—W.N., B.C., 6/3/85.

Mr. Evans, Registrar of Records, Treasury,—Please assist in this matter by searching for any papers bearing upon the cancellation of the very old grant referred to in the enclosed papers. (Henry Lamb, 25 acres at Hunter's Hill, 17th November, 1794.) Particularly any letter referring to the cancellation of said grant, probably prior to the year 1800.—W.N., 27/2/85. Treasury, Revenue Branch. Urgent.

Mr. Newcombe,—I regret I can give you no assistance, as the books in this room do not go so far back as the date mentioned; possibly some trace may be found in the cellar.—A.E., 27/2/85. No records in the cellar.—W.N., 27/2/85.

No. 8.

Application by Mr. H. Nutter.

VOLUNTEER Order Selection.—Application by Howard Nutter, of Pitt-street, Sydney, for a grant of 50 acres of land, under clauses 44 and 45 of the Volunteer Regulation Act of 1867.

Received, with certificate, this 8th day of December, 1884, at 12·45 o'clock, by,—
R. H. DE LOW,
Land Agent for Metropolitan District.

Sir, 5 December, 1884.

In virtue of the enclosed certificate, I hereby apply for a grant of 50 acres of unimproved Crown land, hereunder described. I am, &c.,
HOWARD NUTTER,
158, Pitt-street, Sydney.

The Crown Land Agent.

Description.

County of Cumberland, parish of Willoughby; 25 acres formerly granted to H. Lamb, and surrendered; being surrounded northerly by public recreation reserve; westerly by grants to Baker and Tyler, each 25 acres, and easterly by public reservations for recreation and pound.

The application was received under protest after having been formally refused. Applicant was duly warned, the land being within the population boundary of Sydney, and therefore, even if unalienated, not open to selection.—R. H. DE LOW, Metropolitan Crown Lands Agent.
8th December, 1884.

Mr. H. Hare.—R.H.D., 10/12/84. Volunteer Land Order, 80–225, issued to Sapper Patrick Callopy. Declared void, 17/3/85. *Vide* 85–610 Alienation. C. 582–690 Roll, for 25 acres granted to H. Lamb.

Volunteer Land Order, 80–225, dated 8th December, 1884, by Howard Nutter. The land applied for under the above-mentioned Volunteer Land Order, appears to have been already alienated to H. Lamb; it is therefore recommended that the application be refused. In any case, the application could not be entertained, as it is less than 40 acres, and is for land situated within the reserve from conditional sale on account of the population of the City of Sydney.—ROBT. D. FITZGERALD (for Surveyor-General), 21st January, 1885. H.H., 19th January —C.W.L.B.

The Under Secretary for Lands. Approved.—J.S.F., 11/3/85. Declared void.—R.H.D., 13/3/85. Mr. Nutter with certificate, and Land Agent informed by printed letter, 17th March, 1885. Noted.—R.L., 18/3/85. Noted.—R.H.D., Crown Lands Agent, 19/3/85.

Mr. H. Hare to note and return.—R.H.D., 19/3/85. Voidance noted in Geographical Division 10.—C.W.L.B., 30/3/85. Mr. De Low.

No. 9.

Mr. Surveyor D. M. Maitland to The Surveyor-General.

Sir, Stanmore Road, 20 February, 1885.

Referring to the verbal instructions from yourself and the Under Secretary for Lands, I beg to report that I have inspected four portions of land in the parish of Willoughby, applied for as Volunteer Land Order purchases, which are within the Population Reserve of Sydney, and consequently, by the 44th section of the Volunteer Act of 1867, not open for Volunteer Land Order purchase.

* App. 5,599, D.Wilson, 2a 1r. 33½p. Caveat lodged against issue.
† App. 5,600, B. Magney, 2a. 1r. 17p. Certificate has issued.
‡Aln. 84–4,785 and 85–766.

1. Applications for titles under the Real Property Act for two portions containing respectively 2 acres 1 rood 33½ perches, and 2 acres 1 rood 17 perches, have been made by D. Wilson and J. B. Magney, applications 5,599* and 5,600† within the 25-acre block‡) applied for by Howard Nutter, and marked on the parish map as granted to H. Lamb, one of which titles has been granted. There did not appear to be any act of ownership exercised over any portion of the ground by applicant.

2. On the portion applied (Alienation 84–4,786 and 85–753) for by Henry Chapman, originally granted as 25 acres to Humphery Evans, a weatherboard house has been erected, now occupied by H. Waterhouse, who informed me that the block was claimed by Mr. Thomas Broughton, and that he was in charge of it for him.

3. The portion marked as granted to W. Wright, and now applied (Alienation 84–4,787 and 85–750) for by J. B. Magney, shows no signs of recent occupation but an old fence, originally erected, I believe, by E. Charlish, is still standing.

4. I could not find any occupation of G. Tilley's grant by the (Alienation 84–4,788 and 85–751) applicant, R. Magney.

I have, &c.,
D. M. MAITLAND,
Government Surveyor.

Mr. H. Hare, 20th March, 1885. Submitted. 1st. It is suggested the Registrar-General be requested to lodge a *caveat* against the issue of certificate to D. Wilson for the 2 acres 1 rood 33½ perches, (case 5,599), also to decline to register any dealing with the residue of Lamb's grant, with Humphery Evans', W. Wright's, and George Tilley's grants, for the reason that the grants appear to have been cancelled many years ago, and further that he be requested to furnish this Department with a tracing of the lands described in application 5,599 and 5,600.

2nd. That early search be made as to notations on plans, and in old registers (Deeds, &c.), in connection with the last three mentioned grants. (Date of grant—Evans, 3rd December, 1794; Wright, 3rd December, 1794; Tilley, 19th November, 1794.)—R.H.D., 28/4/85.

C.O., 29/4/85. Approved.—J.S.F., 30/4/85. Correspondence Branch.—R.H.D., 1/5/85. Registrar-General informed, 5/1/85. Mr. M'Kern,—Would you please take action as regards entries in old registers.—R.H.D., 6/5/85. Mr. Farnsworth.—F.M'K., 7/5/85.

Vide

Vide extracts from Cumberland Register No. 1, folios 37 and 41 herewith.—W.F., 11/5/85. Mr. M'Kern. Mr. De Low,—The accompanying extracts contain all the information I can give respecting the three grants referred to.—F.M'K., 11/5/85.

Mr. H. Hare,—Would you please cause early search to be made on old plans and maps as to grants mentioned.—R.H.D., 12/5/85.

It is found upon an inspection of the plans that no fresh information concerning the lands referred to can be furnished. Papers No. 69–12,190 and 69–14,059 alienation might perhaps be found to contain some information bearing upon the cases.—C.W.L.B. (for Mr. Hare), 18/5/85. Mr. De Low.

[*Enclosures.*]

Extract from *Cumberland Register.* No. 1, folio 57.

No. 308; No. 1, folio 136; grantee's name, George Tilley; number of acres, 25; grant or lease, grant; District, Hunter's Hill; by whom granted, Francis Grose; when granted, 19th November, 1794; annual quit-rent, 1s.; when it commences, 19th November, 1799; name of farm, Tilley's Farm; witnesses' names, J. Foveaux, Thomas Rowley, Edward Laing; D. Collins, secretary. Description of grant:—Laying and situate in Lane Cove in the district of Hunter's Hill. Remarks, cancelled, and a new grant given at the Hawkesbury, Mr. William Marr, proprietor.

14th May, 1822.

Extract from *Cumberland Register.* No. 1, folio 41.

No. 335; No. 1, folio 140; grantee's name, William Wright; number of acres, 30; grant or lease, grant; district, Hunter's Hill; by whom granted, Francis Grose; when granted, 3rd December, 1794; annual quit-rent, 1s.; when it commences, 3rd December, 1799; name of farm, Wright's Farm; witnesses' names, J. Foveaux, Thomas Rowley, Edward Laing; D. Collins, secretary. Description of grant:—Laying and situate in Lane Cove, in the district of Hunter's Hill. Remarks:—Exchanged by William Wright with Obadiah Ikin for William Baker's farm, then sold on 3rd August, 1797, to John Holdsworth for £3, who sells it on the 26th May, 1804, to Thomas Randal; he parts with it on the 17th of October, 1805, to Edward Quinn, and it has now been surrendered by William Sherwin, in consideration of an 800-acre farm, promised him in the Parramatta district, and not yet registered.

Torn up by me, this 15th September, 1821.

F. GOULBURN.

Extract from *Cumberland Register.* No. 1, folio 41.

No. 337; No. 1, folio 141; grantee's name, Humphery Evans; number of acres, 25; grant or lease, grant; district, Hunter's Hill; by whom granted, Francis Grose; when granted, 3rd December, 1794; annual quit-rent, 1s.; when it commences, 3rd December, 1799; name of farm, Evans' Farm; witnesses' names, J. Foveaux, Thomas Rowley, Edward Laing; D. Collins, secretary. Description of grant:—Laying and situate in Lane Cove, in the district of Hunter's Hill. Remarks:—Cancelled, this grant being found in the secretary's office with a note thereon, "Demised to the Crown," August 15th, 1804.

D. D. MANN, Clerk.

No. 10.

Application by Mr. S. M'Burney.

Crown Lands Act of 1884—(Part IV, sections 89, 90, or 92.)—Application for special lease.

1, Little Surry-street, Darlinghurst, Sydney.

I HEREBY apply for a special lease for brickmaking and general purposes of a brick manufacture purposes of the land hereunder described, and for which I am willing to pay an annual rental of £10 per acre. Enclosed is a receipt, showing that the sum of £10 has been paid to the Colonial Treasurer as a deposit towards the cost of survey and report.

Dated at Sydney, this 17th day of March, 1885.

SAMUEL M'BURNEY.

To the Local Land Board, Sydney.

Description.

Land district of Sydney, county of Cumberland, parish of Willoughby, about 9 acres. Portion of Lamb's grant in the parish of Willoughby, county of Cumberland, and commencing at the south-west boundary of Magney and Company's brickyard; thence by a line southerly, being the most southern boundary of that grant; thence by a line easterly to two pegs; thence by a line 20 chains northerly; thence by a line westerly 5 chains 49 feet, finishing at that point.

The sum of £10 suspended this day on within account.—P. J. HOLDSWORTH. Revenue Branch, Treasury.—E.H., 17/3/85.

Mr. J. F. Loxton, licensed surveyor, for survey and report, in accordance with instruction No. 124 of 1st April, 1885 herewith. This case may involve determination of disputed bounderies of grants, and unless the boundaries appear clear, &c., the application had better be refused. Should there be any complications Mr. Loxton is to see me prior to final action. A lease for fifteen years seems to be out of the question, at the same time, if expensive brickmaking machinery is erected, as applicant stated verbally to me, some consideration appears desirable.—JOHN W. DEERING, District Surveyor. No. 124, of 1st April, 1885.

The above instruction was withdrawn, certain matters connected with Lamb's grant becoming known to the District Surveyor.—JOHN W. DEERING, 19th June, 1885.

We recommend that the lease applied for be not granted, and further express an opinion that questions of title, such as appear to be involved, should not be entertained, and could not be profitably discussed before us. There is no obligation on the part of the Crown to grant a lease, and since it appears, at least, open to argument whether the land applied for be Crown lands, it will be the wiser course to refuse to grant one.—T. WARRE HARRIOTT, Chairman; HENRY EAGAR. Local Land Board Office, Sydney, 30th June, 1885.

No. 11.

The Deputy Registrar-General to The Under Secretary for Lands.

Sir, Registrar-General's Department, Land Titles Office, Sydney, 12 May, 1885.

In attention to your letter of the 5th instant, I beg to forward herewith plan showing land applied for by Messrs. Wilson and Magney (applications 5,599, 5,600), parish Willoughby, and to state that a *caveat* has been lodged against the land mentioned as desired.

I have, &c.,
HY. NEWCOMBE,
Deputy Registrar-General.

No. 12.

Mr. Metropolitan and Coast District Surveyor Deering to The Chairman, Local Land Board, Sydney.

Special lease, Sydney, No. 85-15; S. M'Burney; 9 acres; parish of Willoughby, County of Cumberland; for the purpose of brickmaking; No. 366; 17th June, 1885.

THE land applied for is part of 25 acres granted to Henry Lamb on 19th November, 1794. The grant was subsequently cancelled. A claim to this and other lands has been set up by Mr. Thomas Broughton. The whole matter is under consideration in the Alienation Branch, Lands Department. (*Vide* papers, "Alienation 84-3,060" within "Alienation 85-1,132," with which this present case might be placed.)

As M'Burney's application involves a question of title, I am of opinion that it must be refused. There are no costs in this case.

JOHN W. DEERING,
Metropolitan District Surveyor

At a meeting of Local Land Board, Sydney, on 30th June, it was recommended that the application for lease be refused.—T.W.H. Forwarded for Ministerial approval.—E.L., 7/7/85. C.O. Approved.—J.S.F., 10/7/85. S. M'Burney, Treasuary, and Cumberland Ranger, 15th August, 1885.

No. 13.

Office Memorandum.

Evans', Tilley's, and Lamb's 25 acres, and Wright's 30 acres, parish of Willoughby, county of Cumberland; resumed Crown land.

1. The circumstances of the four cases particularly mentioned in these papers, are specially brought under notice as involving a most important point, and one which would seem to require definite settling. It is one of very great interest and importance to the Department, *i.e.*, to the Crown, and perhaps no less so to very many persons in its far spreading effects.

2. Connected somewhat with these cases there is, probably, a still larger question, and one which, though under review several times, would seem never to have been settled, but which involves interests of very great importance.

3. In 1794 grants were prepared as above, but from notations in the registers of the Deeds Branch of this Department, and on the record copy of the grants in the Registrar-General's office, it is a question whether the lands did not revert to the Crown shortly after the date of the grant. It is perhaps not too much to hold that at that time the forms used were thought to be effectual in revesting the land in the Crown, and that the lands were thereafrer looked upon as Crown lands.

4. Although only four cases are herein specifically mentioned, it may be stated there are on the deeds registers of this Department many similar cases. Until an authoritative decision be available on the point involved, it might not be advisable to enter upon their consideration.

5. (*a*) In the case of Tilley the endorsement on the record copy at the Registrar-General's office is "cancelled, and a new grant given at the Hawkesbury." A grant dated 10th May, 1798, did issue to Tilley for land on the Hawkesbury, at a place called Mulgrave Place.

(*b*) In the case of Evans the notation is, "Cancelled, this grant being found in the Secretary's Office, with a note thereon, 'Demised to the Crown August 15th, 1804.—D. D. MANN, Clerk.'"

(*c*) In the case of Wright the notation is more lengthy, thus—"Exchanged by William Wright, with Obadiah Ikin, for William Baker's farm, then sold on 3rd August, 1797, to John Holdsworth for £3; who sells it the 26th May, 1804, to Thomas Randal. He parts with it on the 17th October, 1805, to Edward Quinn, and it has now been surrendered by William Sherwin, in consideration of an 800-acre farm promised him in the Parramatta District and not yet registered. Torn up by me this 15th September, 1821.—F. GOULBURN."

A grant of 800 acres, being part of a consolidated grant of 1,165 acres, at Sherwood, near Parramatta, issued, and bears date 25th June, 1831.

(*d*) As regards Lamb's 25 acres, the notation on copy of grant at Registrar-General's Office and in books of Deeds Branch is, "Cancelled." It is also on record that another grant of 25 acres issued in favour of Lamb. The land is on the Hawkesbury at Mulgrave Place, adjoining Tilley's, and the grant is dated 10th April, 1798; each within a month. The presumption is that a similar set of circumstances surround each case, viz., that, as was common in those days, there was an exchange in both cases, the notation being abbreviated in the case of Lamb.

6. A feature of Lamb's 25 acres now under review is that a "Certificate of Title" (application 5,600) under the Real Property Act, as issued in favour of J. B. Magney, for 2 acres 1 rood 17 perches thereof. Last year when dealing with an application (5,599) by Wilson, for a certificate of title for another part of 2 acres 1 rood 33½ perches of the same 25 acres, and against the issue of which a *caveat* has been lodged, the

the whole circumstances were brought under the notice of the Registrar-General. Owing to the great importance of the whole question attention is drawn to Mr. Examiner Maddocks' minute of the 18th April, 1884, on Miscellaneous 84–5,337, "There is no proof whatever to show that Lamb's grant was legally cancelled. It is true the record copy of the grant in the Registrar-General's Department has written upon it, 'Cancelled,' but that will not in law enure as a cancellation of the grant. Therefore, under the circumstances, I am of opinion that the Certificate of Title before referred to (J. B. Magney's) should remain intact."

7. Applications have on two occasions recently been tendered to select in virtue of Volunteer Land Orders these four blocks, but have been declared void for the reason that the lands are within the population boundary of Sydney, the question whether these are Crown lands having thus been avoided. More recently still, an application has been made by Mr. J. B. Magney, for a special lease of part of Lamb's 25 acres. The application has been recommended for refusal. It may also be mentioned that Mr. Thomas Broughton lays claim to these four blocks, as a part of what is called "the Gore Hill Estate," and for which estate he has for several years been applying to this Department for a Consolidated Deed, but without success.

8. If the Crown has now any right or title to these lands, and those similarly circumstanced, it would perhaps be as well to enforce it, or to have an authoritative decision to the contrary, for the repeated application by persons who assume the title to the lands is in the Crown, cause a waste of valuable time to the Department and all with no definite result.

9. Somewhat allied to the points involved in the preceding cases is the larger question, whether "the right of the Crown to recover the possession of land is in general barred after a lapse of sixty years," as regards this Colony (Nullum Tempus Act, 9 George III, chapter 16). This question was under review in 1880, and a copy of Mr. Attorney-General Wisdom's opinion, dated 31st May, 1880, is enclosed, together with the principal part of the correspondence connected therewith. From this it will be seen that Mr. Wisdom attached great importance to the question, and suggested the desirability of obtaining at the earliest opportunity the opinion of the Court upon it, and, if necessary, of appealing to the Privy Council.

10. The minutes succeeding the opinion show that the suggestion was not further proceeded with, but that it was decided to introduce into Parliament a short Bill declaring that "The Nullum Tempus Act" was not applicable to, and did not extend to, or become in force in "New South Wales." The Bill was prepared (copy herewith—Nullum Tempus Act, Declaratory Act), but it does not appear to have been introduced into Parliament.

11. Should the ultimate course indicated by Mr. Wisdom, of an appeal to the Privy Council, result in a decision that the Nullum Tempus Act is in force here, an Act of Parliament passed now negativing its application in this Colony might not be retrospective in its application, to the very early days of the Colony.

12. Under these circumstances, and in view of the great importance of the question raised, and the interests involved, the desirability is submitted of referring to the Crown Law Officers with a view to definite action on the point,—

(*a*) Whether the lands referred to in the four cases specially mentioned herein, and in cases of a similar character, are Crown lands, and can be dealt with as such.

(*b*) Whether the Nullum Tempus Act is in force in this Colony, and in the event of the highest tribunal deciding it is,

(*c*) Whether its application to this Colony should not be negatived by an Act of Parliament as proposed in 1880.

R. H. D., 18th June, 1885.

The advice of the Crown Law Officers may be sought. There are a number of cases now pending which involve one or more of the questions, and the lands affected are of considerable value.—C.O., 22/6/85. Approved.—J.S.F., 29/6/85. The Crown Solicitor.—C.O., B.C., 1/7/85.

[*Enclosure.*]

44 Victoria 1880.

A Bill to declare that the statute 9 George III chapter 16 commonly known as the Nullum Tempus Act is not in force in New South Wales.

Preamble. WHEREAS by the twenty-fourth section of an Act of the Imperial Legislature passed in the ninth year of the reign of His Majesty King George the Fourth intituled "An Act to provide for the Administration of Justice in New South Wales and Van Diemen's Land and for the more effectual government thereof and for other purposes relating thereto" It was enacted that all laws and statutes in force within the Realm of England at the time of the passing of the said Act should (except as therein excepted) be applied in the Administration of Justice in the Courts of New South Wales and Van Diemen's Land respectively so far as the same could be applied within the said Colonies respectively and that as often as any doubt should arise as to the application of any such laws or statutes it should be lawful for the respective Legislatures of the said Colonies to declare whether such laws or statutes should be deemed to extend to such Colonies and to be in force within the same with power to establish such limitations and modifications of any such laws and statutes as might be deemed expedient in that behalf And whereas doubts have been and are still entertained whether the statute first hereinbefore cited and commonly known as the Nullum Tempus Act extends to and is in force in New South Wales and it is expedient that such doubts should be removed Be it therefore enacted by the Queen's Most Excellent Majesty by and with the advice and consent of the Legislative Council and Legislative Assembly of New South Wales in Parliament assembled and by the authority of the same as follows :—

The Nullum Tempus Act 9 George III c. 16 declared not to extend to New South Wales. 1. It is hereby declared and enacted that the statute passed in the ninth year of the reign of King George the Third intituled "An Act to amend and render more effectual an Act made in the twenty-first year of the reign of King James the First intituled 'An Act for the general quiet of the subjects against all pretences of concealment whatsoever'" was not applicable to and did not extend to or become in force in New South Wales by virtue of the provisions of the said twenty-fourth section of the Act 9 George the Fourth chapter eighty-three or otherwise.

Saving of rights, &c., determined or pending. 2. The declaration contained in the preceding section shall not affect any right or title whether of the Crown or a subject which shall have been determined by or shall be pending before any Court at any time before the passing of this Act.

Short title. 3. This Act may be cited as the "Nullum Tempus Act Declaratory Act."

No. 14.

The Under Secretary for Lands to The Under Secretary for Finance and Trade.

Occupation of Lands, Sydney, 15 August, 1885.

Sir,

I have the honor to inform you that Mr. S. M'Burney's application for a special lease of 9 acres, parish of Willoughby, county of Cumberland, for brickmaking, has been declined, and I have to request that the deposit paid thereon into Suspense Account on the 17th March, 1885, may be refunded to him on application.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 15.

The Under Secretary for Lands to The Crown Lands Ranger.

Occupation of Lands, Sydney, 15 August, 1885.

Sir,

I have to inform you that Mr. S. M'Burney's application for a special lease of 9 acres of land for brickmaking at parish of Willoughby, county of Cumberland, has been declined.

I have to request that, on your next visit to the locality, you will ascertain whether there is any illegal occupation of Crown land; and, if so, to report the circumstances in order that the case may be dealt with by the Minister.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 16.

The Under Secretary for Lands to Mr. S. M'Burney.

Occupation of Lands, Sydney, 15 August, 1885.

Sir,

I have the honor to inform you, by direction of the Minister for Lands, that your application for a special lease of 9 acres of land for brickmaking, at parish of Willoughby, county of Cumberland, has been declined.

Your deposit will be refunded on application at the Treasury.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 17.

The Crown Solicitor to The Under Secretary for Lands.

Subject :—Resumed Crown Lands (Evans' Tilley's, and Lamb's 25 acres, and Wright's 30 acres), Willoughby.

Crown Solicitor's Office, Sydney, 18 August, 1885.

Sir,

I have the honor to return herewith the papers relating to the above matter, which were forwarded to me from your department on the 1st day of July, 1885, and to state that I have submitted them to Mr. Attorney-General Dalley, a copy of whose advising thereon will be found upon the other side of this letter.

I have, &c.,
JOHN WILLIAMS,
Crown Solicitor.

Copy of Opinion. 12th August, 1885.

Re resumed Crown Lands (Evans' Tilley's, and Lamb's 25 acres, and Wright's 30 acres) Willoughby.

THIS seems to me to be a case which can only be properly provided for by legislation, which should be undertaken whenever it is found convenient by the Government to submit a measure.

W. B. D., Attorney-General.

Submitted, in view of the interests involved and the importance of the subject.—R.H.D., 25/8/85. This paper was held over with a view to Mr. Farnell conferring with the Attorney-General, but I do not think he had an opportunity of doing so, and it is now submitted for instructions.—C.O., 16/11/85. I think the quickest way to get over the difficulties in these cases would be to resume the land for some public purpose. The notification of that resumption vests it at once in the Crown.—J. P. ABBOTT, 21/11/85.

The papers in this case were unfortunately mislaid, hence the delay in taking action upon the above decision. The Cumberland Ranger informs me that timber is being removed from the land by men acting under the direction of Mr. Thomas Broughton. If they are summoned to the Police Court a question of title will be raised, and the Court will then have no jurisdiction.—C.O., 19/6/86.

Mr. Abbott's decision may be given effect to, and as it is necessary to specify a purpose for which the land is to be taken, it may be resumed for quarries and works for procuring stone, gravel, and earth.—H.C., 21/6/86.

Urgent.—Mr. District-Surveyor Deering for description, please, attention being invited to part of 85-1,486, and to part of Lamb's grant, No. 1,796.—R.H.D., 30/6/86. The necessary descriptions are with my report of this date to the Under Secretary for Lands.—JOHN W. DEERING, Metropolitan District Surveyor, 14th July, 1886.

No. 18.

The Cumberland Ranger to The Under Secretary for Lands.

Sir,

Petersham, 12 September, 1885.

Referring to your letter of the 15th August last, informing me that Mr. Samuel M'Burney's application for a special lease of 9 acres for brickmaking, at parish of Willoughby, has been declined, and requesting me to report whether there is any illegal occupation of Crown lands, I have the honor to report having visited the locality a few days since, and found that the parties named in the margin are now in illegal occupation of a portion of the land applied for by Mr. M'Burney for brickmaking. They are residing upon the land without authority from the Crown, said land being portion of Lamb's 25 acres.

John Grady, Charles Stead, William Welch.

I may add that a Mr. Magney is now in occupation of about 5 acres more or less of the same grant (Lamb's 25 acres). The land is enclosed, and being used by Mr. Magney for brickmaking. Awaiting instructions,

Lamb's 25 acres, parish Willoughby, county Cumberland.

I have, &c.,

JAMES M'KEOWN,

Cumberland Ranger.

The trespassers may be warned that if not removed within fourteen days, proceedings will be taken against them.—E.L., 24/9/85. Yes.—C.O., 24/9/85. J. Grady, C. Stead, and W. Welch, through Cumberland Ranger, 29/9/85.

No. 19.

The Under Secretary for Lands to The Cumberland Ranger.

Sir,

Department of Lands, Sydney, 29 September, 1885.

Referring to your report of the 12th instant, I have the honor to request you to deliver the enclosed letters to the trespassers noted in the margin, warning them that if the trespasses be not abated within a fortnight from this date, proceedings would be taken against them.

Be so good as to report further at end of that time.

Trespassers on Crown land at parish Willoughby, county Cumberland, Messrs. John Grady, Chas. Stead, and Wm. Welch.

I have, &c.,

CHARLES OLIVER,

Under Secretary.

[*Enclosures.*]

Illegal occupation of Crown lands, parish Willoughby, county Cumberland.

Sir,

Department of Lands, Sydney, 29 September, 1885.

It having been reported that you are in illegal occupation of Crown lands at parish of Willoughby, county of Cumberland, I have the honor to inform you that if the trespass be not abated within fourteen days from this date, proceedings will be taken against you.

I have, &c.,

Mr. John Grady.

CHARLES OLIVER,

Under Secretary.

Illegal occupation of Crown lands, parish of Willoughby, county Cumberland.

Sir,

Department of Lands, Sydney, 29 September, 1885.

It having been reported that you are in illegal occupation of Crown lands at parish of Willoughby, county of Cumberland, I have to warn you that if the trespass be not abated within fourteen days from this date, proceedings will be taken against you.

I have, &c.,

Mr. Chas. Stead.

CHARLES OLIVER,

Under Secretary.

Illegal Occupation of Crown Lands, Parish of Willoughby, County of Cumberland.

Sir,

Department of Lands, Sydney, 29 September, 1885.

It having been reported that you are in illegal occupation of Crown lands at parish of Willoughby, county of Cumberland, I have to warn you that if the trespass be not abated by you within fourteen days from this date proceedings will be taken against you.

I have, &c.,

Mr. W. Welch.

CHARLES OLIVER,

Under Secretary.

No. 20.

Messrs. Way and Way to The Under Secretary for Lands.

Sir,

69, Castlereagh-street, Sydney, 3 November, 1885.

We have the honor, acting under instructions from Mr. Thomas Broughton, to reply to your letter to Mr. John Grady, of the 29th September last, and to inform you that Mr. Grady is his tenant, and that he is prepared to defend his title to the property in question.

We may mention that a portion of the grant occupied by Mr. Grady was sold some time ago by Mr. Broughton to a Mr. Magney, who has since obtained a title under the Real Property Act to the land which he purchased, and that, therefore, it is hardly possible that the residue of the grant can be treated as Crown lands.

We have, &c.,

WAY AND WAY.

It appears from the District Surveyor's report that a question of title is involved in the land referred to, and that matter is being dealt with in the Alienation Branch. These papers may be forwarded to that branch in connection with those papers.—E.L., 5/11/85.

No. 21.

No. 21.

Mr. S. M'Burney to The Secretary for Lands.

Sir, 1, Little Surry-street, Sydney, 26 November, 1885.

I have the honor to inform you that I have made a fresh application for a special lease for brickmaking purposes of a portion of Lamb's grant, situate in the parish of North Willoughby.

I desire to bring under your notice that a pressing need exists, for Government work, for such a brick as can be made from the material of the above-mentioned area. The public sewers now being constructed are retarded for the want of such a brick, and viewing the further development of the sewerage scheme the urgency of granting this lease is apparent, and becomes a public necessity.

Mr. Bennett, the Engineer for Roads and Bridges, also of the sewerage scheme, speaks highly of a sample brick submitted by Mr. Magney, whose brick manufactory abuts the land applied for.

Should you feel warranted in granting a lease for the aforementioned purpose, of the land herein mentioned, I should be glad of its issuing in the name of John B. Magney & Co., Oswin Brickworks, North Shore.

I desire to mention that firm is willing to enter into a bond for the due fulfilment of a contract to supply sewer bricks for the Government sewer now in course of construction.

I have, &c.,
SAMUEL M'BURNEY.

May be referred to the Local Land Board in connection with application for special lease stated to have been made.—E.L., 1/12/85. Mr. Chairman Harriott.—C.O., B.C., 4/12/85.

No. 22.

Application by Mr. S. M'Burney.

Crown Lands Act of 1884—(Part IV, Sections 89, 90, or 92.)

Application for Special Lease.

I HEREBY apply for a special lease, for brickmaking and general purposes of a brick manufacture purposes, of the land hereunder described, and for which I am willing to pay an annual rental of ten pounds. Enclosed is a receipt showing that the sum of £10 has been paid to the Colonial Treasurer as a deposit towards cost of survey and report.

SAMUEL M'BURNEY,
1, Little Surry-street, Darlinghurst,
Sydney.

Dated at Sydney, this 26th day of November, 1885.

To the Local Land Board, at Sydney.

Description.

Land District of Sydney, county of Cumberland, parish of Willoughby, about 9 acres. Portion of Lamb's grant in the parish of Willoughby, county of Cumberland, commencing at the south-west boundary of Magney & Company's brickyards; thence by a line southerly, being the most southern boundary of that grant; thence by a line easterly to two pegs; thence by a line 20 chains northerly; thence by a line westerly 5 chains 49 feet, finishing at that point.

The sum of £10, received and placed to suspense on the within account this day.—P. J. HOLDSWORTH. The Treasury.—W.H.B., 26/11/85. Forwarded to the Metropolitan District Surveyor for report.—W.A.M., Land Board Office, 27/11/85. Report to Chairman No. 30 of this date.—JOHN W. DEERING, 7/1/85.

We recommend that this application be refused as the title of the Crown to the land is not made clear, as was reported by us upon a former application by the same person for the same land. We would call attention to the fact that so long as no costs are charged against the applicants, such applications are not unlikely to be renewed.—T. WARRE HARRIOTT, Chairman; F. A. FRANKLIN, HENRY EAGAR, Local Land Board, Sydney, 12/1/86.

Submitted for the consideration of the Minister that application be refused.—E.L., 18/1/86. What costs have been incurred?—C.O., 19/1/86. No costs. Perhaps some amount should be charged to prevent these repeated renewals of applications.—E.L., 20/1/86. There are the costs of investigation, inquiry by Board, &c., £5 5s., may be deducted from deposit, and the application rejected as recommended.—C.O., 22/1/86. Approved.—G.S., 23/1/86. S. M'Burney, Treasury, Local Land Board, and Cumberland Ranger informed.—30/1/86.

No. 23.

The Metropolitan and Coast District Surveyor to The Chairman, Local Land Board, Sydney.

S. M'Burney (for J. B. Magney & Company) 9 acres for brickmaking, parish of Willoughby, county of Cumberland.

Section 90, Crown Lands Act of 1884.—No. 30, 7th January, 1886.

Special lease 85-86.

1. My report of 17th June, 1885 (now herewith), on S. M'Burney's previous application to lease this part of the land known as Lamb's grant, applies with equal force to the present application, which, I am of opinion, must also be refused.

2. The question of title involved is still under consideration, not having yet been finally settled.

3. There are no costs in this case.

JOHN W. DEERING,
Metropolitan District Surveyor.

No. 24.

No. 24.

The Under Secretary for Lands to The Chairman, Local Land Board, Sydney.

Sir, Department of Lands, Sydney, 30 January, 1886.

I have the honor to inform you that Mr. S. M'Burney's application for a special lease of 9 acres of land, parish of Willoughby, county of Cumberland, for brickmaking, has been declined.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 25.

The Under Secretary for Lands to The Under Secretary for Finance and Trade.

Sir, Department of Lands, Sydney, 30 January, 1886.

I have the honor to inform you that Mr. S. M'Burney's application for a special lease at parish of Willoughby, county of Cumberland, for 9 acres of land for brickmaking, has been declined, and I have to request that the deposit paid thereon into the Suspense Account, on the 26th November, 1885, may be refunded to him on application.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 26.

The Under Secretary for Lands to The Cumberland Ranger.

Sir, Department of Lands, Sydney, 30 January, 1886.

I have the honor to inform you that Mr. S. M'Burney's application for a special lease of 9 acres of land, parish of Willoughby, county of Cumberland, for brickmaking has been declined.

I have to request that, on your next visit to the locality, you will ascertain whether there is any illegal occupation of Crown lands; and, if so, to report the circumstances, in order that the case may be dealt with by the Minister.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 27.

The Under Secretary for Lands to Mr. S. M'Burney, Darlinghurst.

Sir, Department of Lands, Sydney, 30 January, 1886.

I have the honor to inform you, by direction of the Minister for Lands, that your application for a special lease of 9 acres of land, parish of Willoughby, county of Cumberland, has been declined.

Your deposit will be refunded on application at the Treasury, less £5 5s., cost of payment towards expenses incurred.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 28.

Mr. J. B. Magney to The Under Secretary for Lands.

Sir, 161, William-street, Sydney, 6 February, 1886.

It has come to my knowledge that S. M'Burney's application to lease from the Government for brickmaking purposes a portion of Lamb's grant, in the parish of North Willoughby, is about to be refused on the grounds that there are doubts of the Crown's position in *re* the title.

Being interested in the above-mentioned application, I trust I am in order in supplying information which I trust will be the means of dissipating any misgivings that the Government may have on that point.

On a very old map in the Surveyor-General's Office there appears a pencilled memorandum on the face of a charted portion of land (the grantee being Henry Lamb) purporting that land was given at the Hawkesbury in lieu. Henry Lamb obtained a cancelled grant in 1794; the land in lieu was given in 1798. Please observe that this latter was given ten years after the Colony was founded. By a registration of a birth in that district of Rebecca Lamb, daughter of Henry Lamb and Elizabeth Chambers, in 1798, being then 12 months old, or thereabouts (*vide* record in Registrar-General's Department), we have pretty conclusive evidence of Henry Lamb's identity. From this fact we derive the knowledge that three years after receiving the grant in North Willoughby he is residing in the district of the Hawkesbury—the place indicated in the "pencilled memorandum" on the face of charted grant previously referred to. We find him still living in that same district in June of 1805. A report appears in the *Sydney Gazette*, of 2nd June, 1805, "That the natives assembled at Lamb's farm at Portland Head on 31st May, 1805, and set fire to his house." In an earlier edition of the *Sydney Gazette* there is a report of Henry Lamb's evidence given against some captured prisoners who broke away from the prison depôt at Castle Hill, he (H.L.) being then a resident of the Hawkesbury district.

Should the above-mentioned facts dispel the doubts of H.L. of North Willoughby and the Hawkesbury not being identical, there may arise another doubt which would cause the Government some anxiety; but after my explanation and search being made to confirm what I advance, I think that anxiety will cease. The Government might anticipate a claim from H.L.'s heir-at-law, and in the absence of a surrender from H.L. of the grant, and would consequently avoid disputing that fact. I said previously in this letter that H.L. had a daughter by E. Chambers, but that issue was out of wedlock, as appears by a marriage of H.L. to E. Chambers in 1811, which was subsequent to the birth,—the birth being in 1797. For the copy of marriage certificate, *vide* record in Registrar-General's Department. She was the only child by that marriage, as a reference to the Registrar-General's Office will prove. By her illegitimacy her issue are barred from claiming. Further search will prove that was H.L.'s only marriage.

From

From the foregoing I think a very strong inference can be made that H.L., of North Willoughby, and H.L. of the Hawkesbury, are identical, more especially when it is considered that in those days so few people were here, and the improbability among so few that two Henry Lambs were here.

I shall be gratified to learn that my efforts to afford the Government information in this instance will be marked by the lease being conceded.

I have, &c.,
JOHN B. MAGNEY.

Special papers.—C.O., 8/2/86. Send to Mr. De Lowe, who will please see me.—C.O., 27/2/86.

No. 29.

The Cumberland Ranger to The Under Secretary for Lands.

Sir, Petersham, 15 April, 1886.

Referring to your circular letter of the 30th January last *re* Mr. Samuel M'Burney's application for a special lease for 2 acres, for brickmaking, at the parish of Willoughby, has been declined, I have the honor to report that while visiting the locality to-day, I found that the parties named in the margin are now occupying the land applied for by Mr. M'Burney; they are residing in tents, and working at Mr. Magney's brick-works, which also appear to be within Lamb's 25 acres.

Lamb's 25 acres. Occupied by Alexander Forbes and John Grady. Parish of Willoughby, county Cumberland.

I may add that the parties now in occupation of the land informed me that "James Bagreve" claims the land in question (Lamb's 25 acres), on behalf of Mr. Thomas Broughton; that they are paying him 6d. a week rent for the use of the land covered by the tents they are now residing in.

Awaiting further instructions,

I have, &c.,
JAMES M'KEOWN,
Cumberland Ranger.

Submitted for instructions.—V.C., 21/4/86. The Crown Lands Ranger is to proceed against the persons in occupation for trespass.—H.C., 6/5/86. Cumberland Ranger, 17/5/86.

No. 30.

Mr. J. Matthews to The Under Secretary for Lands.

Sir, North Willoughby, 14 May, 1886.

On behalf of Mr. John Boyle (I being his relative and deviser), I beg to bring the following under your notice. The matter has reference to a piece of land situated on the North Shore, called "Humphries Evans' Grant." On the 5th May, 1885, the Minister wrote to the Registrar-General, which was intended as a *caveat* against a piece of land called "Lamb's Farm" being brought under the provisions of the Real Property Act. The reason stated was, that it was a cancelled grant, and said letter also stated that it was thought the same set of circumstances applied to H. Evans' grant. We are only interested in the latter, and I beg respectfully to demur to the letter of the 5th May, 1885, that said land is a cancelled grant. We say that said land formed part of Gore-Artarmon's Estate, and was on the 26th May, 1855, transferred by Gore to John Boyle. In support of this I beg to submit for your consideration the following, which are only a few of the many documents in your office bearing on the matter:—1. Memorial by the Gores to the Government in the year 1854, and reply thereto with plan. 2. Surveyor-General M'Lean's report, compiled specially by him at the instance of the Government, to see what was really Gore's land in the year 1860. We also respectfully submit that, about the year 1856, the Government had this land measured with a view to sale, when Mr. Boyle brought the whole circumstances personally under the notice of the then Commissioner for Lands, Mr. Pearce, who recently died at Randwick, and that Mr. Pearce there and then had the land withdrawn from sale, and handed over to Boyle. I trust memoranda will be found in the office to this effect. We have had to contend against a great deal from others, in reference to lands purchased from Gore, but never anticipated any objection on behalf of the Government so late as the year 1885.

I will be glad, Sir, to meet you by appointment, and explain more fully in regard to the land in question.

I beg, &c.,
JOHN MATTHEWS.

Submitted.—E.M., 18/5/86. Reference to Mr. De Low, who is well posted in this matter.—C.O., 10/6/86.

From the papers in the Department the land belongs to the Crown. It will be seen that the title set up herein only goes back to 1855, but from what Crown grant is not stated. Several parties have claimed, one against the other, the land as part of the Gore Estate (Mr. Thomas Broughton being one), but as there is evidence, which at the time was deemed sufficient for the purpose, that the grant was cancelled, and therefore the land reverted to the Crown. There seems nothing to my mind to substantiate the claim set up, as possession by time against the Crown has not been decided to hold in this Colony.—R.H.D., 16/6/86.

There has, I think, been a recent decision given that this land, with others in a similar position, is to be resumed. The matter should receive special attention.—C.O., 26/6/86. Mr. De Low. Yes. *Vide* Alienation, 85-1,953.

No. 31.

The Under Secretary for Lands to The Cumberland Ranger.

Sir, Department of Lands, Sydney, 17 May, 1886.

Referring to your report of the 15th ultimo, respecting illegal occupation of Crown lands at parish of Willoughby, by John Grady and Alexander Forbes, I am directed by the Minister for Lands to request you to take the necessary proceedings under the 131st and 133rd sections of the Crown Lands Act of 1884, to compel abatement of the trespass and to recover penalty.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

No. 32.

No. 32.

The Crown Solicitor to The Under Secretary for Lands.

Sir, Crown Solicitor's Office, 12 June, 1886.

I do myself the honor to return herewith the papers forwarded to me under B.C., 2nd February, 1880, with reference to the question whether sixty years' undisturbed possession bars the Crown's rights of resumption, and to inform you that I have submitted them to Mr. Attorney-General Wisdom a copy of whose advising thereon is sent herewith.

I have, &c.,
JOHN WILLIAMS,
Crown Solicitor.

[*Enclosure.*]

OPINION.

Subject.—The applicability to this Colony of the Statute of Limitations, 9 George III, chapter 16.

BY the Nullum Tempus Act (9 George III, chapter 16), the right of the Crown to recover possession of land is in general barred after a lapse of sixty years. The Statute 9, George IV, chapter 83, section 24, enacts that all laws and statutes within the Realm of England at the time of the passing of that Act (not being inconsistent with any charter, or letters patent, or Orders in Council which might be issued in pursuance thereof) should be applied in the Courts of New South Wales and Van Diemen's Land so far as the same could be applied within the said Colonies. The question then is, can the Statute 9, George III, chapter 16, be applied to the circumstances of this Colony? This point has never been decided, but some light may be thrown upon it by a reference to certain judgments of our Supreme Court, in which the applicability of another English statute has been under consideration. In Hatfield *v.* Alford (*Sydney Morning Herald*, 27th October, 1846), the then Chief Justice, Sir Alfred Stephen, was strongly inclined to think that the 21 Jac. 1, c. 14 ("An Act to admit the subject to plead the general issue in information of intrusion brought on behalf of the King's Majesty, and retain possession until the trial") was not in force in this Colony, while Mr. Justice Dickinson and Mr. Justice Therry guarded against its being supposed that their judgment determined that the Act was in force. The point as to the applicability of this statute again are in Doe. Dan. Wilson *v.* Therry. [2 *S. C. R., Appendix* 1.]

For the plaintiff it was contended "that the Act did not extend to New South Wales, to the circumstances of which it was wholly inapplicable. By the ordinary rules of law it clearly would not extend here, and the enactment in the 9 George IV, chapter 83, section 24, notwithstanding the term 'applied' there used, could not reasonably be construed as introducing any and every statute physically susceptible of application without regard to its unfitness and inapplicability or utter unsuitableness to our condition and circumstances." The Court was strongly inclined to the opinion that, for reasons resting on the peculiar circumstances of a recently occupied territory, the statute was not in force here. Sir Alfred Stephen, who delivered the judgment of the Court, made use of the following among other observations:—"The circumstances of newly-discovered and unpeopled territories claimed by and vested in the Crown on behalf of all its subjects are so widely different from those of a populated and long-settled country, in which the lands never practically belong to the Crown, and with the exception of a few tracts and scattered properties often acquired by the Sovereign originally by purchase have for centuries been owned and cultivated by its subjects, that a moment's reflection would present them to the mind of even a stranger. The lands of this Colony lie necessarily unoccupied and waste until granted by the Crown to individuals willing to reclaim them from a state of nature. The Crown derives no 'profits' from them, and could in the literal sense no more possess them than it could the animals which roam unmolested over the vast area which they embrace. In such a territory it will unavoidably happen that many spots of ground may be occupied for a series of years without the knowledge of the Crown or its officers, or if by their knowledge, without the means (or frequently the wish) to disturb the parties." It seems to me that these observations bear with great force on the question now under consideration, and that many of them are quite as applicable to the statute of George as they are to that of James.

Finally, in Attorney-General *v.* Robinson (3, S. C. R., 23), the Court, consisting of Stephen (Chief Justice), Milford and Wise (J.J.), by a majority, held that the statute 21 Jac. 1, c. 14, is not in force in this Colony. Mr. Justice Milford, who dissented, was of opinion that both Jac. 1, c. 14, and 9 George III, chapter 16, were in force here.

On the whole, then, it is, I think, somewhat doubtful whether the right of the Crown in this Colony is barred after a lapse of sixty years. The Nullum Tempus Act seems to me to be in many respects unsuitable to our condition and circumstances, and its enforcement in such a vast territory as this might be productive of great public inconvenience and injury. However, whether any particular statute is or is not in force within the Colony is a question to be determined by the proper tribunals—first in the Colony, and afterwards, if necessary, on appeal to the Queen in Council. In view of the great importance of this subject, as affecting the public interests, it is highly desirable that the opinion of the Court should be obtained upon it at the earliest opportunity, and in the meantime steps should be taken to assert the rights of the Crown to any lands which may be in the unauthorized occupation of private persons before such rights have become jeopardized by the operation of 9 George III, chapter 16, should that statute be held to be in force here.

ROBERT WISDOM,
Attorney-General, 31/5/80.

From the opinion of the Attorney-General it appears to be somewhat doubtful whether the English Act quoted by him, which bars the rights of the Crown after a lapse of sixty years, is applicable to this Colony. At the same time Mr. Wisdom suggests that, in view of the great importance of the matter, as affecting the public interests, the earliest opportunity should be taken to submit a case for the decision of the Supreme Court of this Colony, appealing afterwards, if necessary, to the Privy Council. He also advises that in the meantime steps should be taken to assert the rights of the Crown before they have become jeopardized by the operation of the Act (9 George III, chapter 16), should it be held to be in force in this Colony. In submitting this matter to the Minister, I venture to offer a suggestion for his consideration, that a great deal of trouble and expense might be saved if a short Bill were to be passed, simply declaring that the Act referred to should not be held to affect the rights of the Crown in New South Wales.—W.W.S., 27/7/80.

I concur with the suggestions offered by the Under Secretary; but it appears to me that the Attorney-General would be the Minister best fitted to introduce such a Bill in Parliament. Mr. Stephen should consult the Crown Solicitor on the subject.—J.H., 29/7/80.

Before returning the papers to the Crown Solicitor, they are forwarded to the Surveyor-General for his information, in reference more especially to the last part of the Attorney-General's opinion in case any action is deemed necessary by the Survey Department for carrying out the recommendations herein contained.—W.W.S., 6/8/80.

The original papers have now been returned to the Under Secretary for Lands as requested.—H. FINCH, 5/11/80.

NOTE.—The above resulted in a decision to prepare a Bill that the Nullum Tempus Act did not apply to New South Wales. The Bill was prepared at the end of , but was never introduced into Parliament.—R.H.D., —/7/85.

No. 33.

The Cumberland Ranger to The Under Secretary for Lands.

Sir, Petersham, 29 June, 1886.

Trespass by John Grady and Alexander Forbes—Lamb's 25 acres, parish of Willoughby, county Cumberland.

Referring to your letter, Occupation 86–1,391, of the 17th of May last, I have the honor to inform you that I visited the locality to-day, and beg to state that the parties named in the margin have now vacated, and given up possession of the land known as Lamb's 25 acres at North Willoughby.

I have, &c.,
JAMES M'KEOWN,
Cumberland Ranger.

No. 34.

The Metropolitan and Coast District Surveyor to The Under Secretary for Lands.

Forwarding description for resumption of Evans' 25 acres, Tilley's 25 acres, Lamb's 25 acres, and Wright's 25 acres, parish of Willoughby, county of Cumberland.—No. 1,796, 14th July, 1886.

District Survey Office, Department of Lands, Sydney.

DESCRIPTIONS are enclosed for the resumption of the portions of land in the parish of Willoughby, county of Cumberland, known as Evans', Tilley's, Wright's, and Lamb's grants of 25 acres each, in accordance with Ministerial approval on Alienation, 85–1,953, herewith.

The area of Wright's grant is given in the enclosed papers as 30 acres, but the land referred to is evidently that applied for by J. B. Magney, under the void Volunteer Land Order, application No. 81–51 enclosed, and which is shown on the office maps and on the original plan as 25 acres, though containing by dimensions stated, at least 30 acres, exclusive of road.

Four descriptions herewith

JOHN W. DEERING.
Metropolitan District Surveyor.

Urgent. Mr. De Low, Miscellaneous Branch.—E.M., 20/7/86.

The papers may now be forwarded to the Department of Works, for the purpose of resumption, under the Act 44 Victoria No. 16, Lands for Public Purposes Acquisition Act, in terms of Minister's minute, 21/6/86, on 1,953, with a desire that the resumption be at once made.—R.H.D., 22/7/86, C.O., 22/7/86.

Approved.—H.C., 23/7/86. The Crown Solicitor for inspection.—J.R., B.C., 3/8/86. Received, 4th.—C.O.P.

[*Enclosures.*]

Land known as Evans' 25 acres.

COUNTY of Cumberland, parish of Willoughby, area 25 acres: Commencing at the north-west corner of Peter Dargan's 25 acres; and bounded thence on the west by a line north to the south-eastern side of a road 1 chain wide along the south-eastern boundary of R. Adams' 5 acres; thence on the north by that side of that road north-easterly, and the south-western side of a road 1 chain wide along the south-western boundary of J. C. Tucker's 5 acres 1 rood 30 perches, south-easterly to the western side of a road along the west boundaries of D. M'Pherson's 6 acres, and John Buchanan's 5 acres 2 roods 10 perches; thence on the east by that side of that road south to the north-east corner of Peter Dargan's 25 acres aforesaid; and thence on the south by the north boundary of that land west, to the point of commencement.

Exclusive of a road 1 chain wide, passing through the portion in a south-easterly direction.

Land known as William Wright's 25 acres.

COUNTY of Cumberland, parish of Willoughby, area 30 acres: Commencing on the south-west boundary of H. Hacking's 30 acres, at the northernmost corner of George Woodcock's 12 acres 3 roods 36 perches; and bounded thence on the north-east by a line forming parts of the south-west boundaries of H. Hacking's 30 acres, and Obadiah Ikin's 30 acres, north-westerly about 14 chains to the south-east boundary of Isaac Nicholl's 380 acres; thence on the north-west by that boundary, south-westerly about 23 chains to the north-eastern side of a road along the north-eastern boundary of Edward Salamon's 21 acres 34 perches; thence on the south-west by that side of that road south-easterly, about 14 chains to the intersection of the south-westerly prolongation of the north-west boundary of George Woodcock's 12 acres 3 roods 36 perches aforesaid; and thence on the south-east by a line partly forming that north-west boundary, north-easterly about 23 chains, to the point of commencement.

Land known as Lamb's 25 acres.

COUNTY of Cumberland, parish of Willoughby, area 25 acres: Commencing on the north-eastern boundary of T. Baker's 25 acres, at a point bearing north 41 degrees, west 5 chains from the easternmost corner of that portion; and bounded thence on the south-east by the north-western side of a road 1 chain wide, bearing north 49 degrees, east 10 chains; thence on the north-east by a line bearing north 41 degrees, west 25 chains; thence on the north-west by a line bearing south 49 degrees, west 10 chains to the north-east boundary of J. Taylor's 25 acres; and thence on the south-west by part of the north-east boundary of that land, and part of the north-east boundary of T. Baker's 25 acres aforesaid, being a line bearing south 41 degrees, east 25 chains to the point of commencement.

Land known as Tilley's 25 acres.

COUNTY of Cumberland, parish of Willoughby, area 25 acres: Commencing at the northernmost corner of Daniel Curry's 25 acres; and bounded thence on the south-east by the north-western boundary of that land south-westerly to the easternmost corner of John Sawyer's 25 acres; thence on the south-west by the north-eastern boundary of that land north-westerly to the southernmost corner of George Whitfield's 25 acres; thence on the north-west by the south-eastern boundary of that land, north-easterly to the southernmost corner of John Robert's 25 acres; and thence on the north-east by a line south-easterly, to the point of commencement.

No. 35.

Mr. J. J. Matthews to The Secretary for Lands.

Dear Sir, North Willoughby, 24 July, 1886.

In the matter of the piece of land situated at North Shore, known as "Humphery Evans'" grant, I would beg respectfully to point out to you that this matter has been before the Department for some months past, in the hope of an amicable settlement as far as we are concerned, so I urgently trust your early decision in the case. We claim the property. The Government say it is a cancelled grant. The property

property cannot possibly have two owners. The question then arises, to whom does the property belong. We had sold the property subject to a Torrens' title, but it was then found that the Government had lodged a *caveat* with the Registrar-General against it passing under the Act, so that unless this *caveat* is withdrawn, we have no alternative but to go to the Supreme Court, and we certainly do not want to go there, if it can be possibly avoided.

There are some people who have been regarding the lands, known as the Gore Estate, as a sort of no man's land. Some there are who would free select them by Volunteer Land Orders, but, in my humble opinion, the boundaries of what was once Gore's land are as well fixed as any boundaries in the Colony, from the fact that these lands were the subject of large litigation so far back as the year 1852, and in proof of this (should you favour me with an interview) I will show you a very comprehensive judgment by Chief Justice Stephen in our favour in the year 1853. There is also a more recent judgment in the case—the Attorney-General *versus* Boyle and another, made in the year 1870. This has reference to one of these cancelled grants (so-called). In this case the Supreme Court decided in our favour, so should we be obliged to go again to the Court, it will be only covering the same ground already twice gone over. In *re* the word "cancelled," that has been the cause of such grave doubts in the official mind, that word has reference to a date altogether anterior to the date of the title, or, in other words, before the lands became Gore's land, and because it was in the year 1819 that the legal estate passed into the Gore family. Another cause for doubt and confusion is the fact that the whole of Gore's instruments of title were surrendered to the Government of the day, in good faith, in order to have these old grants consolidated, but through some accident or other this was never carried out; but that fact does not, I presume, at all alter in any way Gore's original fixed boundaries. I am aware all this is very difficult for a Minister to deal with, I should say that it was more within the province of an Examiner of Titles. So I sincerely trust that you will allow the Land Titles Office to deal with our case. Trusting the favour of an interview when I call.

I beg, &c.,
JOHN J. MATTHEWS.

No. 36.

The Crown Solicitor to The Under Secretary for Lands.

Sir, Crown Solicitor's Office, Sydney, 5 August, 1886

I have the honor to return herewith the papers sent to me under B.C. of the 3rd instant with draft proclamation for resumption of four parcels of land in the parish of Willoughby, and to state that I do not think the minute "H.C., 21/6/86," gives sufficient information to warrant proclamation. The "Lands for Public Purposes Acquisition Act" only authorizes the resumption of land for quarries or works for procuring stone, gravel, earth, and other material when required, "for the construction of, or any of the purposes connected with, a public work or undertaking," mentioned in the preceeding part of the section, and there does not appear to be anything with the papers to show for what public work these quarries are required.

I have, &c.,
JOHN WILLIAMS,
Crown Solicitor.

Forward to the Honorable the Secretary for Lands.—J.R., B.C., 10/8/86. Under Secretary for Lands. Submit the Crown Solicitor's letter of 5th instant to the Under Secretary.—R.H.D., 31/8/86. Mr. Marr.

[*Enclosure.*]

Notification of resumption of land under 44 Victoria No. 16.

New South Wales, } to wit. }

By His Excellency the Right Honorable Charles Robert Baron Carrington, a Member of Her Majesty's Most Honorable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

Governor.

WHEREAS the parcels of land hereinafter described are required for quarries and works for procuring stone, gravel, and earth.

Now, therefore, I, the Governor aforesaid, with the advice of the Executive Council, in pursuance of the power and authority given to or vested in me by the "Lands for Public Purposes Acquisition Act," by this notification published in the *Gazette* and a newspaper circulated in the Police District wherein the said land is situated, that is to say, in the *Sydney Morning Herald* newspaper, declare that the parcels of land hereinafter particularly described have been resumed for the public purposes hereinbefore mentioned, to the intent that upon the publication of this notification in the *Government Gazette* the said land shall forthwith become and be vested in the Minister for Public Works for the said Colony and his successor, on behalf of Her Majesty, for the purposes of the said Act, for an estate of inheritance in fee simple in possession, freed and discharged from all trusts, obligations, estate, interests, contracts, charges, rights-of-way, or other easements whatsoever; and that the legal estate therein, together with all powers incident thereto or conferred by the said Act, shall be vested in the Minister for Public Works as a trustee with the powers in the said Act provided. And I declare that the following are the parcels of land hereinbefore referred to as resumed by this notification, that is to say:—

All that piece or parcel of land situated in the county of Cumberland, parish of Willoughby, area 30 acres: Commencing on the south-west boundary of H. Hacking's 30 acres, at the northernmost corner of George Woodcock's 12 acres 3 roods 36 perches; and bounded thence on the north-east by a line forming parts of the south-west boundaries of H. Hacking's 30 acres and Obadiah Ikin's 30 acres, north-westerly about 14 chains to a south-east boundary of Isaac Nicholl's 380 acres; thence on the north-west by that boundary south-westerly about 23 chains to the north-eastern side of a road along the north-eastern boundary of Edward Salamon's 21 acres 0 roods 34 perches; thence on the south-west by that side of that road south-easterly about 14 chains to the intersection of the south-westerly prolongation of the north-west boundary of George Woodcock's 12 acres 3 roods 36 perches aforesaid; and thence on the south-east by a line partly forming that north-west boundary north-easterly about 23 chains, to the point of commencement.

Also, that piece or parcel of land situated in the county of Cumberland, parish of Willoughby, area 25 acres: Commencing at the north-eastern boundary of T. Baker's 25 acres, at a point bearing north 41 degrees west 5 chains from the easternmost corner of that portion; and bounded thence on the south-east by the north-western side of a road 1 chain wide bearing north 49 degrees east 10 chains; thence on the north-east by a line bearing north 41 degrees west 25 chains; thence on the north-west by a line bearing south 49 degrees west 10 chains to the north-east boundary of J. Taylor's 25 acres; and thence on the south-west by part of the north-east boundary of that land and part of the north-east boundary of T. Baker's 25 acres aforesaid, being a line bearing south 41 degrees east 25 chains, to the point of commencement.

Also, that piece or parcel of land situated in the county of Cumberland, parish of Willoughby, area 25 acres: Commencing at the northernmost corner of Daniel Currey's 25 acres; and bounded thence on the south-east by the north-western boundary

boundary of that land south-westerly to the easternmost corner of John Sawyer's 25 acres; thence on the south-west by the north-eastern boundary of that land north-westerly to the southernmost corner of George Whitfield's 25 acres; thence on the north-west by the south-eastern boundary of that land north-easterly to the southernmost corner of John Robert's 25 acres; and thence on the north-east by a line south-easterly, to the point of commencement.

Also, that piece or parcel of land situated in the county of Cumberland, parish of Willoughby, area 25 acres: Commencing at the north-west corner of Peter Dargan's 25 acres; and bounded thence on the west by a line north to the south-eastern side of a road 1 chain wide along the south-eastern boundary of R. Adams' 5 acres; thence on the north by that side of that road north-easterly and the south-western side of a road 1 chain wide along the south-western boundary of J. C. Tucker's 5 acres 1 rood 30 perches south-easterly to the western side of a road along the west boundaries of D. M'Pherson's 6 acres and John Buchanan's 5 acres 2 roods 10 perches; thence on the east by that side of that road south to the north-east corner of Peter Dargin's 25 acres aforesaid; and thence on the south by the north boundary of that land west to the point of commencement,—exclusive of a road 1 chain wide passing through the portion in a south-easterly direction.

Given under my hand and seal, at Government House, Sydney, this day , in the year of our Lord one thousand eight hundred and eighty-six, and in the fiftieth year of Her Majesty's reign.

By His Excellency's Command.

God Save the Queen.

No. 37.

Notice under Real Property Act.

APPLICATIONS having been made to bring the lands hereunder described under the provisions of the Real Property Act, Certificates of Indefeasible Title will issue, unless *caveats* be lodged in Form B of the said Act, on or before the date named opposite each case respectively:—

Property—No. 6,764, Willoughby, 73 acres 2 roods 2 perches, on the Lane Cove Road, comprising the whole of 25 acres granted to George Whitfield, part of 25 acres granted to John Dark, and part of 25 acres granted to John Sawyer.

Name of Applicants—Francis Edward Rogers and Thomas Broughton.

Residence—Sydney.

Date up to and inclusive of which *caveats* may be lodged—6th January, 1887.

Diagrams delineating these lands may be inspected at the Registrar-General's Office, in Elizabeth-street, Sydney.—Dated this 2nd day of December, 1886, at the Registrar-General's Office, Sydney.

E. G. WARD,
Registrar-General.

No. 38.

The Deputy Registrar-General to The Surveyor-General.

Ordinary Notice to owner or occupier of contiguous land,—Application No. 6,764.

Sir, Land Titles Office, Sydney, 15 December, 1886.

Your attention is called to the accompanying notification of claim of Mr. F. E. Rogers and another, and tracing of land in respect of which he applies for Certificate of Title, especially with regard to the delineation of the boundaries, and to any question of possible encroachment on contiguous property.

You are reminded that if you have any opposing claim to allege it will be excluded unless *caveat* be lodged within the time limited.

The leading provisions of the law regarding *caveat* are noted below for your information; if required, a printed form may be obtained at this office.

Notwithstanding the provisions of the Act (s. 40) that rights-of-way or other easements shall not be extinguished by omission, it is desirable that if any exist they should be noted, and with that view persons claiming such rights are invited to disclose them.

I have, &c.,
HY. NEWCOMBE,
Deputy Registrar-General.

[*Enclosure.*]

Provisions of Real Property Act regarding *Caveat*.

1. The lodging of *caveat* suspends all further action until *caveat* be withdrawn, or until decision obtained from the Supreme Court. (Section 22 of original Act, and Section 9 of Amending Act.)
2. It is not now compulsory for a caveator to take proceedings to establish his title, as required by the 23rd section of the original Act, but the applicant may state a case for the opinion and direction of the Supreme Court, whose decision shall be conclusive on the parties interested and on the Registrar-General and Commissioners. (See section 9 of the Amending Act.)
3. *Caveat* may be withdrawn at any time by the caveator. (See section 81.)
4. Any person lodging *caveat* without reasonable cause is liable to make to any person, who may have sustained damage thereby, such compensation as may be just, which is recoverable in action at law. (Section 84.)
5. By omission to lodge, or allowing lapse of *caveat* after notice, or with knowledge of application, claim on assurance fund is forfeited. (Section 122.)

Urgent. Mr. District Surveyor Deering.—E.M., 17/12/86. Report to the Under Secretary for Lands. No. 3,682 of this date.—JOHN W. DEERING, 23/12/86.

No. 39.

The Metropolitan and Coast District Surveyor to The Under Secretary for Lands.

Francis Edward Rogers and Thomas Broughton applying for Certificate of Title to certain lands in the parish of Willoughby, county of Cumberland. Case No. 6,764, Registrar-General's Office; No. 3,682. 23rd December, 1886.

IT is recommended to the Under Secretary that a *caveat* should not be lodged by the Crown, in respect of the above application.

JOHN W. DEERING,
Metropolitan District Surveyor,
Department of Lands.

The Registrar-General.—C.O., B.C., 24/12/86. E.G.W., 29/12/86.

No. 40.

No. 40.

The Deputy Registrar-General to J. H. Clayton, Esq.

Case No. 6,832.—Application of Rogers and another.

Sir, Land Titles Office, Sydney, 5 January, 1887.

The following is a copy of the Principal Draftsman's preliminary report, viz. :—"This land was part of the subject of application 6,764, F. E. Rogers and another. My preliminary report in that case, dated 28th September, 1886, was as follows :—'A letter was received by the Registrar-General from the Minister for Lands, dated 5th May, 1885, requesting that certain grants were not to be dealt with, under the Real Property Act, G. Tilley's 25 acres was one of those mentioned. These instructions are still in force, and will require your consideration before the case can be further dealt with.' After receipt of the above the applicants withdrew the 25 acres from the above application, but have now lodged the present one. In Register Book No. 1, folio 136, across the grant to Tilley are these words, "Cancelled, and a new grant given at the Hawkesbury."

I have, &c.,

HY. NEWCOMBE,

Deputy Registrar-General.

No. 41.

J. H. Clayton, Esq., to The Deputy Registrar-General.

Application of Rogers and another (case No. 6,832).

Dear Sir, 136, Pitt-street, Sydney, 6 January, 1887.

In reply to the Chief Draftsman's report herein, I have the honor to submit the following facts for the consideration of the Examiners :—

A grant was issued to George Tilley of 25 acres, and on the copy the "cancellation" referred to by the draftsman was endorsed. No authority is shown for this endorsement being made, which was probably done by a clerk in the Survey Office, and even if it were authorized such endorsements would not be effective. The proper course, I submit, would be to obtain a surrender of the grant, and this not having been done the fee is outstanding and is now vested in the applicants.

I would call your attention to the fact that a similar endorsement was made on a grant to H. Lamb of 25 acres in the same district, and which the Minister for Lands requested the Registrar-General not to deal with, notwithstanding which a certificate of title has been issued for about 2½ acres of Lamb's grant.

The applicants are innocent purchasers, and I submit that, not having notice of the cancellation of the grant, they are not bound by such cancellation even if it were good.

I have, therefore, to request that the Registrar-General will at once proceed with the application.

I have, &c.,

JOHN H. CLAYTON

(*Per* A. J. Macauley).

No. 42.

The Deputy Registrar-General to J. H. Clayton, Esq.

Case No. 6,832.—Application, Rogers and another.

Sir, Land Titles Office, Sydney, 7 February, 1887.

Replying to your letter of the 6th ultimo, I have to inform you that, until the Principal Draftsman's preliminary report is satisfactorily complied with, the Examiners are unable to deal with the application.

I have, &c.,

HY. NEWCOMBE,

Deputy Registrar-General.

No. 43.

Mr. F. E. Rogers to The Secretary for Lands.

Sir, Chambers, 105, Elizabeth-street, Sydney, 14 May, 1887.

Would you allow me to bring under your notice the following facts :—On the 26th August, 1885, Sir Robert Wisdom, Mr. Thomas Broughton, and myself purchased about 100 acres of land on the North Shore. The conveyance was to Mr. Thomas Broughton and myself, we being trustees of Sir Robert Wisdom as to his share. In November of last year an application was made to bring this land under the Real Property Act, and an objection was taken by the Chief Draftsman in the Real Property Office, that, as to 25 acres of the land comprised in the conveyance to us, they were included in one of several grants which he had been directed by the Minister for Lands in May, 1885, not to deal with. (See copy of Principal Draftsman's report herewith.) Thereupon, so that no delay as to the remainder of the land might be caused, the application respecting the 25 acres was withdrawn, and my object in addressing you is, that some instructions may be given to the Registrar-General's Department, which will have the effect of either causing him to proceed with, and entertain the application or give us some decided answer so that steps may be taken by us to obtain a legal decision.

The three enclosures herewith will put you in full possession of the facts of the case, and will also show that we were innocent purchasers, and if, at your convenience, you can grant me the favour of a personal interview, I shall be very happy to give any further information in my power, if indeed anything further is required.

I have, &c.,

F. E. ROGERS.

In reference to the Minister's instructions of 13/6/87, on back of Registrar-General's letter of 30th May, 1887, Alienation 87-2,250, it is observed the whole case to the points involved is set out in my memorandum of 18th June, 1885, on Lands 85-1,486, Alienation herewith. The papers may perhaps be referred to the Crown Solicitor for the opinion of the Attorney-General as directed by Mr. Garrett.—R.H.D., 28/6/87.

Submitted.—S.F. Approved.—T.G., 6/7/87. The Crown Solicitor.—R.H.D. (for the Under Secretary for Lands), 11/6/87.

No. 44.

No. 44.

The Deputy Registrar-General to The Under Secretary for Lands.

Sir Registrar-General's Department, Land Titles Office, Sydney, 30 May, 1887.

In compliance with request in your letter of the 27th instant, I have the honor to return herewith application (No. 6,764) of Messrs. Rogers and Broughton, together with papers connected with the case.

I have, &c.,
HY. NEWCOMBE,
Deputy Registrar-General.

The facts of this case are fully set out in my memorandum of 18th June, 1885, Alienation 85–1,486, which led to the issue of the letter to the Registrar-General not to deal with Tilley's (among others) grant at the North Shore. One of the important points involved is whether the "Nullum Tempus Act," which bars the Crown after sixty years adverse possession is in force here. Upon this the present case and many others rest mainly. One of the parties to the present suit (Sir Robert Wisdom), when Attorney-General in 1880, had this peculiar feature before him, and gave a lengthy opinion upon the point (see enclosure herewith), to the effect that it was doubtful if that Act did apply to this Colony. Mr. Wisdom suggested special legislation. The point was referred to Mr. Attorney-General Dalley (now the Right Honorable W. B. Dalley, Q.C.), in connection with this very case of Tilley's. Mr. Dalley advised special legislation. I have gone fully through the circumstances again, and cannot recommend that the *caveat* be withdrawn, nor that the Crown give way in the least. Should the applicants move in the usual way for the removal of the *caveat* by the order of the Supreme Court, this Department should be advised, and the Crown represented by able counsel.—R.H.D., 13/6/87. Submitted.—C.O., 13/6/87.

I concur with previous recommendation. See it is strictly adhered to, and then have the question of law stated for the opinion of the Honorable the Attorney-General.—T.G., 13/6/87. Inform Mr. Rogers that the Minister declines to remove the *caveat*. 2nd. Inform Registrar-General that the Minister wishes the terms of Lands' letter of 5th May, 1885, No. 85,513 Alienation, adhered to.—R.H.D., 14/6/87. Mr. Rogers and Registrar-General informed, 22/6/87.

[*Enclosure.*]

Supreme Court, Friday, 20th May, 1887.

In Banco. (Before their Honors the Chief Justice, Mr. Justice Faucett, and Mr. Justice Innes).

In *re* Rogers and Broughton.

In the matter of the application of F. E. Rogers and Thomas Broughton, to bring certain land under the Real Property Act, and in the matter of the *caveat* lodged by John Joseph Matthews and John Boyle, no case having been stated by Boyle, and the case stated by Matthews not disclosing any title, their Honors, on the motion of Mr. C. J. Manning, directed the *caveats* to be removed, and a certificate to be issued to the applicants.

[From *Daily Telegraph*, 21stMay, 1887.]

No. 45.

The Under Secretary for Lands to The Registrar-General.

Sir, Department of Lands, Sydney, 22 June, 1887.

Referring to your letter of 30th ultimo (87,509), I have the honor to inform you that the Secretary for Lands desires the terms of letter from this Department, bearing date 5th May, 1885 (No. 85,513 Alienation), in reference to certain grants at North Shore, adhered to.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 46.

The Under Secretary for Lands to Mr. F. E. Rogers.

Sir, Department of Lands, Sydney, 22 June, 1887.

I have the honor to acknowledge receipt of your letter of 14th ultimo, in reference to the application of Sir Robert Wisdom, Mr. Thomas Boughton, and yourself, to bring certain land at North Shore, known as Tilley's Grant, under the provisions of the Real Proyerty Act, and to inform you that, after consideration of the matter, the Secretary for Lands declines to remove the *caveat* lodged by this Department against the granting of the application.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 47.

The Crown Solicitor to The Under Secretary for Lands.

Subject:—*Re* Tilley's Grant, North Shore, and adverse possession thereof as against the Crown.

Sir, Crown Solicitor's Office, Sydney, 20 July, 1887.

I have the honor to return herewith the papers relating to the above matter, which were forwarded to me from your department on the 11th day of July, 1887, and to state that I have submitted them to Mr. Attorney-General Wise, a copy of whose remarks thereon will be found upon the other side of this letter.

I have, &c.,
JOHN WILLIAMS.
Crown Solicitor

[*Enclosure.*]

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[*Enclosure.*]

Remarks :—

I CONCUR with the recommendation in minute of 13/6/87, signed R.H.D., that the *caveat* should not be removed, and an authoritative decision to be obtained as to—

(1.) The effect of the supposed cancellation of the grants.

(2.) The validity or invalidity in this Colony of the Nullum Tempus Act?

B.R.W., 18/7/87.

No. 48.

The Registrar-General to The Under Secretary for Lands.

Special Notice of Application.

Sir, Land Titles Office, Sydney, 10 August, 1887.

1. Your attention is called to the accompanying notification of claim of Messrs. Francis Edward Rogers and Thomas Broughton, and tracing of land in respect of which they apply for certificate of title, in order that you may lodge *caveat* within the time limited if you have any opposing claim to allege, as otherwise such claim will be finally excluded.

2. The causes which have lead to this special notice being given to you may be briefly stated as follows :—In the month of July, 1882, two applications were made to bring under the provisions of the Real Property Act, two parcels of land, being portions of what is commonly known as the Gore Estate, North Shore, in the parish of Willoughby, and part of 25 acres originally granted to Henry Lamb, by grant dated 19th November, 1794, the numbers of such applications being respectively 5,599 and 5,600. Though the three Examiners of Title in charge of such cases had before them the fact that there was written across the record copy of grant the word, "cancelled," they came to the conclusion, on a full consideration of the matter, that, there being then nothing to show when, how, or why such word was so written, they were not entitled to consider such an endorsement as affecting the title of the applicants, and accordingly reported in favour of the titles of the applicants, and the titles being passed by the Board of Commissioners, the usual advertisements were inserted in the Gazette and other necessary papers; but though a *caveat* was, at the instance of the Under Secretary for Lands, and on the ground that the grant was cancelled, lodged by the Registrar-General in case No. 5,599, a similar *caveat* was not lodged in case No. 5,600, and a certificate of title for the land applied for therein was duly issued. With regard to case No. 5,599 nothing seems to have been possible, also on account of another *caveat* which was lodged against it, and is still in force. In the month of August, 1886, Messrs. Rogers and Broughton lodged an application (No. 6,764) in which they sought to bring under the Act another portion of the Gore Estate, containing 99 acres 14 perches, including 25 acres originally granted to George Whitfield, parts of two grants of 25 acres each, to John Dark and John Sawyer, and the whole of 25 acres originally granted to George Tilley, but in consequence of the Principal Draftsman having made a preliminary report referring to the letter of instruction (5th May, 1885), under which the Registrar-General entered the *caveat* in case 5,599, the applicants withdrew the application so far as concerned Tilley's grant, so as not to delay the progress of the matter as to the other grants, and eventually the Principal Draftsman, having reported as to such other grants, the Examiners of Title in charge of the matter made their report in favour of the title of Messrs. Rogers and Broughton to such remaining lands, their title thereto, with the exception of the question as to the cancellation of grant being the same as their title to Tilley's grant, and afterwards, the application having been duly passed by the Commissioners, and advertised as usual, and two *caveats* by other claimants had been disposed of by the Supreme Court, a certificate of title was issued to Messrs. Rogers and Broughton. Not long after withdrawing the application in case 6,764 as to Tilley's grant, Messrs. Rogers and Broughton lodged a fresh application (No. 6,832) in which they sought to bring under the "Act" only the land so originally granted to George Tilley (grant dated 19th November, 1794). Upon the case coming before the Principal Draftsman for his report he made a preliminary (5th January, 1887) in which he referred to the Under Secretary for Lands' letter of 5th May, 1885, in which it was requested that certain grants, including George Tilley's 25-acre grant, should not be dealt with under the Real Property Act, and stating further that across the record copy of such grant were written the words, "Cancelled, and a new grant given at the Hawkesbury." A copy of this report having been sent to the applicant's solicitor, the correspondence shown by the copy letters of the Deputy Registrar-General and Mr. Clayton, of 6th January, 1887, 7th February, 1887, 8th February, 1887, 9th February, 1887. Subsequently, the Registrar-General having been urged to do something in the matter, either by refusing in writing to proceed with the matter, or by asking the Examiners of Titles to report on the matter so that it might come before the Board, placed the matter before the Examiners of Titles, and requested them to advise on the matter or deal with it as they might see fit. The Examiners so charged, having carefully considered all the matters herein referred, made their report in favour of the title of Messrs. Rogers and Broughton, subject to this special notice being given, so that you might be in a position to test the question of the cancellation of the grant in a proper way.

Herewith I send you copies of the Principal Draftsman's preliminary reports in cases 6,764 and 6,832, also of the correspondence referred to.

I might, perhaps, call your attention to sections 21, 22, 23, 24, 81, 82, 83, 84, and 122 of the Act 26 Victoria No. 9, and sections 4 and 9 of the Act 41 Victoria No. 18.

I have, &c.,
E. G. WARD,
Registrar-General.

[*Enclosures.*]

Case 6832—Application, Rogers and another.

Sir, Land Titles Office, Sydney, 9 February, 1887.

Replying to your letter of yesterday's date, I beg to inform you that the Examiners have nothing more to communicate than what is contained in my letter to you of the 7th instant.

I have, &c.,
HY. NEWCOMBE,
Deputy Registrar-General.

John H. Clayton, Esq., Solicitor, Pitt-street,

Re

Re Application of Rogers and another—Case No. 6,832.

Henry Newcombe, Esq., Deputy Registrar-General, Sydney,—

Dear Sir, 136, Pitt-street, Sydney, 8 February, 1887.

I have the honor to reply to yours of the 7th February instant, to call your attention to the 13th section of the Real Property Act, 26 Victoria, No. 9.

I contend that the land, the subject matter of this application, was alienated in accordance with that section, and so remains alienated from the Crown at the present time.

The Examiners have already taken this view in another application respecting Lamb's grant, and in the same district.

The Examiners have evidently overlooked my former reference to this application, as I feel sure precedent in the office will be followed.

The notice from the Minister for Lands or Surveyor-General in your office is entitled to no more consideration than any other member of the public. Either of these persons has a right to enter a *caveat* to the application when passed if so advised.

I need not point out if a similar notice was forwarded to your office by any member of the public the course I now suggest is the usual and only course adopted.

I would respectfully request, if the Examiners take a different view of the application, that a definite refusal may be recorded, to deal with the lands as proper subject matter for a Real Property Act application.

Under such circumstances an applicant can follow the other sections of the Act.

I have, &c.,
JOHN HORATIO CLAYTON
(*Per* A. J. MACAULEY).

Application No. 6,832—Principal Draftsman's preliminary Report.

THIS land was part of the subject of application 6,764, F. E. Rogers and another. My preliminary report (in that case dated 28th September, 1886), was a follows :—"A letter was received by the Registrar-General from the Minister for Lands, dated the 5th May, 1885, requesting that certain grants were not to be dealt with under the Real Property Act. G. Tilley's 25 acres was one of these mentiondd. These instructions are still in force, and will require your consideration before the case can be further dealt with." After receipt of the above, the applicants withdrew the 25 acres from the above application, but have now lodged the present one.

In Register, book No. 1, folio 136, across the grant to Tilley are these words, "Cancelled, and a new grant at the Hawkesbury."

ROBERT M. PEARSON,
5th January, 1887. Principal Draftsman.

Application No. 6,764.—Principal Draftsman's preliminary Report.

A LETTER was received by the Registrar-General from the Minister for Lands, dated the 5th May, 1885, requesting that certain grants were not to be dealt with under the Real Property Act. G. Tilley's 25 acres, part of the subject of this application was one of them. These instructions are still in force, and will require your consideration before further proceeding with the application.

ROBERT. M. PEARSON,
28th September, 1886. Principal Draftsman.

Memorandum.

Land Titles Office, Sydney.

APPLICATION 6,764 included Darks, Whitfield, and Sawyer's grants ; the certificate for this has issued, volume 836, folio 8.

Application 6,832 has passed for Tilley's grant, full particulars of which will reach the Under Secretary by letter from this office to-morrow.

R. M. P., 11/8/87.

No *caveat* was lodged in case 6,764 by Crown. Mr. Deering, by minute dated 23rd December, 1886, No. 3,682, stated that one should not be lodged. This minute was forwarded to Registrar-General.—R.M.P.

Notice under Real Property Act.

APPLICATIONS having been made to bring the lands hereunder described under the provisions of the Real Property Act, certificates of indefeasible title will issue, unless *caveats* be lodged in form B of the said Act on or before the date named opposite each case respectively.

Property—No. 6,832, Willoughby, 25 acres 2 roods 23½ perches, adjoining Sawyer's, Dark's, Whitfield's, and Robert's grants of 25 acres each, and the recreation reserve, originally granted to G. Tilley as 25 acres.

Name of applicants—Francis Edward Rogers and Thomas Broughton.

Residence—Sydney.

Date up to and inclusive of which *caveats* may be lodged—29th September, 1887.

Diagrams delineating these lands may be inspected at the Registrar-General's office, in Elizabeth-street, Sydney.

Dated this 21st day of July, 1887, at the Registrar-General's Office, Sydney.

E. G. WARD,
Registrar-General.

No. 49.

Office Memorandum.

Copy of Minute on Papers, Alienation 87–3,644, in connection with Real Property Application, No. 6,832.

CAVEAT.—Tilley's grant against dealing with this land, this Department, by letter of 15th May, 1885, to the Registrar-General, lodged a *caveat*. In the case of application No. 6,764, Real Property application, Messrs. Rogers and Broughton applied for certificate of title for this land among others. Tilley's grant was, however, withdrawn by Messrs. Rogers and Broughton from that application, in consequence of Lamb's *caveat* of 15th May, 1885. Messrs. Rogers and Broughton now apply for this land (Tilley's) in a fresh application, and that application has apparently passed, notwithstanding the *caveat* of this Department, of the 15th May, 1885, and of a repetition thereof by Lamb's letter to Registrar-General, of 22nd June last, No. 87–2,250 Alienation. That letter was the outcome of an opinion of the Minister for Lands, dated 13th June, 1887, expressed to the effect that the *caveat* should not be withdrawn, and that the opinion of the Attorney-General should be obtained. As regards the continuance of the *caveat* of 15th May, 1885, Mr. Secretary Garrett stated : "See that it is strictly adhered to"; hence the letter to Registrar-General, of 22nd June last. On reference to the Attorney-General, the Honorable B. R. Wise, under date 18th July, 1887,

1887, says: "I concur that the *caveats* should not be removed." It is not clear but that the *caveat* of 15th May, 1885, has been ignored. It is suggested that, on behalf of this Department, the Registrar-General do lodge a fresh *caveat* in this case, and also invited to cause the terms of letters of 15th May, 1885, and 22nd June last, to be strictly observed in the case of the other three blocks of land referred to therein.

As the caveator (the Crown in this case) is not compelled to take proceedings to establish title (or to defeat the applicants), Messrs. Rogers and Broughton, the applicants, should, if they think fit, take steps to state a case for the opinion and direction of the Supreme Court, and, in the event of them doing so, the Registrar-General should be requested to acquaint this Department, so that this Department may take steps to be represented, to express its view of the question.

R.H.D., 16/8/87.

Submitted for approval. I think the action taken by the Registrar-General is to be much regretted, and he should be urged not to pursue a similar course in future, unless legally compelled to do so.—C.O., 17/8/87. Approved.—T.G., 17/8/87.

No. 50.

I. E. Ives, Esq., M.P., to The Secretary for Lands.

Sir, Argyle Bonded and Free Warehouse, Sydney, 30 September, 1887.

The Mayor of North Willoughby informs me application was made some time ago, asking that 30 acres of land, known as Wright's grant, might be dedicated for a public reserve.

I enclose a tracing showing the position of the land, and have visited the locality, and consider it would be wise to grant the request.

I also enclose copy of a letter from Mr. Edward J. H. Knapp, Licensed Surveyor, to Mr. Ludovici, one of the aldermen. In this Mr. Knapp clearly traces the history of the land, and shows how it reverted to the Crown.

The district is a very large one, and is daily becoming more populated.

I have the honor to request you will give this matter your most favourable consideration.

Yours, &c.,

I. E. IVES.

Obtain report.—T.G., 30/9/87. Any trace of the application herein mentioned?—R.H.D., 6/10/87. Mr. Ferris. No.—J.R.F., 6/10/87. As regards the title to this land, attention is invited to my memorandum of 18th June, 1885, on Alienation 85-1,466, and to memorandums on Alienation 87-2,250.—R.H.D., 14/10/87. Submitted.

This Department has always held that the land in question is Crown land, and it would appear that the claimants cannot obtain a title. Submitted that the area be dedicated as a public reserve.—S.F., 14/11/87.

Verbal instructions to report from Minister through the Assistant Under Secretary. Report No. 3,000 of this date herewith.—JOHN W. DEERING, 21/11/87.

[*Enclosure.*]

Copy of a letter received from Mr. Alderman Ludovici, for the information of the Borough Council, North Willoughby, *re* 30 acres of land called Wright's grant, required for a reserve for recreation for the River Ward.

Mr. J. C. Ludovici, Swan-street, Sydney,— Wentworth Court, Elizabeth-street, Sydney, 6 March, 1883.

Sir,

Re that portion or land, 30 acres in extent, originally granted to William Wright, on the 3rd of December, 1794, I beg to inform you that when perusing an old field-book by my late father when he was in the year 1836 making a survey for Mr. Charles Nichols, I came across a memorandum to this effect, "Wright's 30 acres, exchanged and deed torn up."

I have to report that, at your request, I have searched the records of the Surveyor-General's Department, to ascertain the truth of this memorandum.

I beg to inform you that the result of my examination has been to verify the memorandum.

This will be readily perceived on perusing the descriptions hereunder, which have been copied by myself from the *Cumberland Registers* in the Surveyor-General's Department.

Cumberland Register No. 1, folio 41.—William Wright, 30 acres, Hunter's Hill; granted by Francis Grose, 3rd December, 1794, at a quit-rent of 1s. a year, to commence the 3rd December, 1799, and to be known as Wright's farm; laying and situate in Lane Cove, in the district of Hunter's Hill. Remarks—Exchanged by William Wright with Obadiah Ikin for William Baker's farm; then sold on the 3rd August, 1797, to John Holdsworth for £3, who sells it on the 26th May, 1804, to Thomas Randall; he parts with it on the 17th day of October, 1805, to Edward Quinn; and it has now been surrendered by William Sherwin in consideration of an 800-acre farm promised him in the Parramatta district, and not yet registered. Torn up by me, this 15th September, 1821.—F. GOULBURN.

Cumberland Register No. 1, folio 41.—William Baker, 40-acre grant, Toongabbie district of Concord, granted by F. Grose, 13th December, 1794, at a quit-rent of 1s. a year, to commence 13th December, 1794, and to be known as Baker's farm. Laying and situate in the district of Toongabbie.

William Sherwin, 1,165-acre grant, parish of St. John, granted by Rolph Darling, 25th June, 1831; quit-rent, £1 3s. a year, to commence 30th December, 1826, being consolidation, &c., &c.

It so happens that I am intimately acquainted with all these grants, having recently made a survey for you adjoining the land formerly granted to William Wright, surveyed and subdivided for Messrs. Carter, Abigail, and others, Baker's grant at Toongabbie, and laid out a number of roads and streets through Sherwin's consolidated grant for the mayor of Prospect and Sherwood, so that I personally know of the existence of Baker's grant given in exchange for the surrender of William Wright's 30 acres in question.

Seized with these facts, I have no hesitation in giving it as my professional opinion that this land is now vested in the Crown.

Moreover, it is a significant fact that my late father, who was in 1836 acting as surveyor to the Nichols family, did not consider it as a part of the estate, else he would most assuredly have subdivided it, and not excluded it from the elaborate survey he then made.

Yours, &c.,

EDWARD J. H. KNAPP,
Licensed Surveyor.

With letter from Isaac Ellis Ives, 30/9/87.

No. 51.

No. 51.

The Metropolitan and Coast District Surveyor Deering to The Under Secretary for Lands.

J. E. Ives, M.P., applying that about 30 acres, known as Wright's grant, should be dedicated for the purposes of public recreation No. 3,000, 22nd November, 1887.

Department of Lands, Sydney.

1. Within one mile of the above land there is a reserve for recreation, embracing a total area of no less than 107 acres of very valuable land, but now dedicated to the foregoing purpose. Probably the applicant is unaware of this extensive and valuable reserve, and his attention might be invited thereto.

2. The land known as Wright's being an old cancelled grant, is worth about £5,000 and should, I submit, be now surveyed into portions of about 1 acre each, and be offered forthwith at public auction. The distance from Milson's Point is only about 4½ miles.

JOHN W. DEERING,
Metropolitan District Surveyor.

Submitted special. This report was called for by Minister's instruction (*vide* memorandum of Mr. Deering, of 21st November, 1887, on 12,702).—R.H.D., 30/11/87. S.F. Inform Mr. Ives, M.P., of facts set out in this report. Submit plan of subdivision.—T.G., 10/12/87. Correspondence Branch. Mr. Ives, M.P., informed, 20/12/87. For plan of subdivision, Mr. District Surveyor Deering.—R.H.D. (for Under Secretary), 21/12/87. Wright's 30 acres cancelled grant, parish of Willoughby, county of Cumberland. Ms. 87-14,973. Mr. Surveyor Gordon for proposed design. Show position of Pearce's corner Railway.—JOHN W. DEERING, 29/12/87, No. 3,288. Mr. Surveyor Gordon. Received.—W.M.G., 4/1/88. Design prepared and forwarded under cover of my letter, 88-4, of the 14th February, 1888.—W. M. GORDON.

No. 52.

Mr. Licensed-Surveyor Knapp to The Colonial Secretary.

Re Crown land, parish of Willoughby, North Shore.

Nos. 1, 22, and 23, Wentworth Court, Elizabeth-street, Sydney, 28 November, 1887.

Dear Sir Henry Parkes,

You must pardon me again addressing you anent Crown land referred to in my letter of 15th August last, *re* which I have your note of 6th September, with Mr. Garrett's memorandum of 5th of same month, in which he says, "that we have done, and are doing, all that can be done to prevent the land being improperly alienated."

Since receipt thereof I have learned that some of the persons named in my letter of 15th August are endeavouring to secure, in addition to the land therein specified, a block of 30 acres belonging to the Crown, once granted to William Wright, but since cancelled; for proof of cancellation I enclose extract from Cumberland Register in the Surveyor-General's Office.

Now, as it is well known in the Lands Department that the several blocks of land which I have named are Crown lands, and on more than one occasion attempts have been made to have them improperly alienated, I beg to suggest that the shortest way of putting a check on these endeavours will be for the Government to forthwith fence in and take possession.

I feel confident if this be not done in some way or other the land will be lost from the public estate, this is my reason for pressing on you the necessity for prompt action.

I know your time is fully occupied, but this matter is of such moment to your constituents I cannot refrain from reminding you.

Yours, &c.,
EDWARD J. H. KNAPP.

Secretary for Lands.—H.P., 28/11/87. Acknowledge, and say that I have sent on the papers to the Secretary for Lands.—H.P. E. J. H. Knapp, Esq., 29/11/87. The Under Secretary for Lands. C.W., Principal Under Secretary, B.C., 29/11/87.

Mr. M'Kern to state if the enclosed information, *re* King's grant is all that can be given from his books, and if anything further can be gleaned from record copy in Colonial Secretary's Office.—R.L.

Mr. Farnsworth,—Check the information contained in the enclosures to Mr. Knapp's letter.—F.M'K., 14/12/87. The information is correct, and is the fullest that can be obtained from the Register.—W.F., 14/12/87. Mr. De Low—F.M'K., 14/12/87.

Urgent. Please attach a sketch or a lithograph showing prominently King's grant, referred to by Mr. Knapp, and say if your plans will throw any light on the statement in connection with King's 30 acres.—R.H.D. (for Under Secretary), 30/12/87. Mr. District-Surveyor Deering.

Wright's grant.—J.W.D.

Action has already been taken in the matter of Wright's 30 acres, upon papers, "Miscellaneous, 87-14,973." Instructions have already been issued by me, No. 3,288, of 29th December, 1887, for the subdivision of the above land prior to offering at auction. Mr. Knapp perhaps might be so informed.—JOHN W. DEERING, 4/1/88. The Under Secretary.

Are Wright's and King's grants one and the same?—R.H.D., 10/1/88. Urgent. Mr. M'Kern. Mr. Farnsworth.—F.M'K., 12/1/88. Urgent. No; Wright's grant is registered volume 1, folio 140; and King's, volume 1, folio 141.—F.M'K., 13/1/88. Mr. De Low.

It seems very doubtful if they are one and the same. King's name, however, does not appear on Willoughby maps—the descriptions in Register, volume 1, folios 140 and 141, seem to throw no light on the point.—R.H.D. (for the Under Secretary), 19/1/88. Mr. Deering.

Wright's grant and King's grant are different.—JOHN W. DEERING, 20/1/88. Mr. De Low. Knapp refers to Wright's grant, not King's.—J.W.D., 20/1/88. King's grant was cancelled, and has no existence.—J. W. DEERING, 3/2/88. It was never supposed they were the same by me.—J. W. DEERING, 3/2/88.

[*Enclosure.*]

25

[*Enclosure.*]

WILLIAM WRIGHT'S grant, 30 acres, dated 3rd December, 1794. Laying and situate in Lane Cove, in the district of Hunter's Hill. Remarks :—Exchanged by William Wright with Obadiah Ikin for William Baker's farm ; then sold on 3rd August, 1797, to John Holdsworth for £3, who sells it, 26th May, 1804, to Thomas Randall, he parts with it on the 17th October, 1805, to Edward Quinn, and it has now been surrended by William Sherwin, on consideration of an 800-acre farm, promised him in the Parramatta district, and not yet registered.

Torn up by me, this 15th September, 1821.

F. GOULBURN.

(See Cumberland Register, No. 1, folio 41.)

Extracts from Cumberland Registers in the Surveyor-General's Office.

George Tilley's grant ; 25 acres ; dated 19th November, 1794 :—

"Laying and situate in Lane Cove in the district of Hunter's Hill. Cancelled and a grant given at the Hawkesbury. Mr. William Marr, proprietor, 14 May, 1822." (See Cumberland Register, No. 1, folio 37.)

H. Lamb's grant ; 25 acres ; date, 19th November, 1794 :—

"Laying and situate in Lane Cove, in the district of Hunter's Hill. Cancelled." (See Cumberland Register, No. 1, folio 38.)

Robert King's grant ; 30 acres ; date, 3rd December, 1794 :—

"Laying and situate in the Lane Cove, district of Hunter's Hill. Cancelled." (See Cumberland Register, No. 1, folio 41.)

Humphery Evans' grant ; 25 acres ; date, 3rd December, 1794 :—

"Laying and situate in Lane Cove, in the district of Hunter's Hill. Cancelled, this grant being found in the Secretary's Office with a note thereon. Demised to the Crown, 15th August. 1804.—D. D. MANN, clerk." (See Cumberland Register, No. 1, folio 41.)

No. 53.

The Under Secretary for Lands to I. E. Ives, Esq., M.P.

Sir, Department of Lands, Sydney, 20 December, 1887.

Referring to your letter of the 30th September last, on behalf of the Borough Council of North Willoughby, urging that certain land, known as Wright's Grant, may be dedicated for the purposes of public recreation, I have the honor to inform you that within 1 mile of this land is a reserve for public recreation embracing a total area of no less than 107 acres of very valuable land, and in view of this the Secretary for Lands has approved of the area known as Wright's Grant being subdivided, and offered for sale at auction.

I have, &c.,

F. H. WILSON

(For the Under Secretary).

No. 54.

Mr. Surveyor William Matheson Gordon to Mr. Metropolitan District Surveyor Deering.

Sir, "Adace Villa," North Shore, 14 February, 1888.

In accordance with your instruction No. 87–3,288, of the 29th December, 1887, I have the honor to transmit herewith a tracing showing the design for subdivision in the parish of Willoughby and county of Cumberland :—

1st. The proposed design contains twenty-nine portions, varying in area from 2 roods 20 perches to 1 acre, the whole embracing an area of 25 acres cancelled grant to W. Wright.

2nd. The roads at present laid out are all practicable. Burns' Bay, Tambourine Bay Roads, and the Government Road on the north-west are formed and cleared.

3rd. An application has been made by one Broughton to bring this cancelled grant under the Real Property Act, under application No. 7,019.

4th. The grant consists of slightly undulating land, good soil, well timbered, suitable for orchard and building sites, and good road frontages.

The grant is 1 mile distant from the North Shore and Pearce's Corner railway line, now in course of construction, and only a quarter of a mile from the proposed branch line to Ball's Head.

5th. Adjoining land, and much inferior, has brought from £200 to £250 per acre.

6th. On the design tracing I have shown a local sketch, showing the relative positions of railway lines, Lane Cove River, and the main roads, also St. Leonards.

I have, &c.,

W. M. GORDON,

Government Surveyor.

Design submitted for approval.—JOHN W. DEERING, 6/3/88. The Under Secretary. Mr. De Low,—I think there are former papers relating to the question of dealing with Wright's cancelled grant. Please place them herewith, and state what was finally decided. Urgent.—C.O., 10/3/88. 1st. Yes ; Alienation 87–2,250 herewith. Please see also copy herewith of Alienation 87–3,657. 2nd. It was decided on Ms. 87–14,973 to have a subdivision plan of Wright's submitted, with a view to auction sale. I have learnt that Mr. Broughton has applied under Real Property Appropriation, 7,019, to have titles issued to him of all the four blocks herein referred to.—R.H.D., 14/3/88. Mr. Broughton has for a long time endeavoured to obtain a title to the land, but has failed. He appears now to be making a fresh effort. Submitted as to whether the sale should be proceeded with.—C.O., 16/3/88. Proceed with sale.—T.G., 16/3/88.

No. 55.

The Registrar-General to The Under Secretary for Lands.

Application No. 6,832.—F. E. Rogers and Thomas Broughton.

Sir, Registrar-General's Department, Land Titles Office, Sydney, 17 March, 1888.

Referring to my notice of the 10th August, 1887, addressed to you on the subject of the above-named case, I have the honor to inform you that the applicants above named have obtained an order from the Court that I should state my case. As the *caveat* lodged by me was lodged at the instigation of the Minister

Minister for Lands, I have the honor to inform you that the full Court did, yesterday, fix Wednesday next for the hearing of the cause. It will therefore be necessary that immediate instructions be given to the Crown Solicitor in this matter.

I have, &c.,
E. G. WARD,
Registrar-General.

This refers to Tilley's 25 acres. Statement of the Department's views herewith. Perhaps the Crown Solicitor may be requested to take the necessary steps.—C.O., 20/3/88. Forwarded to the Crown Solicitor.—C.O., B.C., 20/3/88.

[*Enclosures.*]

In the Supreme Court of New South Wales, for Friday, 23rd March, 1888.

In the matter of the application of Francis Edward Rogers and Thomas Broughton, both of Sydney, in the Colony of New South Wales, gentlemen, to bring certain lands situate in the parish of Willoughby, in the county of Cumberland, in the Colony aforesaid, under the provision of the Real Property Act.

And of the *caveat* lodged against the granting of the said application by the Registrar-General of New South Wales for and on behalf of the Under Secretary for Lands of the said Colony.

And in the matter of the Real Property Act, 26 Victoria, No. 9, and of the Amending Act, 41 Victoria, No. 18.

Notice of Motion—15/3/88—Quarter-past 2 p.m.—E.G.W.

JOHN H. CLAYTON.

In the Supreme Court of New South Wales.

In the matter of the application of Francis Edward Rogers and Thomas Broughton, both of Sydney, in the Colony of New South Wales, gentlemen, to bring certain land situate in the parish of Willoughby, in the county of Cumberland, in the Colony aforesaid, under the provision of the Real Property Act.

And of the *caveat* against the granting of the said application lodged by the Registrar-General of New South Wales for and on behalf of the Under Secretary for Lands of the said Colony.

And in the matter of the Real Property Act, 26 Victoria, No. 9, and of the Amending Act, 41 Victoria, No. 18.

Take notice that an application will be made on behalf of the above-mentioned Francis Edward Rogers and Thomas Broughton to the Court sitting in Banco at the Court-house, King-street, Sydney, on Friday, the 16th day of March instant, at 10 of the clock in the forenoon, or as soon thereafter as counsel can be heard in that behalf, for an order directing the Registrar-General, the above-named caveator, to lodge in the Court, on or before a certain day, a case on his own behalf, stating whether he claims in his own right or under another person, together with such other particulars (if any) as the Court shall think fit to order.

Dated this 15th day of March, A.D., 1888.

JOHN HORATIO CLAYTON
(Attorney for FRANCIS EDWARD ROGERS and THOMAS BROUGHTON),
136, Pitt-street, Sydney.

Real Property Application 6,832, by F. E. Rogers and Thomas Broughton, for Certificate of Title for 25 acres of land at Willoughby, county of Cumberland, known as George Tilley's 25 acres.

Statement of claim to the land put forth by the Crown.

1st. That the Crown grant of the 19th November, 1794, was cancelled by (and with the consent inferentially of) the grantee. The Deed Register, Cumberland Register, volume No. 1, folio 37, containing an entry, "Cancelled, and a new grant given at the Hawkesbury."

That the entry above named bears evidence of its ancient character.

That the copy at the Registrar-General's Office contains a similar endorsement.

That a grant did issue to George Tilley, for land at Mulgrave Place, near Windsor. The grant bears date, 10th May, 1798, and the land is called Tilley Farm, and was described as being bounded on the north side by Ross, and on the south side by Lamb's Farm.

That the Register of Deeds in the Lands Department shows that the deed of 10th May, 1798, of land at Mulgrave Place, was delivered to George Tilley in the presence of N. M'Kellar and C. Grimes.

That there is no evidence put forth by the applicant that the recognized and authorized forms of revesting the land in the Crown, as would have been required in England at the time (1794–1798) were demanded in this Colony at that time, and that viewing the then circumstances of the Colony, the custom then prevailing, as shown in several other cases, of exchanging lands with the Crown by simply delivering up to the Governor the grant and receiving a fresh one, was then held to be sufficient and effective, and that the entries of "cancellation" of grant in the early Registers, with similar endorsements on copy of grant, disclosing evidence of their ancient character, were held to be sufficient for years after, and were not called in question until recent years.

2nd. That the applicants and those through whom they are alleged to derive have not been in undisturbed possession for a number of years; that the right of any person to deal with the land has always been disputed by the Crown, and was never recognized when, many years ago (prior to 1840), efforts were made to consolidate what was called the "Gore Hill" Estate and later known as the "Artamon" Estate.

That even if applicants had been in undisturbed possession for sixty years, the right of the Crown to the land is not barred thereby, as the Supreme Court, it is thought, has not yet given a decision that the "Nullum Tempus Act," 9 George III, chaper 16, is in force here.

3rd. That applicants have not tendered any evidence that the grant has been "lost," but simply believe that is because it is not in their possession. They do not tender any evidence that the grant has been seen or heard of since 1798. That from similar cases now before the Department it is held the Crown grant was torn up at the time by the authority of the then Governor, a practice then followed.

CHARLES OLIVER, 20/3/88.

No. 56.

Applicant's Case.

In the Supreme Court of New South Wales.

In the matter of the application of Francis Edward Rogers and Thomas Broughton, both of Sydney, in the Colony of New South Wales, gentlemen, to bring certain land situate in the parish of Willoughby, in the county of Cumberland, in the Colony aforesaid under the provisions of the Real Property Act; and of the *caveat* against the granting of the said application lodged by the Registrar-General of New South Wales for and on behalf of the Under Secretary for Lands of the said Colony.

And in the matter of the Real Property Act, 26 Victoria, No. 9, and of the Amending Act, 41 Victoria, No. 18.

Copy, applicant's case

J. H. CLAYTON.

By

By His Excellency Francis Grose, Esquire, Lieutenant-Governor in and over His Majesty's Territory of New South Wales and its Dependencies, &c., &c., &c.

WHEREAS full power and authority for granting lands in the territory of New South Wales, to such persons as may be desirous of becoming settlers therein, is vested in His Majesty's Captain-General and Governor-in-Chief (or, in his absence, the Lieutenant-Governor for the time being), in and over the said territory and its dependencies, by His Majesty's instructions under the Royal Sign Manuel, bearing date respectively the twenty-fifth day of April, one thousand seven hundred and eighty-seven, and the twentieth day of August, one thousand seven hundred and eighty-nine. In pursuance of the power and authority vested in me as aforesaid, I do by these presents give and grant unto George Tilley, his heirs and assigns, to have and to hold for ever, twenty-five acres of land, to be known by the name of Tilley Farm, lying and situate in Lane Cove, in the district of Hunter's Hill, the said twenty-five acres of land to be had and held by him the said George Tilley, his heirs and assigns, free from all fees, taxes, quit-rents, and other acknowledgments, for the space of five years from the date of these presents, provided that the said George Tilley, his heirs, or assigns shall reside within the same and proceed to the improvement and cultivation thereof. Such timber as may be growing, or to grow hereafter, upon the said land, which may be deemed fit for naval purposes, to be reserved for the use of the Crown, and paying an annual quit-rent of one shilling, after the expiration of the term or time of five years before mentioned. In testimony whereof, I have hereunto set my hand and the seal of the Territory, at Sydney, in the Territory of New South Wales, this nineteenth day of November, in the year of our Lord one thousand seven hundred and ninety-four.

Signed and sealed in our presence,— FRANCIS GROSE.

T. FOVEAUX.
THOMAS ROWLEY.
EDWARD LAING.

Cancelled, and a new grant given at the Hawkesbury.

Registered in the Secretary's office.—DAVID COLLINS, Secretary to the Governor.

In the Supreme Court of New South Wales.

IN the matter of the application of Francis Edward Rogers and Thomas Broughton, both of Sydney, in the Colony of New South Wales, gentlemen, to bring certain land situate in the parish of Willoughby, in the county of Cumberland, in the Colony aforesaid, under the provisions of the Real Property Act.

And of the *caveat* against the granting of the said application, lodged by the Registrar-General of New South Wales, for and on behalf of the Under Secretary for Lands, of the said Colony.

And in the matter of the Real Property Act, 26 Victoria, No. 9.

And of the Amending Act, 41 Victoria, No. 18.

Case stated on behalf of the above-named applicants, under the provisions of Act 41 Victoria, No. 18, section 4 :—

1. Francis Edward Rogers and Thomas Broughton, both above named, claimed to be the absolute owners in fee simple of all that parcel of land situate, lying, and being in the parish of Willoughby, county of Cumberland, Colony of New South Wales, containing 25 acres 2 roods 23½ perches.

2. The said lands were originally granted to one George Tilley and his heirs, by deed of grant, dated the nineteenth day of November, one thousand seven hundred and ninety-four, by His Honor Francis Grose, Esq., Lieutenant-Governor in and over His Majesty's Territory of New South Wales and its Dependencies.

3. The said grant has been lost, but an alleged entry or copy thereof has been found in the office of the Registrar-General, and a true copy of such entry or copy, with the interlineations, erasures, and corrections now appearing thereon is hereunto annexed and marked "A."

4. The said lands, which were always known as "Tilley's Farm," subsequently became invested in one William Gore (who was in possession thereof, in connection with other adjacent lands, prior to the year one thousand eight hundred and fifteen), and they have remained in the continuous and undisturbed possession of the said William Gore, and those claiming by, through and under him, up to the present time, that is to say, for upwards of sixty years, and now by virtue of divers mesne assignments, the said lands have passed to, and become vested in the said applicants, for an estate in fee simple in possession.

5. The said applicants duly applied to bring the said lands under the provisions of the Real Property Act, and to be registered as proprietors thereof, in fee simple, and their title thereto was duly passed by the Examiners appointed in that behalf, but on the nineteenth day of August, one thousand eight hundred and eighty seven, a *caveat* was entered by the Registrar-General of New South Wales, for and on behalf of the Under Secretary for Lands, claiming estate or interest, as per an annexed memorandum attached to the said *caveat.*

6. The Registrar-General does not dispute the title of the applicants on any other grounds, but those appearing on the face of the said entry or copy grant, but contends that the said lands have never passed from the Crown, or have reverted to the Crown, and that in either case the applicants can have no title as against the Crown.

7. The applicants contend that in the absence of any evidence of a cancellation by the proper authority, and of any surrender and other authorized and recognized mode of revocation, the lands cannot be held to have reverted to the Crown, but must be taken to have passed from the Crown to the said George Tilley, by the issue of the grant, and that the Crown cannot now claim any estate or interest therein.

8. The applicants further contend that as against a possessory title of upwards of sixty years, the Crown cannot be heard to claim any estate or interest in the said lands.

9. The said caveator has taken no other step in connection with the said application or *caveat* up to the present time, and the applicants are therefore desirous of obtaining under the provisions of the Act 41 Victoria No. 18, Section 4, the opinion and direction of this Honorable Court in the above matter as to the proceedings to be taken herein, in order that the dispute between the applicants and the said caveator may be decided.—Dated this fifteenth day of March, A.D. 1888.

JOHN HORATIO CLAYTON
(Attorney for FRANCIS EDWARD ROGERS and THOMAS BROUGHTON),
136, Pitt-street, Sydney.

No. 57.

No. 57.

Rule of Court.

In the Supreme Court of New South Wales.

IN the matter of the application of Francis Edward Rogers and Thomas Broughton, both of Sydney, in the Colony of New South Wales, to bring certain lands, situate in the parish of Willoughby, in the county of Cumberland, in the Colony of New South Wales, under the provisions of the Real Property Act.

And of the *caveat* against the granting of the said application lodged by the Registrar-General of New South Wales, for and on behalf of the Under Secretary for Lands.

And in the matter of the Real Property Act, 26 Victoria, No. 9.

And of the Amending Act, 41 Victoria, No. 18.

Rule of Court.

JOHN H. CLAYTON.

In the Supreme Court of New South Wales.

IN the matter of the application of Francis Edward Rogers and Thomas Broughton, both of Sydney, in the Colony of New South Wales, gentlemen, to bring certain lands situate in the parish of Willoughby, in the county of Cumberland, in the Colony of New South Wales, under the provisions of the Real Property Act.

And of the *caveat* against the granting of the said application lodged by the Registrar-General of New South Wales, for and on behalf of the Under Secretary for Lands in the said Colony.

And in the matter of the Real Property Act, 26 Victoria No. 9.

And of the amending Act, 41 Victoria No. 18, Friday, the 16th day of March, in the year of our Lord, 1888.

Upon reading the case filed by the applicants, the above-named Francis Edward Rogers and Thomas Broughton, and upon hearing Mr. Charles J. Manning, of counsel for the said applicants, it is ordered that the caveator, the Registrar-General of New South Wales, do lodge in the Court on Wednesday, the 21st day of March instant, a case on his own behalf, stating whether he claims in his own right, or under another person's, and it is further ordered that the issue as to any fact or facts (if any) shall be settled by a Judge in Chambers.

By the Court,
for the Prothonotary,
C. R. WALSH,
Chief Clerk.

No. 58.

Instructions to prepare case on behalf of Registrar-General.

IN the matter of the application No. 6,832, F. E. Rogers and Thomas Broughton. This is an application to bring a grant to a man named Tilley under the Real Property Act.

Some months ago a *caveat* was entered against this application by the Registrar-General, at the request of the Department of Lands.

The Court has fixed to-morrow (Wednesday), 21st instant, for the Registrar-General to state a case.

As instructions for the case so to be stated, the minute sent herewith has been forwarded late this afternoon.

Will Mr. Pring please say if he can prepare a draft case to file in time to-morrow, making use of as much of the minute now forwarded as he may consider available for that purpose.

In the matter of the application of F. E. Rogers and Thomas Broughton.

Instructions to prepare draft case. Mr. Pring, two guineas. See within fold.—R.W.P.—WILLIAMS, Crown Solicitor.

I HAVE drafted the case on behalf of the Registrar-General; but in my opinion there are no grounds for the *caveat* lodged by him. According to his case, there actually was a grant issued to Tilley, so that unless proper means have been taken to revest the land in the Crown, the Crown has no title thereto. The alleged custom appears to me to be of no avail, for, in my opinion, the only mode in which the estate could legally revest in the Crown would be by a surrender by Tilly, or his representatives, to the Crown. This was never done, and hence, in my opinion, the estate is in those who now claim through Tilley.

R. W. P.

No. 59.

Notice of Motion.

In the Supreme Court of New South Wales.

IN the matter of the application of Francis Edward Rogers and Thomas Broughton, both of Sydney, in the Colony of New South Wales, gentlemen, to bring certain land situate in the parish of Willoughby, in the county of Cumberland, in the Colony of New South Wales, under the provisions of the Real Property Act.

And of the *caveat* against the granting of the said application lodged by the Registrar-General of New South Wales, for and on behalf of the Under Secretary of Lands for the said Colony.

And in the matter of the Real Property Act, 26 Victoria, No. 9.

And of the Amending Act, 41 Victoria, No. 18.

Notice of Motion.

John Williams, Esq.,
Crown Solicitor.

JOHN H. CLAYTON.

Received, 3·30 p.m.—J.H.C., 22/3/88.

In the Supreme Court of New South Wales.

IN the matter of the application of Francis Edward Rogers and Thomas Broughton, both of Sydney, in the Colony of New South Wales, gentlemen, to bring certain land situate in the parish of Willoughby, in the county of Cumberland, in the Colony of New South Wales, under the provisions of the Real Property Act.

And

And of the *caveat* against the granting of the said application lodged by the Registrar-General of New South Wales, for and on behalf of the Under Secretary for Lands of the said Colony.

And in the matter of the Real Property Act, 26 Victoria, No. 9.

And of the Amending Act, 41 Victoria, No. 18.

Take notice that application will be made to this Honorable Court sitting in Banco at the Supreme Court-house, King-street, in the city of Sydney, on Friday, the 23rd day of March instant, at 10 of the clock in the forenoon, or so soon thereafter as counsel can be heard in this behalf to decide the above-mentioned matter, upon the cases stated by the said Francis Edward Rogers and Thomas Broughton, and by the said Registrar-General, or to direct an issue or issues to be tried by Jury as to any fact or facts which appear upon the said cases.

Dated this 23rd day of March, A.D. 1888.

JOHN HORATIO CLAYTON
(Attorney for the said FRANCIS EDWARD ROGERS and THOMAS BROUGHTON)
136, Pitt-street, Sydney.

No. 60.

Brief for Registrar-General.

In the Supreme Court of New South Wales.

IN the matter of the application No. 6,832 of F. E. Rogers and Thomas Broughton, to have certain land situate at Willoughby, in the county of Cumberland, brought under the provisions of the Real Property Act.

And in the matter of the said Act.

Brief for the Registrar-General—Mr. Pring, five guineas—24th March, 1888. Court :—Darley, Chief Justice; Owen and Foster, Puisne Judges.—Ordered that the *caveat* be taken off the file.

J. Williams, Crown Solicitor. R.W.P.

In the Supreme Court of New South Wales.

IN the matter of the application No. 6,832, of F. E. Rogers and Thomas Broughton to have certain land, situate at Willoughby, in the County of Cumberland, brought under the provisione of the Real Property Act.

And in the matter of the said Act.

Brief for the Registrar-General.

Statement of case by the Registrar-General :—

1. After the execution of the alleged grant of the said land to the said George Tilley, the said grant was, by and with the consent of the said George Tilley, cancelled, and in consideration of such consent and cancellation, and by way of exchange for the said land a grant was issued to the said George Tilley, dated the 10th day of May, A.D. 1798, of 25 acres of land, situate near Windsor, in the county of Cumberland. At the time of the cancellation aforesaid it was a well recognized custom, as between the Crown and the grantees therefrom, in the Colony of New South Wales, that lands originally granted by the Crown should be deemed to revest in the Crown on the delivery up to the Crown by the grantee on the cancellation thereof and the acceptance by him of a grant of other lands by way of exchange, and this custom was acted upon in the case of the said George Tilley and in several other cases.

2. Neither the applicants nor any person through whom they claim have been in undisturbed possession of the said land, but the Crown has always disputed and never recognized the right of any private individual to the said land.

3. The said applicants have not furnished the Registrar-General with sufficient or any proof of the loss of the said alleged grant.

E. GRANT WARD,
Registrar-General.

Darley, Chief Justice,—Question whether there are any issues for Jury. Admitted that grant issued, but counsel contended that there might be a surrender by operation of law. I am not aware of any law of that kind, and counsel admits that he can find no authority. That being so, there is an end to the case. The grant avails until there has been a surrender by deed. But the second point is also fatal. There is only one way to dispute possession, and that is by taking some step to dispossess the person. I think the case presents no issue for Jury.

Owen, Judge.—Entirely concur. (Grant was in existence for four years.) Only evidence of revesting to the word "cancelled; that is not sufficient. There is one well recognized mode of revesting which has not been followed. As to the possession, the Crown really admits that, but says it has always disputed that possession, which is not enough.

Foster, Judge.—I concur.

No. 61.

Rule of the Court.

In the Supreme Court of New South Wales.

IN the matter of the application of Francis Edward Rogers and Thomas Broughton, both of Sydney, in the Colony of New South Wales, gentlemen, to bring certain land situate in the parish of Willoughby, in the county of Cumberland, in the Colony of New South Wales, under the provisions of the Real Property Act.

And of the *caveat* against the granting of the said application lodged by the Registrar-General of New South Wales, for and on behalf of the Under Secretary for Lands of the said Colony.

And in the matter of the Real Property Act, 26 Victoria, No. 9.

And of the Amending Act, 41 Victoria, No. 18.—Rule of Court.

JOHN H. CLAYTON.

John Williams, Esq., Crown Solicitor.

Received, 27/3/88.—J.H.C.

In

In the Supreme Court of New South Wales.

In the matter of the application of Francis Edward Rogers and Thomas Broughton, both of Sydney, in the Colony of New South Wales, gentlemen, to bring certain land situate in the parish of Willoughby, in the county of Cumberland, and the Colony of New South Wales, under the provisions of the Real Property Act.

And of the *caveat* against the granting of the said application lodged by the Registrar-General of New South Wales, for and on behalf of the Under Secretary for Lands of the said Colony.

And in the matter of the Real Property Act, 26 Victoria, No. 9.

And of the Amending Act, 41 Victoria, No 18.

Saturday, the 24th day of March, in the year of our Lord 1888.

Upon reading the statement of case filed herein by the above-named Francis Edward Rogers and Thomas Broughton, and the statement of case filed by Registrar-General of New South Wales, and upon hearing Mr. C. J. Manning of counsel for the said Francis Edward Rogers and Thomas Broughton, and Mr. Pring of counsel for the said Registrar-General, it is ordered that the *caveat* lodged by the Registrar-General, for and on behalf of the Under Secretary for Lands for the said Colony against the granting of the application of the said Francis Edward Rogers and Thomas Broughton to bring certain land situate in the parish of Willoughby, in the county of Cumberland, in the Colony of New South Wales, and known as "Tilley's Grant," be removed.

By the Court,

(L.S.) FREDERICK CHAPMAN,
Prothonotary.

No. 62.

Extract from *Daily Telegraph* of 26th March, 1888.

Supreme Court, Saturday, March 24th.

In Banco—(Before the Chief Justice, Mr. Justice Owen, and Mr. Justice Foster.)

In *re* Rogers and Broughton.

In the matter of the application of F. E. Rogers and Thomas Broughton to have certain land at Willoughby, County of Cumberland, brought under the provisions of the Real Property Act. Mr. C. J. Manning appeared for the applicants, and Mr. Pring appeared for the Registrar-General, who had lodged a *caveat* on behalf of the Under Secretary for Lands.

The applicant's case set forth that in 1794, Lieutenant-Governor Francis Grose granted to George Tilley the land in question, consisting of 25 acres, and that the land subsequently became vested in William Gore, sometime prior to 1815, and had since then remained in his possession, or in that of those claiming under him, including the present applicants, up to the present time, and that that possession had never been disputed until now—a period of upwards of sixty years. The Registrar-General did not dispute their title on any other grounds, but that the land had either never passed from the Crown or had reverted to the Crown, but they contended that in the absence of any evidence of cancellation by the proper authority and of any surrender or other authorized and recognized mode of revocation the land could not be held to have reverted to the Crown, but must be taken to have passed from the Crown to Tilley by the issue of the grant, and that the Crown could not now claim any estate or interest therein, and further, that against a possessory title of upwards of sixty years, the Crown could not be heard to claim any estate or interest in the land in question. The Registrar-General in his case set forth that after the issue of the alleged grant it was by consent of Tilley cancelled, and that in consideration of such consent and cancellation, and by way of exchange for the land, a grant was issued to Tilley, dated May 10th, 1798, of 25 acres of land near Windsor, that at that time it was a well recognized custom as between the Crown and the grantees therefrom. In this Colony the lands originally granted by the Crown should be deemed to revest in the Crown on the delivery up to the Crown of the grant by the grantee, and the acceptance by him of a grant of other land by way of exchange, and that this custom was acted upon in the case of Tilley, and in some other cases, and that the Crown had always disputed and never recognized the right of any private individual to the land now in question. The office copy of Tilley's grant to this land bore across it the word "cancelled."

The Chief Justice, in giving judgment, said the first matter the Court had to determine was, whether the case filed by the Registrar-General raised any issues for determination by a Jury, if not, the Court was to make such order as they saw fit. There were two titles in point of fact on which the applicants were entitled to rely. First, the original grant they said was issued, and counsel for the Crown now admitted that the grant had issued, but counsel for the Crown contended that the relationship of the grantee had been really that of tenant of the Crown, and that he had by word of mouth surrendered his interest in the land in question to the Crown. He was not aware of any such propositions as that having ever before been stated, nor could he call to mind anything of the sort appearing in any book on real property relating to grants from the Crown which he had ever read, and counsel for the Crown admitted that he was not able to find either in any text book on the subject, or in any authority, that such a proposition could be maintained. In other words, that, when once the Crown had issued a grant to a subject, the subject could revest the land in the Crown by simply declining to take the grant, or having taken it for four, five, or six years, could revest it in the Crown by simply saying, "I don't desire to hold this any longer." He did not think that that could be maintained, or any authority found in support of it. That being so, there seemed to him to be an end to this case. A grant was in existence, until it was revoked, or until it was surrendered by deed to the Crown, and nothing of that sort appeared here. But there was also a second point which appeared to him to be fatal to the claim of the Registrar-General. It was admitted that the applicants, and those under whom they claimed, had been in possession ever since prior to 1815. As against that, the Registrar-General said that the possession of the land had been disputed. But there was only one way in which to dispute a person's possession of land, and that was to take some steps to terminate it. Nothing of that sort had been done. The mere fact that in some office in Sydney connected with the Lands Department, some officer of the Department constantly said to himself, or to some other officers of the Department, "We dispute certain persons' possession of such and such land," could have no effect. Under all those circumstances he thought that this case raised no issues to be tried before a Jury, and also raised no point of law that the Court could determine in the Registrar-General's favour; but, that, on the other hand, the applicants had made out a sufficient case to bring this land under the Act.

Mr. Justice Owen and Mr. Justice Foster both concurred, and the *caveat* was directed to be taken off the file.

No. 63.

No. 63.

Extract from *Sydney Morning Herald* of 26th March, 1888.

In *re* F. E. Rogers and Thomas Broughton and the Real Property Act.

Mr. C. J. Manning, instructed by Mr. J. H. Clayton, appeared for the applicants; and Mr. Pring, instructed by the Crown Solicitor, on behalf of the Registrar-General.

Mr. Manning explained that the applicants desired to bring certain land under the Real Property Act, but the Registrar-General, on behalf of the Minister for Lands, had lodged a *caveat*. The question whether there were any facts to go to a Jury would have to be settled. If there were not then the Court would be in a position to decide the matter. Francis Edward Rogers and Thomas Broughton claimed to be the absolute owners in fee simple of 25 acres 2 roods 23½ perches, situated in the parish of Willoughby. The land was originally granted as far back as November, 1794, to one George Tilley by His Excellency Francis Grose, then Lieutenant-Governor of the Colony, and was described in the grant as Tilley's Farm, situated in Lane Cove. The grant has been lost, but an alleged entry or copy has been found in the office of the Registrar-General. The land, which was always known as Tilley's Farm, subsequently became vested in one William Gore, who was in possession thereof in connection with other adjacent lands, prior to the year 1815, and it has remained in the continuous and undisturbed possession of William Gore, and those claiming through him, up to the present time, representing a period of upwards of sixty years, and has now become vested in the applicants. When the applicants sought to bring the land under the provisions of the Real Property Act, the title was duly passed by the Examiners, but, on the 19th August last, the Registrar-General lodged a *caveat*, on behalf of the Minister for Lands, alleging that the land had never passed from the Crown, or that it had reverted to the Crown. According to the caveator's statement it appears that after the execution of the grant to George Tilley, it was, by and with the consent of the grantee, cancelled, and in consideration of such consent and cancellation, and by way of exchange, a grant was issued to George Tilley, dated 10th May, 1798, of 25 acres of land situated near Windsor. At the time of the cancellation it was a well-recognized custom as between the Crown and the grantees that land originally granted by the Crown should be deemed to revert to the Crown on the delivery up of the grant by the grantee on cancellation and the acceptance by him of a grant of other lands by way of exchange, and this custom was acted upon in the case of George Tilley and others. The Registrar-General also affirms that neither the applicants nor any person through whom they claim have been in undisturbed possession of the land, but the Crown has always disputed and never recognized the right of any private individual to the land. The only record which had apparently been made of the exchange of land was the entry appearing at the foot of the copy of Tilley's original grant—"Cancelled, and a new grant given at the Hawkesbury."

The applicants now contended that, in the absence of any evidence of a cancellation by the proper authority of any surrender and other authorized and regular mode of revocation, the land could not be held to have reverted to the Crown, but must be taken to have passed from the Crown to George Tilley by the issue of the grant, and that the Crown could not now claim any estate or interest therein, especially as applicants could prove a possessory title of upwards of sixty years.

After hearing argument,—The Chief Justice said, the matter for the Court to determine was, whether there was any issues raised for the determination of a Jury on the cases filed. If there were no issues to be raised, it was then for the Court to make such order as they might think fit. There were two titles in point of fact upon which the applicants were entitled to rely. The first was the original grant which had been issued, and it was admitted by counsel for the Crown that the grant did issue, but the learned counsel contended that the relation of the grantee was really that of a tenant of the Crown, and that he could at any time by word of mouth have conveyed back his interest to the Crown. He (the Chief Justice) was not aware that any such proposition as that had ever before been stated, nor could he call to mind anything of this sort appearing in any book on real property that he had ever read, relating to grants from the Crown, and the counsel for the Crown admitted that he was not able to find any precedent in any text-books upon the subject, or any authority that such a proposition could be maintained; in other words, that when once a Crown grant was issued from the Crown to a subject, the subject could revest the land in the Crown again by simply declining to take the grant, or having taken it for several years to revest it in the Crown by simply saying, "I do not desire to hold this any longer." He did not think that such a proposition could be maintained, or that any authority could be found in support of it. That being so, it seemed to him to be an end of the case. The grant was in existance until it was revoked, or surrendered by deed to the Crown, but nothing of that sort appeared to have occurred here. There was another point which seemed to him to be fatal to the claim of the Registrar-General. It was admitted that the applicants, or those through whom they claimed, had been in possession since prior to 1815. As against that, the Registrar-General said that the possession of the land had been disputed, but there was only one way in which to dispute a person's right of possession to land, and that was by taking some step to terminate his possession. Nothing of that sort had been done here, and for some officer connected with the Lands Department, merely to be constantly saying to himself or other officers,—"We dispute the possession of certain persons to such and such land," could have no effect. Under these circumstances he thought the case raised no issue to try before a Jury, and raised no point of law which the Court could determine in the Registrar-General's favour, but that on the other hand the applicants had made out a sufficient case to entitle them to bring the land under the Real Property Act.

Mr. Justice Owen and Mr. Justice Foster concurred.

The decision was, therefore, that there were no issues for a Jury, and the Registrar-General was ordered to take his *caveat* off the file.

No. 64.

The Crown Solicitor to The Under Secretary for Lands.

Sir, Crown Solicitor's Office, Sydney, 3 April, 1888.

I have the honor to return herewith the papers relating to the *caveat* you caused to be entered in the Registrar-General's Office against a certificate of title being granted to F. E. Rogers and T. Broughton, which would include 25 acres of land situate in the parish of Willoughby, county of Cumberland, known as Tilley's grant.

The

The *caveat* in the case was entered by the Registrar-General in his own name upon request from your department to him.

Upon the Registrar-General being called upon to state a case in support of his claim, in order that it might be determined by the Court whether there was any issue that could be left to a Jury to determine, a gentleman from your department called upon me with reference to the preparation of the case to be submitted to the Court, and I informed him that I thought the *caveat* could not be supported, but that as it was thought to be desirable that the question as to whether an entry in the books of the department that a grant had been cancelled, could be taken as any evidence of the fact, I would have a case prepared by counsel and filed, and I delivered a brief to counsel to appear on behalf of the Government.

The matter came on for hearing on Saturday, 24th March last, when the Court unanimously ordered the *caveat* to be removed.

You will understand from this that the certificate of title about to be issued to Messrs. Rogers and Broughton will include the land known as Tilley's grant.

Your department will of course have to pay the costs occasioned by the *caveat* having been entered and of obtaining its removal.

I have, &c.,
JOHN WILLIAMS,
Crown Solicitor.

[Three plans.]

Sydney : Charles Potter, Government Printer.—1889

[2*s.* 6*d.*]

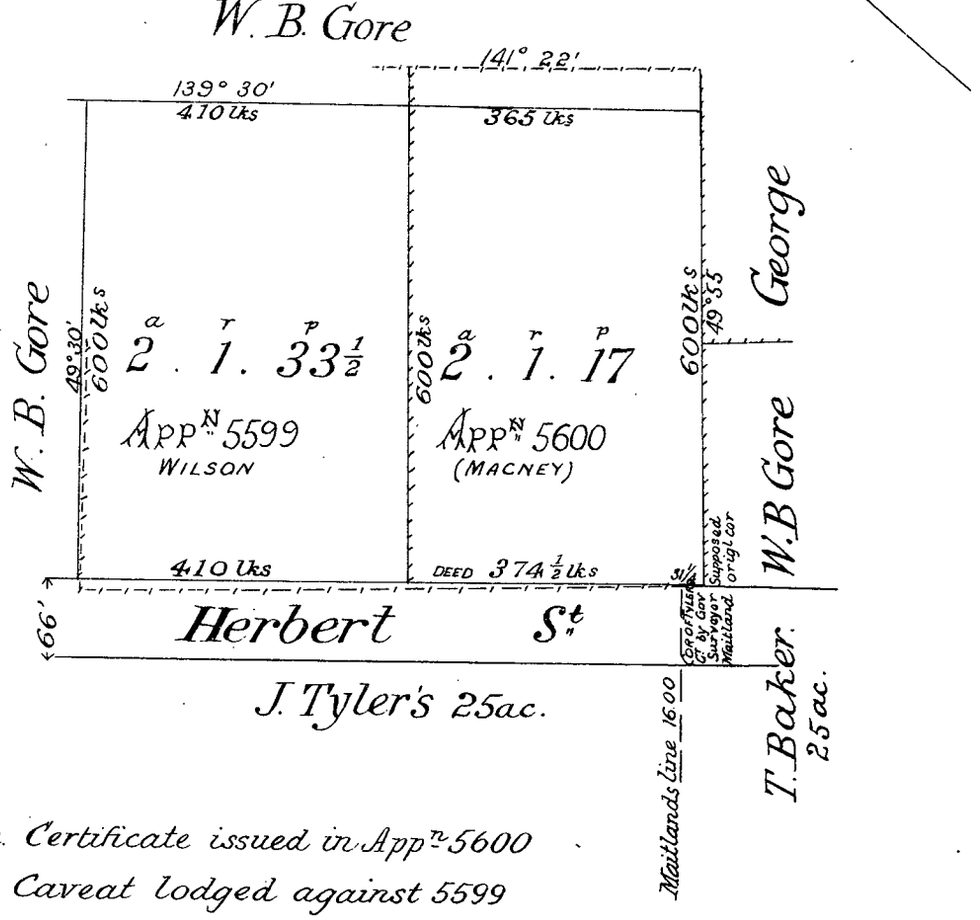
Enclosure to No 11

TRACING

land applied for by Messrs Wilson & Magney
Apps 5599 & 5600
of Willoughby
Land Titles Office

Scale 2 chains

Alienation Branch
85.1132
Enclosure
Lands Department



Note. Certificate issued in Appn 5600
Caveat lodged against 5599

(sigd) Robt M Pearson. Pl Draftsn
12th May 85

(Sig 228.)

PHOT -LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

Alienation Branch
86.4186
Lands Dept

Enclosure to No 38.

Tracing

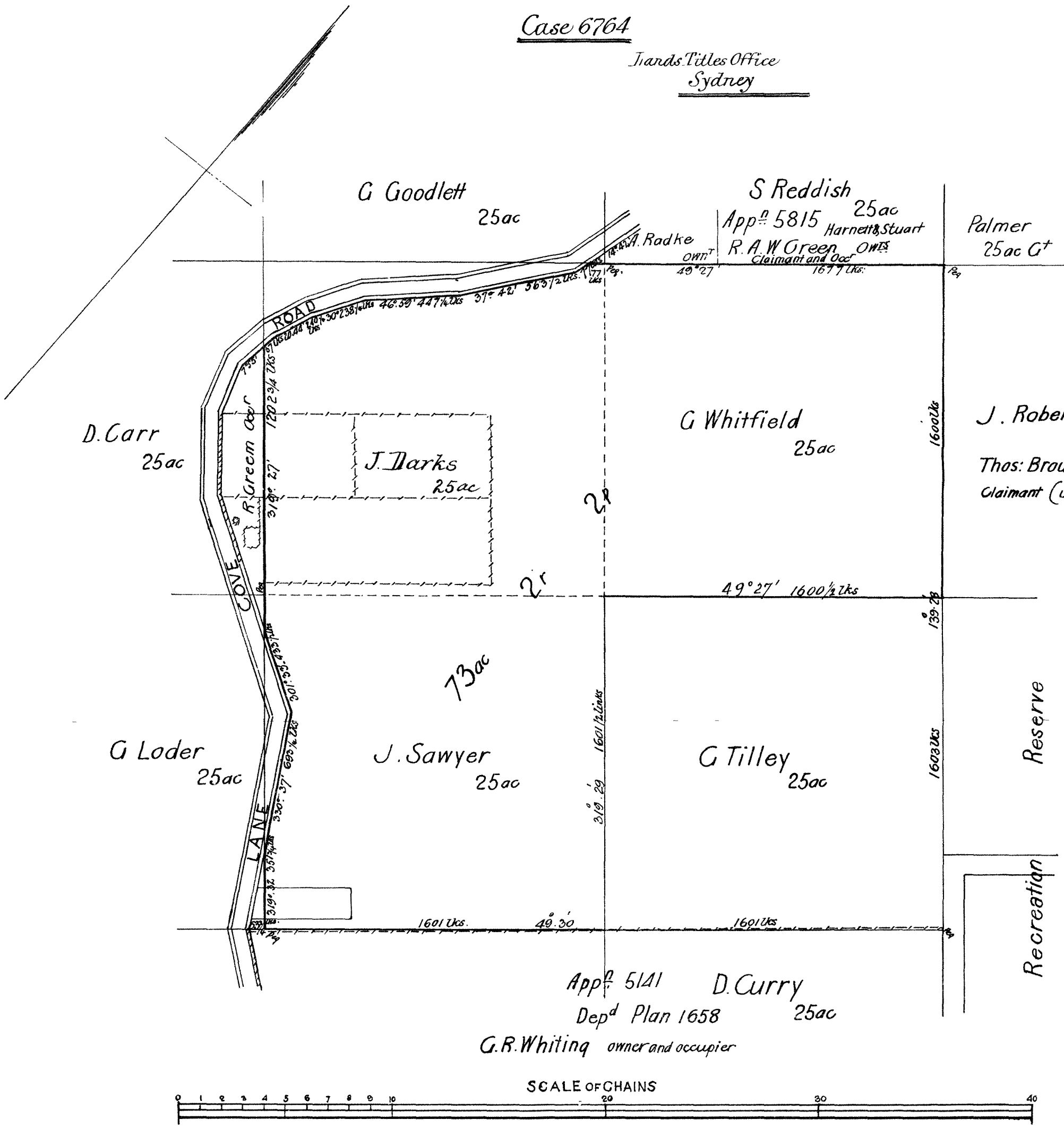
showing C. Whitfield's 25ac Grant & Parts of J. Dark's & J. Sawyer's 25ac Grants. Parish of Willoughby

COUNTY OF CUMBERLAND

the property of F. E. Rodgers and anr

Case 6764

Lands Titles Office
Sydney



SCALE OF CHAINS

0 1 2 3 4 5 6 7 8 9 10 20 30 40

(Sig 228)

Traced by
H.J.C.M
Examined by. S.F. 25-3-89

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

Enclosure to No 60

Plan shewing Lia "Wright's grant" Require Recreation Reserve for Boro of

10 Chains to one Inch

(sigd) J Henderson
Council Clerk
13/9/87

Examined H.J.C.M. (Sig. 228)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CROWN LANDS.

(CORRESPONDENCE, &c., IN CONNECTION WITH MRS. ANN ROUSE'S CONDITIONAL PURCHASE, PARISH OF KAHIBAH.)

Ordered by the Legislative Assembly to be printed, 3 September, 1889.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 9th August, 1889, That there be laid upon the Table of this House,—

"Copies of all papers, letters, minutes, evidence, and other correspondence "in connection with Mrs. Ann Rouse's conditional purchase, parish of "Kahibah, in the county of Northumberland."

(Mr. Creer.)

No. 1.

Application by Ann Rouse.

C. [Alienation Act, sections 13, 14, and 19.]

District of Newcastle. No. 3 of 1871.

Application by Ann Rouse for the conditional purchase, without competition, of 80 acres of unimproved Crown Land.

Received by me, with a deposit of £20, this 20th day of July, 1871, at 11 o.clock,—

HEN. BAKER,
Agent for the Sale of Crown Lands at Newcastle.

Sir, Newcastle, 20 July, 1871.

I am desirous of purchasing, without competition, under the Crown Lands Alienation Act of 1861, the portion of unimproved Crown Land hereunder described, containing 80 acres; and I herewith tender the sum of £20, being a deposit at the rate of 5s. per acre on the area for which I apply.

I am, &c.,
ANN ROUSE,
Newcastle.

To the Agent for the Sale of Crown Lands at Newcastle.

Description.

County of Northumberland, parish of Kahibah, 80 acres: Starting at Quin's south-west corner, running 40 chains south, 20 chains west, 40 chains north, 20 chains back to point of starting.

Lapsed—*Gazette*, 29th January, 1875. Forfeited—*Gazette*, 3rd February, 1875.

No. 2.

Mr. H. Rouse to The Secretary for Lands.

Sir, Sydney, 29 July, 1874.

On the 20th day of July, 1871, my mother, Mrs. Ann Rouse, of Red Head, near Newcastle, selected a piece of land, adjoining her own freehold property, of 80 acres, under (as she thought) the 22nd section of the Crown Lands Alienation Act, and has made improvements thereon to the value of not less than £100. She now finds that the said land was applied for under another section of the Act.

She now therefore and hereby requests permission to amend her application for the said land, so as to fulfil the requirements under the aforesaid 22nd section of the said Act.

I have, &c.,
H. ROUSE,
Agent for the said Ann Rouse.

The

[870 copies—Approximate Cost of Printing (labour and material), £13 8s. 3d.]

The Minister for Lands decided this morning that the purchase should be declared lapsed, as Mrs. Rouse cannot make the declaration required by the Act in consequence of her not having resided on the land.—30/7/74. A. Rouse, 5 August, 1874.

No. 3.

The Under Secretary for Lands to Mrs. A. Rouse.

Madam, Department of Lands, Sydney, 5 August, 1874.

80 acres—Ann Rouse, 20 July, 1871. Newcastle.

With reference to your letter of the 29th ultimo, respecting the conditional purchase noted in the margin, and requesting that the section thereof may be altered from the 13th to the 22nd, I am directed to inform you that the Minister for Lands has decided that the purchase in question must be declared lapsed, as Mrs. Rouse cannot make the declaration required by the Crown Lands Alienation Act, in consequence of her not having resided on the land.

I have, &c.,
W. W. STEPHEN.

No. 4.

Mr. H. Rouse to The Under Secretary for Lands.

Sir, Sydney, 24 November, 1874.

My mother, Mrs. Ann Rouse, selected at Red Head, parish of Kahibah, near Newcastle, on the 21st July, 1871, 80 acres of land, under the 13th clause, and not having complied with the land regulations the same land by the Act will be declared forfeited. As agent for Mrs. A. Rouse I hope the land will be declared forfeited as soon as convenient to the Government.

I have, &c.,
HENRY ROUSE,
Agent for Ann Rouse.

Should be included in next forfeited list.—W.B., 22/12/74. Approved, 22 December.

No. 5.

Mr. Licensed-Surveyor Stuart to The Surveyor-General.

Sir, Camp, Teralba, 26 June, 1875.

I do myself the honor to transmit to you a plan of Ann Rouse's 80-acre A.C.P., No. 121.

Though now within the Newcastle water reserve, I presume that at the date of application, and from the number of surveyors' hands it has been through, it was then unobjectionable. I have therefore measured it subject to your approval.

The improvements, consisting of hut and fencing, I value at £46.

I have, &c.,
CLARENDON STUART,
Licensed Surveyor.

P.S.—The applicant is resident.—C.S.

Ask Mr. L.-S. Stuart why he left the road, &c.; also, why he stated on plan that the portion was applied for under the 21st clause.—J.H.C., 19 August, 1875. Dealt with in charting branch. The conditional purchase is within water reserve, notified 1st January, 1867, and also now within the population reserve around Newcastle.—J.H.C. Call the portion No. 221, and inform Mr. L.-S. Stuart to that effect.—H.C.

D.-S.-General,—Mr. L.-S. Stuart draws attention to the fact of the portion being measured within water reserve, notified 1st January, 1867, but he has overlooked the fact of its being also within population reserve around Newcastle.—J.H.C., 21 September. Shall he be paid for survey?

Conditional purchase application is noted forfeited. Papers may be placed at records after the D.-S.-General has seen my memo. of to-day's date.—J.H.C., 21 September, 1875. Measurement should be paid for, as the application was made before the extension of the population boundary.—R.D.F., 5 October, 1875. Papers may be placed away, as the portion, although measured, will not be offered at auction sale.—J.H.C., 5 October, 1875.

No. 6.

Mr. H. Rouse to The Under Secretary for Lands.

Sir, Newcastle, 11 August, 1875.

I have received your letter of the 5th, in answer. I am sorry the Minister could not allow the alteration to be made, inasmuch as all the money had been duly paid. I suppose the deposit will have to be forfeited. The balance (£61) I hope will be returned at your earliest convenience, and placed to the credit of Ann Rouse or myself in the Bank of New South Wales, Newcastle.

By so doing you will oblige. I am, &c.,
H. ROUSE,
Agent for Ann Rouse.

No. 7.

H. J. Withers & Co. to The Under Secretary for Lands.

Sir, Exchange Corner, Sydney, 19 August, 1875.

On behalf of Ann Rouse we have the honor to request that you will grant a refund of deposit paid by our client on the conditional purchase noted in margin. This land was taken up in 1871, but was not surveyed until the latter end of last year.

Ann Rouse, 21st July, 1871, at Newcastle.

We have, &c.,

HENRY J. WITHERS & CO.

The refund in this case should not be allowed, survey having been made on the 12th February, 1875, and the application for return of the deposit money, dated 19th of August, 1875. The application has also been lapsed and forfeited, in consequence of non-residence by applicant. Messrs. Withers & Co. should be apprised.—16/12/75.

No. 8.

The Under Secretary for Lands to H. J. Withers & Co.

Gentlemen, Department of Lands, 28 January, 1876.

Referring to your letter of the 19th August last, on behalf of Ann Rouse, applying for refund of deposit paid on her selection mentioned in the margin, on the grounds of non-survey within twelve months, I am directed to inform you that the refund cannot be granted, as the application was not made until after the survey of the land had taken place.

C.P. 71-2,478, 80 acres, Newcastle, 20 July, 1871.

I am also to inform you that your client's purchase was declared forfeited by notice in the *Government Gazette* of 5th February last.

I have, &c.,

W. W. STEPHEN.

No. 9.

Declaration of Conditional Purchaser.

(C.P. No. 75-1.) D. [Alienation Act.]

Declaration of Conditional Purchaser under the 18th section of the Crown Lands Alienation Act of 1861 (25 Vic. No. 1.)

I, JOHN WOOD, of Newcastle, wine merchant, do solemnly and sincerely declare that I am one of the trustees and executors of Ann Rouse, who died the lawful owner, by conditional purchase, under the 22nd section of the Crown Lands Alienation Act of 1861, of the land hereunder described, and that improvements, consisting of house, fencing, and orchard, and to the value of £500, have been made on the original selection adjoining (see 39 Vic. No. 13/8/22). The said Ann Rouse died on 17th of March last. And I make this solemn declaration, conscientiously believing the same to be true, and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled "An Act for the more effectual abolition of oaths and affirmations taken and made in various departments of the Government of New South Wales, and to substitute declarations in lieu thereof and for the suppression of voluntary and extra-judicial oaths and affidavits."

Taken and declared, at Newcastle, this 6th day of May, 1878, before me,— JOHN WOOD.

ALEX. LUMSDAINE, Commissioner for Affidavits.

Description.

County of Northumberland, parish of Kahibah, 80 acres, at Red Head, being conditional purchase No. 1 of 1875, in the district of Newcastle, made on the 4th February, 1875.

[*Enclosure.*]

C.P. No. 75/1, L.A. No. Applicant, Ann Rouse (widow); land district, Newcastle; date, 4th February; time, 10·15; area, 80 acres; section 22.

Description.

80 acres, portion 221, in parish of Kahibah, county of Northumberland, parish of Kahibah: Starting at Quin's south-west corner, running 40 chains south, 20 chains west, 40 chains north, and 20 chains back to the starting point, and which adjoins my freehold of 40 acres on the west.

Action taken:—Declared void. (*Vide* 78-48,352 C.S.)

For particulars of applicant's freehold.—H.E.W., 27 September, 1878. Con. Sales Bch. Cannot trace any freehold by Ann Rouse, Land Agent at Newcastle may be able to give particulars.—H.E,W., 16 November, 1878. Con. Sales Bch. The Land Agent at Newcastle will please give the above particulars.—C. E. NEATE (for the Chief Commissioner), Department of Lands, B.C., 27 November, 1878.

No. 10.

Office Memorandum.

THE freehold of Ann Rouse, widow (deceased), referred to in annexed paper, is portion 21, in the parish of Kahibah, in county of Northumberland (within police district of Newcastle). This portion 40 acres was originally conditionally purchased by one Lydia Packer Priest (described in the C.P. Register at this office as the wife of a settler), on the 27th August, 1863, and under section 13 of 25 Vic. No. 1, and alienated to Ann Rouse aforesaid (entered in error by late L.A. as Henry Rouse, a son of said Ann Rouse), then a widow, on 23rd October, 1866, who, by payment of the balance of purchase money thereon, rendered it a freehold*, and who, in virtue thereof, and consequently under section 22† of aforesaid Act selected the 80 acres referred to in the amended paper,—a prior selection by her of same area, and identical therewith, having been cancelled, &c. (See *Government Gazette* in 75/30.)

C.L.O., Newcastle, 29 November, 1878.

ALEX. LUMSDAINE, C.L.A.

* Entered in error by late Land Agent as Henry Rouse (a son of said Ann Rouse.)

† Entered in error by late Land Agent as section 13.

It

It is recommended that C.P., application 75/1, Newcastle, be declared void, as the land applied for is situated within Newcastle population reserve, and also water reserve, notified 1st January, 1867.—Robt. D. Fitzgerald (for Surveyor-General), 20 January, 1879. C.S. Records.

For Cancellation.—A.O.M., 31/1/79. Applicant will refund order. Agent and Treasury informed. Refund of deposit and interest, 6 February, 1879.

No. 11.

The Chief Commissioner to The Land Agent at Newcastle.

Department of Lands, Sydney, 6 February, 1879.

Sir,

I desire to inform you that the application of Ann Rouse, on the 4th February, 1875, for the conditional purchase of 80 acres of land, is void, as the land applied for is situated within Newcastle population reserve and also water reserve, notified 1st January, 1867.

2. A form for refund of deposit has been forwarded for the signature of the applicant, the nature of which you will be so good as to explain to her if required.

I have, &c.,
W. M. BLACKMAN
(For the Chief Commissioner.)

No. 12.

The Chief Commissioner to Mrs. Ann Rouse.

Department of Lands, Sydney, 6 February, 1879.

Madam,

I desire to inform you that the application made by you at Newcastle, on the 4th February, 1875, for the conditional purchase of 80 acres of land, is void, as the land applied for is situated within Newcastle population reserve, and also water reserve, notified 1st January, 1867.

Deposit paid, £20.

2. Enclosed is a form which, on being filed up, in accordance with the instructions thereon, and forwarded to the Treasury, Sydney, will enable you at once to obtain the refund of your deposit.

I have, &c.,
W. M. BLACKMAN
(For the Chief Commissioner.)

P.S.—The interest paid will also be refunded upon application at the Treasury.

No. 13.

The Chief Commissioner to The Under Secretary for Finance and Trade.

Conditional purchase—Revenue refunded—Conditional purchase No. 75-1.

Department of Lands, Conditional Sales Division,
Sydney, 6 February, 1879.

Sir,

District, Newcastle; name, Ann Rouse; date of selection, 4th February, 1875; area, 80 acres.

I have to inform you that the conditional purchase noted in the margin being void, as the land applied for is situated within Newcastle population reserve, and also water reserve, notified 1st January, 1867, you will be good enough to refund to the selector the sum of £20, being the deposit money paid thereon.

2. I am to add that a receipt form for the disposal of the money has been forwarded to the applicant, with instructions to fill up same and transmit it to the Treasury.

I have, &c.,
W. M. BLACKMAN
(For Chief Commissioner.)

P.S.—The interest paid should also be refunded.

No. 14.

Mr. H. J. Brown to The Chief Commissioner.

Newcastle, 12 February, 1879.

Sir,

Referring to your communication of the 6th instant, addressed to the late Mrs. Ann Rouse, informing her that her conditional purchase of 80 acres of land, made on the 4th February, 1875, is void, as the land is situate within the Newcastle population reserve, I have the honor to state, on behalf of the executors and trustees of the will of Mrs. Rouse, that the land in question is situated 7 miles from the extreme boundary of the city of Newcastle, the population of which, according to the last census, was considerably under the prescribed number of 10,000, and was therefore open for selection, under the 13th section of the Crown Lands Alienation Act of 1861, and to purchase under the 22nd.

I may mention that at least £200 have been spent on the land, and that, in compliance with notice from the Government, interest has been paid on the balance of purchase-money, the whole of which would have been paid but for the fact that the will, not having been proved, the executors were not in a position to do so, which they are now prepared for.

I have, &c.,
HENRY J. BROWN.

The C.P. had been correctly declared void. The population reserve of Newcastle extends 5 miles, in *direct line* southerly as far as Red Head, and includes the land applied for.—T.S. (for Surveyor-General), 27 March, 1879.

No. 15.

No. 15.

The Chief Commissioner to H. Brown, Esq.

Department of Lands, Conditional Sales Division,
Sydney, 24 April, 1879.

Sir,

Adverting to your letter of the 12th of February last, on behalf of the executors of the late Mrs. A. Rouse, relative to the cancelled selection quoted in the margin, I have to apprise you that this purchase has been recently declared void, the population reserve of Newcastle extending 5 miles in a direct line southerly, as far as Red Head, including this land applied for.

Newcastle, C P. 75-1; Mrs. A. Rouse.

I have, &c.,
A. O. MORIARTY,
Chief Commissioner.

No. 16.

Mr. H. Rouse to The Secretary for Lands.

Red Head, *via* Charlestown, September, 1886.

Sir,

On the 20th July, 1871, I, as agent for my mother, the late Ann Rouse, selected 80 acres of land adjoining her freehold selection, portion 21, parish Kahibah.

In January, 1875, it was surveyed by Mr. Stuart, Government Surveyor, who made the selection 79 acres, the land at the time being outside the population boundary.

On applying for the deeds I found that the application was a free selection in place of an additional purchase to the selection my mother was at the time living on.

I may state that my mother expended in buildings, orchard, and fencing, upwards of £1,500.

I applied to the Lands Agent, Newcastle, for the necessary papers for my mother to sign; on finding a resident clause in the declaration my mother would not sign, not actually living on the selection.

I then went to Sydney, and had a personal interview with Mr. Farnell, then Minister for Lands; his advice was to get the selection forfeited and reselect under the clause he then read to me.

After a short time the selection was cancelled in 1875. (See *Gazette* No. 303.)

I then reselected, on 4th February, 1875, and paid another £20 as an additional purchase, in virtue of her freehold portion 21, parish Kahibah.

I also paid interest on the land from the 4th February, 1878, to the 3rd February, 1879.

After paying the interest I received notice that the land was resumed on the 6th February, 1879, for water purposes.

I also wish to state that the land at the second time of selection was outside the population boundary.

About 60 acres were fenced—a two-railed split, substantial, and capping in some parts; also a two-roomed slab hut, shingled; and about 6 acres felled and cleared,—the cost being at least £200.

The last time Mr. Farnell held office as Minister for Lands I spoke to him about the land and the fix I was in on account of the land being reserved as a watershed. Mr. Farnell's advice was, as the Government had gone to Maitland for their water supply, to get the reserve revoked; then put an application in for the land, having a prior claim, and he could not see what would stop me from securing it.

My mother died on the 17th of March, 1878, willing the proceeds of her property to myself, her only son; at my death the property will then fall into the hands of my four daughters. Mr. John Wood, spirit merchant, and Mr. H. J. Brown, solicitor, both of Newcastle, are the trustees. I am now acting in their behalf.

I am, &c.,
HENRY ROUSE.

Submitted as to whether, under the circumstances stated, the C.P. of 1875 may be validated under section 138 of the Act of 1884, provided that clause be deemed to include cases where residence has been complied with on the adjoining area held in connection with such C.P., and subject to the report of the Local Land Board as to the land not having been claimed in a lawful manner by anyone else since the date of voidance, and to its not being required for public purposes.—S.F., 9/12/86.

I think this is a case that can and should be validated under the 138th section, provided that no conflicting interests have arisen.—H.C., 9/12/86. Mr. H. Rouse informed, 15 December, 1886.

No. 17.

The Under Secretary for Lands to Mr. H. Rouse.

Department of Lands, 15 December, 1886.

Sir,

I have the honor to acknowledge receipt of your letter of September last, respecting the voidance of the conditional purchase quoted in the margin, and to inform you that the Secretary for Lands has approved of this conditional purchase being validated under the 138th section of the Crown Lands Act of 1884, subject, however, to the report of the Local Land Board, as to the land not having been claimed in a lawful manner by anyone else since the date of voidance, and to its not being required for public purposes.

C.P. 75-1, Ann. Rouse, 4th Feb 1875, 80 acres, Newcastle.

I have, &c.,
STEPHEN FREEMAN
(For the Under Secretary).

No. 18.

Mr. H. Rouse to The Chairman, Local Land Board, Maitland.

Newcastle, 5 February, 1887.

Sir,

I have the honor to communicate with you with reference to the land as mentioned in the margin of this communication.

C.P. 75-1, Ann Rouse, 4th Feb., 1875, 80 acres, Newcastle.

As I am only acting in the capacity as a life legatee, and as it is in the interests of my family alone, I wish to express my desire that your Local Land Board, of which you are the head, will cause an inquiry to be held at the earliest opportunity, so that I may be prepared with my witnesses, &c.

Mr.

Mr. John Wood, one of the executors of my late mother's estate, is shortly leaving for England, and it may be some considerable time before he returns, and as he is in possession of all the facts of the case it is both his wish and my wish that the matter should be settled prior to his departure.

Would you therefore kindly press this matter on as an urgent one, as Mr. H. J. Brown, the other executor in the estate, is willing to give his assistance in furthering the inquiry.

I shall be happy to suit your convenience as to whether the inquiry shall be held in Newcastle or Maitland, but as my witnesses are domiciled in Newcastle and its immediate surroundings, and it would suit my convenience and my witnesses if the inquiry were held in Newcastle so as to save unnecessary time, trouble, and expense.

I have, &c.,
HENRY ROUSE.

The District Surveyor will be good enough to report.—JAS. VERNON, Chairman. East Maitland, 8 March, 1887.

The Chairman,—There does not appear to be any other application for this land, but an authority, No. 352, under which permission to mine for coal, in terms of section 28 of the Mining Act of 1874, has been granted to Victor Thomas, Sherbrooke, Houghton, and Samuel Palmer, for certain lands, of which this portion forms a part. (*Vide* Misc. 86/21,844.—L.B., 87/106).—J. WITTEN ALLWORTH, District Surveyor, 9 March, 1887.

No. 19.

Memo. from The Under Secretary for Lands to The Chairman, Local Land Board, Maitland.

C.P., 75-1; Newcastle; Henry Rouse.

THE enclosed papers, referring to the C.P. noted in the margin, are forwarded to the chairman of the local Land Board, Maitland, with a view of ascertaining whether there are any conflicting interests before validating the C.P. in question.

F.H.W.
(For the Under Secretary).

B.C., 7/3/87.

The Chairman,—Since writing the above a letter has been received from the Land Agent at Newcastle stating this land has been applied for as a mineral lease. No. of application, No. 87-2; date of application, 17th January, 1887; area, 79 acres; No. of portion, 221; parish of Kahibah, county of Northumberland.—J. WITTEN ALLWORTH, 10 March, 1887.

No other interest has arisen with respect to this land than those referred to by the District Surveyor.—JAS. VERNON, Chairman, L.B., Maitland, 12th August, 1887. The Under Secretary for Lands.

No. 20.

Mr. H. Rouse to The Under Secretary for Lands.

Sir,

Redhead, *via* Charlestown, 13 July, 1887.

The Land Board held here last week did not think it advisable to take my claim into consideration from the fact that the chairman, Mr. Vernon, could do all that was required.

Mr. Vernon gave me to understand that he would send his report to Sydney after his return to Maitland.

You will please let me know if such report has been received at your office. I should like to go to Sydney and get the matter put through with the assistance of my solicitor, Mr. Merriman. Please let me know.

Yours, &c.,
H. ROUSE.

Mr. Fletcher, M.P., brought Mr. Rouse here some six or seven months back in reference to a void C.P. at Redhead, near Newcastle, and the case was remitted to the Board. Please let me know how the matter stands.—S.F., 14/7/87.

Inform that the case has not yet been returned.—S.F., 14/7/87.

No. 21.

The Under Secretary for Lands to Mr. H. Rouse.

Sir,

Department of Lands, 14 July, 1887.

I have the honor to acknowledge the receipt of your letter of the 13th instant, respecting the conditional purchase noted in the margin, and to inform you that the case has not yet been returned from the Local Land Board office.

Newcastle, C.P. 74-2,478.

I have, &c.,
STEPHEN FREEMAN
(For the Under Secretary).

No. 22.

Mr. H. J. Brown to The Chairman, Local Land Board, East Maitland.

Sir,

Newcastle, 2 August, 1887.

I have the honor to request to be furnished with a copy of Mr. Henry Rouse's letter to the Under Secretary for Lands, which was referred to the Local Land Board for report.

Would you be good enough to send in the report as speedily as possible, as Mr. Rouse is continually urging me on the subject.

I have, &c.,
HENRY J. BROWN.

Mr.

Mr. Brown may be furnished with a copy of the letter written by his co-executor, and informed at the same time that the case has been this day returned with the required report to the Under Secretary for Lands.—JAS. VERNON, Ch., L.B., 12/8/87. Mr. Fitzpatrick.

H. J. Brown with copy.—H.A.F., 12/8/87. Do any mineral leases embrace portion 221, shown on lithograph, blue pencil?—W.H.C., 28/9/87. Yes, it is separately held as a mineral lease by Houghton and Palmer, dated 26th March, 1887, under the Act 48 Vic. No. 10.—W.H.C., 29/9/87. The A.U.S. Submitted.—S.F., 29/9/87. Cannot be validated. Conflicting interests existing.—T.G., 20/9/87. H. J. Rouse, 30/9/87.

No. 23.

The Under Secretary for Lands to Mr. H. Rouse.

Sir,

Department of Lands, 30 September, 1887.

Adverting to my letter of the 15th December last, respecting the validation of the conditional purchase noted in the margin, I have the honor to inform you that the Secretary for Lands has now decided that as there are conflicting interests existing the selection in question cannot be validated.

Newcastle, C.P. 75-1, 4th February, 1875, 80 acres; Ann; Rouse.

I have, &c.,

STEPHEN FREEMAN

(For the Under Secretary).

REPORT from the Select Committee on Mrs. Ann Rouse's Conditional Purchase, Parish of Kahibah; together with the Proceedings of the Committee and Minutes of Evidence.

EXTRACTS FROM THE VOTES AND PROCEEDINGS OF THE LEGISLATIVE ASSEMBLY.

Votes No. 16. *Tuesday*, 25 *October*, 1887.

15. MRS. ANN ROUSE'S CONDITIONAL PURCHASE, PARISH OF KAHIBAH:—*Mr. Melville*, for Mr. Abbott, moved, pursuant to Notice,—

(1.) That a Select Committee be appointed, with power to send for persons and papers, to inquire into and report upon all the circumstances attending the conditional purchase of Mrs. Ann Rouse of 80 acres, situate in the parish of Kahibah, and the forfeiture of the same.

(2.) That such Committee consist of Mr. Brunker, Mr. Day, Mr. Ewing, Mr. Goodwin, Mr. Garrett, Mr. Hassall, Mr. Lee, Mr. Thompson, Mr. Sydney Smith, and Mr. Abbott.

Question put and passed.

Votes No. 79. *Wednesday*, 18 *April*, 1888.

3. MRS. ANN ROUSE'S CONDITIONAL PURCHASE, PARISH OF KAHIBAH:—Mr. Day (*by consent*), moved, without Notice, That the papers relating to the conditional purchase of Ann Rouse, and the applications of Messrs. Houghton and Palmer to mine under reserves at Kahibah, printed by order of the House, be referred to the Select Committee sitting in reference to the conditional purchase of Ann Rouse.

Question put and passed.

Votes No. 99. *Wednesday*, 6 *June*, 1888.

7. MRS. ANN ROUSE'S CONDITIONAL PURCHASE, PARISH OF KAHIBAH:—*Mr. Day*, for Mr. J. P. Abbott, Chairman, brought up the Report from, and laid upon the Table the Minutes of Proceedings of, and Evidence taken before, the Select Committee for whose consideration and report this subject was referred on 25th October, 1887.

Ordered to be printed.

Mrs. Ann Rouse's Conditional Purchase, Parish of Kahibah.

REPORT from the Select Committee of the Legislative Assembly, appointed on the 25th October, 1887, "*with power to send for persons and papers to inquire into and report upon all the circumstances attending the conditional purchase of Mrs. Ann Rouse of* 80 *acres, situate in the parish of Kahibah, and the forfeiture of the same*," and to whom was referred on the 18th April, 1888, "*the papers relating to the conditional purchase of Ann Rouse*," and "*the applications of Messrs. Houghton and Palmer to mine under Reserves at Kahibah*," beg to report to your Honorable House:—

Your Committee, having examined the witnesses named in the List (whose evidence will be found appended hereto), find as follows:—

(1.) That on the 20th July, 1871, Ann Rouse conditionally purchased 80 acres of land in the parish of Kahibah, county of Northumberland, and in 1874 the Government sent Mr. Surveyor Stuart to measure the land, and he reported the survey on the 26th January, 1875, which was approved on 20th September, 1875, four years after the land was selected.

(2.) On the 29th January, 1875, the conditional purchase was declared lapsed, owing to non-payment of interest and non-receipt of declaration.

(3.) On the 4th February, 1875, the said Ann Rouse, reselected the land by virtue of her freehold, on which she then resided, and on the 6th February, 1879, her second selection was declared void, as being on a water reserve.

(4.) Formal protests were made by the said Ann Rouse to the Lands Department against such voidance, and Mr. Secretary Copeland, after considering the case, wrote a minute on the 9th December, 1886, to the effect that he considered the case was one which should be validated under section 138 of the Land Act of 1884. This minute was written some nine years after the first selection, and over four after the second.

(5.)

(5.) No further steps appear to have been taken by the Department until 31st July, 1886, when a lease of the land was granted to Messrs. Houghton and Palmer for coal-mining purposes, thus creating conflicting interests, which prevented Mr. Secretary Copeland's minute from being carried out.

Your Committee, having considered all the circumstances of the case, and in view of the improvements effected on the land—the extraordinary delay of the Lands Department in declaring the voidance of the selections—and that the said Ann Rouse and her heirs have been in undisturbed possession since 1871—strongly recommend her case to the favourable consideration of the Government.

J. P. ABBOTT,
Chairman.

No. 2 Committee Room,
Sydney, 6th June, 1888.

Proceedings of the Committee.

Thursday, 15 *March*, 1888.

Member Present:—

Mr. Lee.

[In the absence of a quorum the meeting called for this day lapsed.]

Wednesday, 11 *April*, 1888.

Members Present:—

Mr. Day, | Mr. Lee,
Mr. Ewing.

Mr. Day called to the Chair *(pro tem.)*

Entry from Votes and Proceedings, appointing the Committee, *read* by the Clerk.

Resolved:—That Mr. J. P. Abbott be Chairman of this Committee.

[Adjourned to Wednesday next, at *Eleven* o'clock.]

Wednesday, 18 *April*, 1888.

Members Present:—

Mr. J. P. Abbott in the Chair.

Mr. Day, | Mr. Garrett.

Committee deliberated.

Ordered:—That the Under Secretary for Lands and Mr. Rouse be summoned to give evidence next meeting.

[Adjourned to to-morrow, at *Eleven* o'clock.]

Thursday, 19 *April*, 1888.

Member Present:—

Mr. Day.

[In the absence of a quorum the meeting called for this day lapsed.]

Wednesday, 25 *April*, 1888.

Member Present:—

Mr. Lee.

[In the absence of a quorum the meeting called for this day lapsed.]

Thursday, 3 *May*, 1888.

Members Present:—

Mr. Day, | Mr. Ewing,
Mr. Thompson, | Mr. Sydney Smith,
Mr. Brunker, | Mr. Lee.

Mr. Day called to the Chair (*pro tem*).

Entry from Votes and Proceedings referring to the Papers relating to the conditional purchase of Ann Rouse, and applications of Messrs. Houghton and Palmer to mine under reserves at Kahibah, *read* by the Clerk.

Printed copies of the Papers *referred*, before the Committee.

Mr. Henry Rouse called in, sworn, and examined.

Mr. Day having retired, Mr. Brunker was called to the Chair (*pro tem*).

Examination of Mr. Henry Rouse resumed.

Witness withdrew.

William Henry Capper (*Clerk-in-charge, Conditional Sales Branch, Lands Department*) called in, sworn, and examined.

Room cleared.

Committee deliberated.

Reassembling of the Committee to be arranged by the Chairman.

[*Adjourned.*]

Thursday,

Thursday, 10 *May*, 1888.

Members Present:—

Mr. Brunker, | Mr. Day.

[In the absence of a quorum the meeting called for this day lapsed.]

Wednesday, 16 *May*, 1888.

Members Present:—

Mr. Day, | Mr. Ewing,
Mr. Thompson.

Mr. Day called to the Chair (*pro tem.*)

W. H. Capper, Esq. (*Clerk-in-charge, Conditional Sales Branch, Lands Department*), called in and further examined.

Witness withdrew.

Committee deliberated.

[Adjourned to Wednesday, 30th May, at *half-past One* o'clock.]

Wednesday, 30 *May*, 1888.

Members Present:—

None.

[In the absence of a quorum the meeting called for this day lapsed.]

Wednesday, 6 *June*, 1888.

Members Present:—

Mr. J. P. Abbott in the Chair.

Mr. Day, | Mr. Ewing.

Chairman submitted draft Report.

Same read and *agreed* to.

Chairman to report to the House.

MINUTES OF EVIDENCE taken before the Select Committee on Mrs. Ann Rouse's Conditional Purchase, Parish of Kahibah.

THURSDAY, 3 *MAY*, 1888.

Present:—

MR. BRUNKER,	MR. LEE,
MR. EWING,	MR. SYDNEY SMITH,
MR. THOMPSON,	MR. DAY.

G. DAY, ESQ., IN THE CHAIR.

Mr. Henry Rouse called in, sworn, and examined:—

Mr. H. Rouse. 3 May, 1888.

1. *Chairman.*] Where do you reside? At Redhead, near Newcastle.

2. What is your occupation? I am what is termed a yeoman, living on my own property and spending my own means.

3. Do you remember an application being made by Ann Rouse in 1871? I made an application in her name.

4. You made an application in her name for the right to purchase 88 acres of land, and tendered a deposit of £20 in accordance with the provisions of the law? I did.

5. Did you ever hear anything about the purchase before you got a letter from the Under Secretary for Lands? I heard nothing of the property until 1879.

6. Did not Mrs. Ann Rouse receive a letter from the Under Secretary on the 5th August, 1874? Yes; it was about the forfeiture.

7. It stated that the land was forfeited because she could not make the declaration? It did.

8. What did you do after that? Reselected as a conditional purchase by virtue of the freehold that we were then residing on. We had spent something between £1,500 and £2,000 on the freehold. It was not voided until February, 1875. It was taken up as a free selection instead as an additional conditional purchase.

9. You heard nothing of the land after the second application was made until 1879? Not a sentence that I am aware of.

10. What did you first hear? That the Department had reserved the land for water purposes.

11. Did they refuse the application? They asked me to make out a claim for any improvements I might have made upon the land. I was in the hands of trustees, my mother having died. Mr. John Wood and Mr. H. J. Brown, of Newcastle, were my trustees. Mr. Brown was solicitor to the estate, and his reply was, "No; we will make no application. The land is freehold property. I do not think that the Government are entitled to take freehold property away from us without an Act of Parliament. We want compensation for the land and the coal that is underneath it." Matters have remained in that state until the present.

12. Did the Government take possession of the land? I have had possession ever since 1871. It is fenced in.

13. Have you had any communication from the Government since 1879? I have corresponded with them since 1879.

14.

Mr. H. Rouse. 3 May, 1888.

14. What has been the result of the correspondence? The last correspondence was to this effect: that the 80 acres was leased to Messrs. Houghton and Palmer for coal-mining purposes. Most of the correspondence has taken place since the land was taken up for coal-mining purposes.
15. Did you get any reason from the Department? They said that it was taken for water purposes—that it was part of the Newcastle water reserve.
16. It was not part of the water reserve when you took it up? Not that I know of. We did not know that there was a water reserve there.
17. Was there really a water reserve? I do not think that it had been proclaimed a water reserve. In 1875 Mr. Secretary Farnell did not tell me that it was a water reserve. If he had thought that it was a water reserve he would not have given me the land. I saw him frequently about the matter. He said that the land must be voided, and that I could take it up as an additional conditional purchase by virtue of my freehold. He told me what section of the Act I could take it up under.
18. You would not be satisfied with a refund of the deposit money, the interest, and the cost of the improvements? No; I should like the property. The improvements have all been burnt down. The land that had been cleared is now covered with bush. Saplings a foot through have grown on it since 1879. The property is too valuable for me to take compensation for the improvements.
19. Have you paid up the interest? Up to the time that they gave me notice that they had taken it for water purposes. I have not paid interest since the 6th February, 1879.
20. If the land was a water reserve then, according to law, you could not keep it? I do not know whether it was or not. If I had thought that it was a water reserve, I should not have taken it up. They took my money for the land both in 1871 and in 1875. I think that Mr. Bowie Wilson was Secretary for Lands in 1871. But Mr. Farnell was Minister when I took the land up on the second occasion. I was with him every week for twelve weeks over the matter. He told me how to get it forfeited. When I saw notice of the forfeiture in the Court-house, at Newcastle, I immediately went in and paid a deposit of £20. Mr. Farnell told me afterwards that no one could take the land from me.
21. *Mr. Brunker.*] What was the area of your mother's freehold? 40 acres.
22. Does this land adjoin it? Yes; the Government sent a surveyor, Mr. Clarendon Stuart, in 1874 to survey the land.
23. You were not aware that it was a water reserve at the time the selection was made? No, else we would not have made it.
24. When did you receive the first intimation that it was a water reserve? In February, 1879.
25. What action did you then take? The Government then asked us to make out a claim for any improvements that might have been made on the 80 acres, but Mr. Brown, one of the trustees and solicitor to the estate, as I have already said, would not consent to their proposition.
26. Did you take any further action? I applied to Mr. Secretary Copeland, and he, after looking into the case, wrote a reply which you will find in the papers, saying he could see no reason why under a certain section of the Act the selection might not be validated. I wrote my application in September, but I did not receive a reply until January.
27. Why was that? My application was mislaid somewhere or other. He did not get my letter.
28. Had Messrs. Houghton and Palmer, any idea that the conditional purchase had been taken up by you before they made application for a lease of the land for coal mining purposes? They knew all about it. Mr. Palmer knew about it for years and years.
29. Who is he? He was a boundary rider for Mr. Merewether. I used to see him every day. He knew that I had possession of the land since 1871. It was fenced in and there was a hut and everything on the land. He said to me one day in Sydney "I see you have gone in for your land." "Yes, of course I have." I said, "I know you are going round selecting all the land you can get. I want only 80 acres." He said, "Our people have plenty of money. We want the land. Give us the first chance. We will give you more than anybody else." I said, "So far as I am concerned I will sell the land and the homestead too, because I want to make a change; but my trustees are the proper parties to deal with, make your bargain with Mr. John Wood and Mr. J. H. Brown." He said, "All right."
30. *Mr. S. Smith.*] When Mr. Secretary Copeland wrote his minute were there any conflicting interests in existence? No.
31. Palmer and Houghton had not applied for the land then for coal purposes? No.
32. *Mr. Ewing.*] Do you believe that the land that you took up in 1871 is not within the boundary of the reserve? No; because Mr. Surveyor Stuart told me that there was no objections to the deeds being made out. In 1874 he stopped at my mother's place. He surveyed the 80 acres first and the reserve afterwards.
33. Did the Government put you in possession of the land? We have kept possession of the land; we have never lost possession.
34. How long have you been in possession? I have not given up possession of the land from 1871 up to the present time.
35. How long did the Government allow you to be in possession? They have never given me notice to quit the land in any shape or form. It was forfeited on account of a mistake in the application. Mr. Gillies, who is called a long-headed Scotchman, said to my mother, "Mrs. Rouse, take my advice, apply for the 80 acres as an additional conditional purchase in virtue of your freehold, and I will measure it for you." He wrote out the application, but instead of it being for an additional conditional purchase it was for a free selection. I think it was Mr. Baker, a lawyer in Newcastle, who made the mistake. Mr. Stuart, when he was at my mother's place in 1874 said, "Now, Mrs. Rouse, I have surveyed your land. I have sent the document to the Government. You can apply for the deeds and get them as quickly as you like."
36. You stated that you are still in possession of the land; I asked you whether the Government had at any time interfered with you in possession, and you said, "no," but it seems that the land has been cancelled? Forfeited.
37. That is the most practical interference that the Government could have with you? It was forfeited, and I took it up under another section. I applied for the land in 1874, and I was in occupation for four years before they gave me notice that they required it for water purposes.
38. *Mr. S. Smith.*] Were you informed by Mr. Stuart when he made the survey, that the land was within the water reserve? No; he surveyed all the water reserve after he had surveyed my selection. He was there for weeks after he had surveyed my selection.

William Henry Capper, Esq., called in, sworn, and examined:—

W. H. Capper, Esq. 3 May, 1888.

39. *Mr. Brunker.*] You are Clerk-in-charge of the conditional sales branch in the Lands Department? Yes.

40. What do you know with regard to this case of Mrs. Ann Rouse? An application was made on the 20th July, 1871, by Mrs. Ann Rouse under section 13 of the Act of 1861, for a conditional purchase of 80 acres in the district of Newcastle. It was declared lapsed on the 29th January, 1875, for non-receipt of declaration and non-payment of interest. This action was taken with the concurrence of the parties interested. The land was reapplied for by Mrs. Ann Rouse, on the 4th February, 1875. The application was declared void on the 6th February, 1879.

41. Was that the first intimation they had between the receipt of the application and the voidance of the selection? Yes. Protests against the voidance were subsequently received, but it was upheld. These protests have recently been renewed. Mr. Secretary Copeland on the 9th December, 1886, wrote a minute to the effect that he thought the case was one which should be validated under section 138 of the Act of 1884.

42. *Mr. Ewing.*] What is the section? No. 138; it provides for the validation of selections taken up within reserves where the applicants have retained undisturbed possession for twelve months.

43. It is a "retrospective" section virtually? Yes, but it has no effect where there are conflicting interests.

44. Not as against the Crown but as between individuals? Yes. And in the case now before the Committee, upon inquiry being made at the Mines Department it was found that there were conflicting interests, and consequently Mr. Secretary Garrett, on the 20th December, 1887, decided that he could not validate it under that section.

45. You say that Ann Rouse first of all made application in 1871, and that it was declared forfeited in 1875. What was the Department doing in the interim? The Department was waiting for the selector to fulfil the conditions.

46. *Mr. Thompson.*] In what way? Residence and improvements.

47. *Mr. Ewing.*] But the selection was not forfeited for that reason? Yes; as well as for the reasons already given.

48. Then the reason it was declared forfeited was not because it was a reserve, but because the selector had not carried out any of the conditions? Exactly.

49. Suppose that she had carried out the conditions—how would the Department have stood then—she would have got the land? That I cannot say.

50. If you forfeited the selection because she did not carry out the conditions, and you say that the Department was waiting for her to fulfil the conditions, the inference is that if she had carried out the conditions she would have got the land? I should say so.

51. Does it not seem a strange thing to resuscitate the reserve after an action of that kind? No; because the second application was quite a new matter entirely.

52. The reapplication was made on the 4th February, 1875. On the 5th September, 1875, the Department sent a surveyor in the employ of the Surveyor-General to survey the land*? Yes; that is the date of the approval of the plan.

53. When were the parties first informed that they were in occupation of Crown land? On the 6th February, 1879, when they received notice of voidance.

54. As far as the Crown was concerned the people apparently were in undisputed possession of the land for about four years? Yes.

55. You are aware that under the present Act if a person has been in undisputed possession for twelve months his title is a good one? It is capable of validation.

56. It is reasonable to infer that had Mr. Secretary Copeland remained in office this particular selection would have been validated? The present Secretary for Lands would validate it if there were no conflicting interests.

57. From the tenor of Mr. Secretary Copeland's minute it would appear that had he remained in office he would have taken definite action in the matter? That I cannot say, as it has been shown recently that conflicting interests had arisen. The conflicting interests would have affected the late Minister in the same way as they have affected the present one.

58. These conflicting interests have only been in existence since the 31st July, 1886. Does it not appear a strange thing that they should override what previously was departmentally a good claim? I cannot admit that they had a good claim.

59. Apparently the Department considers that had not application been made on the 31st July, 1886, Mr. Copeland would have validated it? Yes.

60. And that Mr. Secretary Garrett, it would appear, would be willing to validate it only for the existence of these conflicting interests? Yes.

61. The simple accident of a man creating conflicting interests ruins what otherwise would be to the man a good case? Yes, so it appears.

62. *Mr. Brunker.*] Is there anything in the records of the Department that would lead you to believe that it was anything but *bonâ fide* selection? No. But if the conditional purchase were validated to-morrow the Department would at once set to work to ascertain if the conditions had been fulfilled; but as the selection was declared void the Department ceased to take any steps to investigate the fulfilment of the conditions.

63. *Mr. Ewing.*] It is the custom of the Department to take a retrospective view of cases of this kind? Yes.

64. *Mr. Brunker.*] Who was the first to survey the land? Mr. Stuart surveyed the land in virtue of the first application made in 1871.

65. When did he report to the Department? He reported on the 26th January, 1875, and his survey was approved on the 21st September, 1875.

66. He made a survey of the land between 1871 and 1875, and the survey was approved in 1875? Yes.

67. What do you mean by the survey being approved? The Minister or an officer deputed by him has to approve of all surveys.

68. Then on the forfeiture of the first selection was there a second survey made? No.

69.

* Note (*on revision*):—Not so, no instructions were issued to a surveyor in connection with the second application.

W. H. Capper, Esq. 3 May, 1888.

69. How was the information first obtained by the Department that the first selection was within a water reserve? The question did not arise in connection with the first application, but an explanatory memorandum was furnished by the Crown Lands agent in regard to the second application.
70. But he must have been put in motion by the Department? Yes. In the application lodged by Mrs. Ann Rouse there were particulars wanting as to the freehold. In fact sufficient information was not given in the application to identify the freehold. A copy of the original application was sent to the Crown Lands agent in 1878 to furnish particulars. Thereupon Mr. Lumsdaine furnished a memorandum dated 29th November, 1878, and upon that the Deputy Surveyor-General recommended the application for voidance, on account of the land being within the Newcastle population reserve, and also within the water reserve.

WEDNESDAY, 16 *MAY*, 1888.

Present:—

MR. DAY,

MR. EWING, | MR. THOMPSON,

GEORGE DAY, ESQ., IN THE CHAIR.

William Henry Capper, Esq., called in, sworn, and examined:—

W. H. Capper, Esq. 16 May, 1888.

71. *Chairman.*] Was the second application made for this conditional purchase on the 4th February, 1875? Yes.
72. Was that application taken into consideration, and a surveyor sent to survey the land? No; a surveyor was never sent to measure it.
73. It was never measured after the second application? No; no steps were taken by any surveyor in connection with the second application.
74. *Mr. Ewing.*] You said that the Department never issued instructions to survey in connection with the second application? They did not.
75. Did they accept the deposit? The land agent did, of course, as he must do.
76. Did he accept it under protest? That I cannot say; I have nothing to show that he did.
77. You cannot say that it was not? I assume that it was not under protest.
78. They accepted the deposit, and the man went into occupation? I do not know anything about that.
79. You did not send a surveyor? No.
80. Do you mean that they intended to take no further action about it? No; certainly not. As I have already stated, the description was not sufficiently explicit, and the land agent was asked for information regarding the freehold.
81. What steps did the Department take after accepting the deposit? The papers merely show that the matter was dealt with by a draftsman, on the 16th November, 1878.
82. About three years after it was taken up? Yes; and then he stated that he could not trace any freehold in the name of Ann Rouse, and suggested that the land agent might be able to give particulars.
83. From 1875 to 1878 the applicant did not know departmentally that the Government was not prepared to complete the bargain? No.
84. *Mr. Thompson.*] Does it not show also by memorandum No. 10 in printed copy of papers that the freehold of Ann Rouse was discovered, and information given on the 29th November, 1878, as to that freehold? Yes, and upon that information the freehold was identified, and the position of the additional C.P. in virtue of it was located, and found to be in a reserve. Then the application was cancelled.
85. *Mr. Ewing.*] In the year 1878? Yes, on the 6th February.
86. *Chairman.*] Do you remember when the water reserve was proclaimed? No; but I can give you the date of the proclamation. It is dated the 1st January, 1867.
87. Was all the land embraced in this conditional purchase within that water reserve? Yes.
88. It was taken from the water reserve? Yes.*
89. And there has been no selection on that water reserve since then until now? Yes.
90. Have the selections been allowed? One has been validated by a special Act.
91. Which was that? One taken up on the 1st May, 1873, by Walter Baylis, portion 93.
92. *Mr. Ewing.*] On what ground was it validated? Because of its being within an area reserved from conditional purchase on account of the population of the City of Newcastle.
93. *Chairman.*] There is no reserve dated the 20th March, 1885? Yes; it is the population area. There is a water reserve proclaimed on the 1st January, 1867, and a population area proclaimed on the 20th March, 1885.
94. *Mr. Thompson.*] Look at the letter dated the 16th May, 1873, from the land agent at Newcastle, and say whether there do not appear to be two conditional purchases dealt with there within the area? Yes; but one is cancelled.
95. Which is that? One taken up in 1873 by Daniel Cane.
96. And Alcock's, which was originally Baylis's, was validated? Yes.
97. And is it not a fact that Baylis's consisted of portions 93, 55, and 56? Yes; but those others you have included now were made before the reserve was proclaimed.
98. Which? Numbers 55 and 56.
99. They were made then before the reserve was proclaimed? Yes. No. 56 was made in the year 1863, and No. 55 was made in the year 1862.
100. How is it then that they are both included in the water reserve which was made in 1867. How did the Government come to make a proclamation of a water reserve which included land already alienated from the Crown? I cannot answer that.
101. But still it is apparent that these selections were taken up within the area of the reserve a year before the reserve ever was proclaimed? Yes; but this matter of Mr. Rouse's only dates from the year 1875. Mr. Rouse has no claim before that.
102. Apropos of that, will you find out the minute with regard to the validation of Baylis's conditional purchase amongst the papers? The following is the minute with reference to the validation of Baylis's conditional

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* NOTE (*on revision*):—No; it was not taken from the water reserve, as the application was declared void on account of it embracing land within the boundaries of the reserve in question.

W. H. Capper, Esq. 16 May, 1888.

conditional purchase. It is dated the 5th January, 1877, and is upon a special report by Inspector George Smith: "It is respectfully recommended that this case be inserted in the schedule to the Bill now in course of preparation. Applicant has been for years allowed to remain in possession of the land and to make improvements on the faith of the promise of successive administrations that his holding should be legalized. As pointed out, the only conflicting claim is from a person who subsequently to such promise, and on the failure of certain proposed transactions between them, has applied for the land under mineral lease. The omission of the case from the former Bill by the Committee of the Legislative Council was based not on the superior merits of the conflicting claim but on the ground that such a claim existed. It is submitted that the case can only be dealt with by legislation. If the land possesses special value, that will be settled by appraisement." Sir John Robertson approved of that minute, and wrote: "This case should be included when the next Bill is brought in." Cane's selection was made on the 1st March, 1873, and cancelled on the 27th June, 1873.

103. *Mr. Ewing.*] The reason why Baylis received his land was that he had been in undisputed possession for a considerable time, was it not? Yes.

104. *Mr. Thompson.*] And always paid his money? Yes.

105. *Mr. Ewing.*] The same grounds may be urged in favour of this claim from 1875 to 1879? I am not prepared to say so.

106. *Mr. Thompson.*] Can you give us the particulars of No. forty-nine? That was applied for by John Riley as a mineral conditional purchase on the 3rd June, 1872, and transferred to Frederick Alcock on the 7th April, 1874. The land was also measured in 1862.

107. *Chairman.*] I suppose that No. ninety-two was taken up at the same time? That appears to have been taken up by John Riley on the 3rd August, 1871, and transferred to Frederick Alcock.

108. *Mr. Thompson.*] Can you find No. fifty-seven, Thomas Jarvis Alcock, 40 acres on the lagoon? That, it appears, was selected by James Parker, on the 4th September, 1862, and subsequently transferred to Thomas G. Alcock.

[One Plan.]

[1*s.* 3*d.*]

Sydney: Charles Potter, Government Printer.—1889

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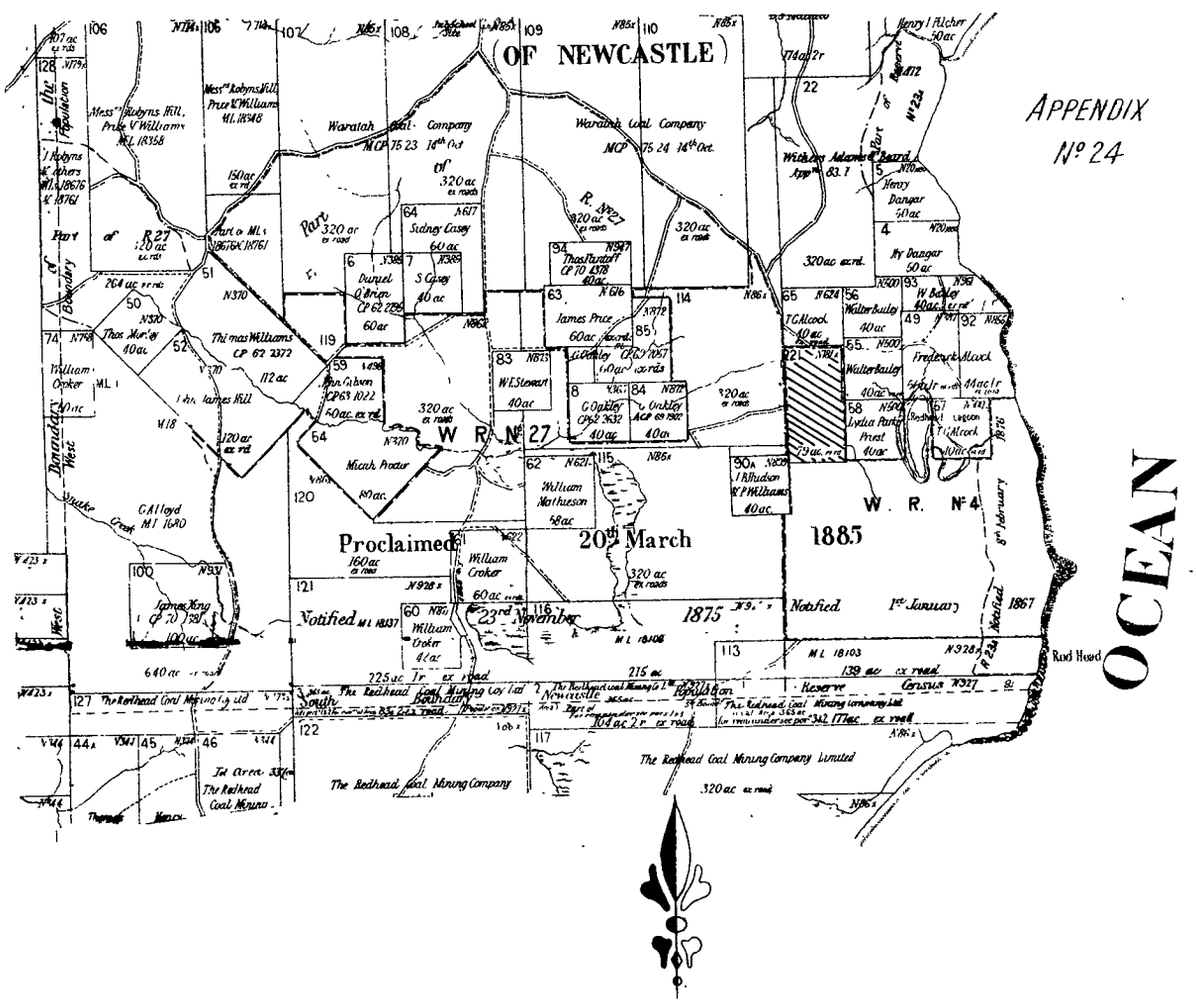
APPENDIX
Nº 24



PART OF

PARISH OF KAHIBAH

Kahibah Poma

COUNTY OF NORTHUMBERLAND

NEWCASTLE LAND DISTRICT

EASTERN DIVISION N.S.W. 1886

SCALE

CHAINS 0 5 10 15 20 40 60 80 100 120 140 160 180 200 220 240 CHAINS

MILES 0 ¼ ½ ¾ 1 1¼ 1½ 1¾ 2 2¼ 2½ 2¾ 3 MILES

Reserves charted and exam[d]

(Sig. 694)

NOTE

Portions are shewn on this map only as far as finally dealt with by the Charting Branch
28th Oct '86

NOTE:- The part hatched thus ////// was shown in blue on Original Plan.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CROWN LANDS.

(CORRESPONDENCE, &c., RESPECTING SALE OF TOWNSHIP ALLOTMENTS AT TOCUMWALL.)

Ordered by the Legislative Assembly to be printed, 3 *September*, 1889.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 11th July, 1889,—That there be laid upon the Table of this House,—

"Copies of all papers and other correspondence by residents of Tocumwall "and others, relating to application that certain township allotments in "the town of Tocumwall should be submitted to competition by public "auction."

(*Mr. Chanter.*)

SCHEDULE.

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[870 copies—Approximate Cost of Printing (labour and material), £18 7s. 9d.]

CROWN LANDS.

No. 1.

Mr. Petera Dunne to Mr. Surveyor Creed.

Tocumwall, 11 February, 1887.

Dear Sir,

On behalf of the Catholic residents of this town, who are desirous of purchasing a site for the erection of a Church, I respectfully request you to recommend that the Church reserve, marked on the plan* of the village of Tocumwall as having a frontage to Hennessy-street on its northern side, and to Emily-street on its eastern side, be offered at public auction at the next Government land sale of Tocumwall allotments.

*Appendix A.

I have, &c.,
PETERA DUNNE.

Forwarded to Mr. District-Surveyor Wood for instructions.—WM. CREED, 22/2/87.

Mr. Licensed-Surveyor Creed may subdivide the area referred to. The allotments must not exceed half an acre each, and the same to be of the same width as that already provided in the section. —J. H. WOOD, District Surveyor.

Suggest upset price. Acted on by my letter and plan of 31st May, 87-24.—WM. CREED, L.S.

No. 2.

Mr. Licensed-Surveyor Creed to The District Surveyor at Albury.

Warmatta, 31 May, 1887.

Sir,

In reply to your instruction of 3rd March, 1887, No. 7, I have the honor to transmit herewith the plan of a part of the sub-division of section 8 into four allotments of half an acre each, numbered 4, 5, 6, and 7, in the village of Tocumwall, county of Denison, measured by me on the 5th March, 1887.

There are no improvements on the land.

The upset price of allotments 4 and 5 should be £10 each, and of 6 and 7 £8 each, as the former are fronting the main street.

I have, &c.,
WM. CREED.

Original voucher, 87-30, forwarded for payment of 75 per cent. advance on £3 11s.—WM. DAY. T. 8-1,816 Roll.

Plan approved. These portions have been measured on the application of the Roman Catholic residents of Tocumwall, who are desirous of purchasing a site for a Church in that village. It is recommended that these allotments be offered at auction, 4 and 5 at £10 each, and 6 and 7 at £8 each. The place of sale should be Corowa, and should be advertised twice in the *Corowa Free Press*.—WILLIAM ORR, District Surveyor, 3/5/88.

Submitted for approval.—R.H.D. (*pro* S.F.), 29/5/88. Approved.—T.G., 2/6/88. Mr. M'Lean.—E.C.M., 2/6/88. Mr. Fowler. Sale at Corowa, 28th September, 1888. Town lots, allotments 4, 5, 6, and 7, section 8. The above allotments not bid for, *vide* sale list of the 28th September, 1888.—R.L. (*pro* E.C.M.), 10/10/88.

No. 3.

Petition from the Residents of Tocumwall.

Sir,

The humble Petition of the undersigned residents of Tocumwall respectfully showeth that being desirous of acquiring sites to build in the village of Tocumwall, they would, therefore, respectfully request you to cause a subdivision to be made of that portion of the village reserve situated on the north side of Deniliquin-street, directly opposite sections 1 and 2, and then have the allotments offered at public auction, as business sites are in great demand.

And your petitioners, as in duty bound, will ever pray.

J. G. HOWARD, contractor, Tocumwall.
M. A. TAYLOR, Agent, Tocumwall.
J. T. BANKS, Farmer, Tocumwall.

[Here follow twenty-five other signatures.]

This petition be referred to the District Surveyor for report, keeping in view that if other lands suitable are available the reserves should not be interfered with.—R.H.D., 8/8/87. There are former papers, I think.—C.O., 9/8/87.

Former papers for Tocumwall land to be sent to auction herewith. They are not for the same land. The land applied for in this application is situated opposite sections Nos. 1 and 2.—E.C.M. (*pro* R.H.D.), 12/8/87. The Under Secretary.

Refer to the District Surveyor as proposed, and inform.—C.O., 15/8/87. Correspondence Branch to inform.—E.C.M. (*pro* R.H.D.), 15/8/87. Messrs. Howard, Taylor, and others informed, 20/8/87. The District Surveyor, Wagga Wagga.—F.H.W. (for the Under Secretary), B.C., 20/8/87. Mr. Surveyor Wood is requested to report as to the propriety of alienating the land herein referred to, 23/8/87.—C. F. BOLTON, District Surveyor, 26/8/87.

I am of opinion that the land referred to should be retained for future public requirements. Over fifty allotment are to be offered for sale, some with a frontage to the main street, on the 21st of this month.—J. H. WOOD, Surveyor, 8/8/87. The District Surveyor, Wagga Wagga.

Perhaps, as the land in question is not required for a specific public purpose, and it is no doubt less suited for commercial purposes, it might, in deference to the desire of petitioners, be measured and sold at auction.—C. F. BOLTON, 14/11/87. Only

Only five lots sold on the 21st September, 1887; fifty-six lots not bid for.—E.C.M., 21/11/87. Submitted. It is clear there is no demand for land, and it is suggested no further action is necessary.—S.F. (*per* R.H.D.), 24/11/87. Inform of result of sale, and of above submission, which is approved.—T.G., 5/12/87. Cor. Branch to inform.—E.C.M. (*pro* R.H.D.), 6/12/87. Messrs. Howard and others informed, 12/12/87. Put away.—E.C.M., 13/12/87.

No. 4.

The Under Secretary for Lands to Messrs. Howard, Taylor, and Others.

Gentlemen, Department of Lands, Sydney, 20 August, 1887.

I am directed to inform you that the petition has been received, and that your application to have the land noted in the margin brought to auction is being forwarded to the District Surveyor for measurement, should no objection exist and his report thereon is favourable.

Village reserve, part north of Deniliquin-street, village of Tocumwall.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 5.

The Under Secretary for Lands to Messrs. Howard, Taylor, and Others.

Gentlemen, Department of Lands, Sydney, 12 December, 1887.

Adverting to the petition signed by you, praying that lands in the village of Tocumwall might be offered for sale at auction, as you were desirous of acquiring building sites, I am directed by the Secretary for Lands to inform you that five lots only out of the number of allotments at Tocumwall offered for sale on the 21st September last were sold, fifty-six lots not being bid for; from which it is clear there is no demand for the land.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 6.

Messrs. Howard, Manning, and Others to The Under Secretary for Lands.

Sir, Tocumwall, 25 January, 1888.

Referring to your No. 87-3,556 of 12th December, intimating that the petition from residents of Tocumwall praying for certain lands in that town be put up to auction had been refused on account of the sale of Crown allotments on the 21st September last being unsuccessful, we have the honor to pray that you will again reconsider the petition on the following grounds:—

1. The allotments offered for sale on 21st September were three-quarters of a mile from the river bank, where the present township is situated, and were surveyed in a place utterly useless for building purposes, part of the ground being very swampy in winter time; the balance, sand-hills.
2. Many of the undersigned are anxious to secure building sites, and if the Crown lands opposite sections 1 and 2, Deniliquin-street, Tocumwall, be now offered for sale, great competition would undoubtedly take place to secure same, and, without doubt, all the allotments would realize very much more than the upset price.

Ever praying that our former petition will be favourably reconsidered by your Department.

We have, &c.,
J. G. HOWARD.
F. MANNING.

[And nineteen others.]

Mr. Howard,—Former papers.—E.C.M., 16/2/88. Papers herewith.—C.H., 18/2/88. Mr M'Lean,—Please supply tracing showing the land required; also sections 1 and 2.—E.C.M. (*pro* R.H.D.), 5/3/88.

Mr. Skelton,—Alienation Branch.—The land referred to as opposite sections 1 and 2 is unmeasured land outside the town boundary. As there is apparently some local demand for the land near the river indicated by the petitioners, the matter should probably be referred at once to the District Surveyor at Wagga Wagga.—R.M., 15/3/88.

Mr. M'Lean,—Can you please supply a tracing?—E.C.M. (*pro* R.H.D.), 23/3/88. Mr. Skelton for tracing.—R.M., 26/3/88.

Alienation Branch,—Tracing herewith. It may perhaps be pointed out that there are about fifty allotments in various measured sections in this village still unalienated and apparently available for auction sale.—R.M., 29/3/88.

Perhaps the matter should be forwarded to the District Surveyor for a report as to the advisability of measuring suitable allotments, which would sell more readily, as there appears to be a demand for building sites in the neighbourhood.—R.L., 8/6/88. Mr. Marr.

Mr. District-Surveyor Orr for report.—R.H.D. (for the Under Secretary), B.C., 20/6/88.

No. 7.

R. Barbour, Esq., M.P., to The Under Secretary for Lands.

Dear Sir, Parliament House, Sydney, 12 February, 1888.

I understand that the town allotments, Tocumwall, applied for, are now being surveyed and will shortly be gazetted for sale.

The Progress Committee desire that I point out to you the desirability of making Tocumwall the place of sale and not at Corowa or Jerilderie, 60 miles distant, as the buyers will be at Tocumwall.

Yours, &c.,
ROBT. BARBOUR.

No. 8.

No. 8.

R. Barbour, Esq., M.P., to The Under Secretary for Lands.

Sir, Parliament House, Sydney, 4 July, 1888.

In my district there is a township called Tocumwall. It is situated on the bank of the River Murray, in the county of Denison.

This town would be a thriving village were it not for the monopoly of a single individual named Hillson, who purchased all the best sites, and left the out-of-the-way and swampy ones. He then built a big hotel and general stores, secured the site of the punt, and got all the surrounding Crown lands made a reserve.

His next move was to get a river steamer and barges, and put it on to trade between Tocumwall and Echuca, in connection with Melbourne.

For years he has enjoyed this monopoly, and to such an extent as to charge 1s. a nobbler during a large part of the time.

I have, therefore, to ask that you will cancel the reserves round the punt site. They are not required in the interest of the public. A street leading to the punt is all that is required, and some day a bridge will no doubt take the place of the punt.

I think the reserves are two in number, but whether two or one, the people in the district are agreed that they should be revoked, and subdivided into town allotments and sold by auction. The land will sell well, and the sale will help the township to increase in population and in importance.

Yours, &c.,
ROBT. BARBOUR.

Submitted be referred to the District Surveyor for report.—E.C.M. (*pro* R.H.D.), 9/7/88. Yes. Inform.—C.O., 9/7/88. Cor. Branch to inform, then to District Surveyor.—E.C.M. (*pro* R.H.D.), 10/7/88. Done, 12/7/88. The District Surveyor, Wagga.—F.H.W. (for the Under Secretary), B.C., 13/7/88.

I beg to refer the Under Secretary to my previous communications on this subject, dated this 30th July, 1888 (Aln. 88-557).—William Orr, District Surveyor, Wagga Wagga, 30/7/88. The Under Secretary for Lands.

No. 9.

J. M. Chanter, Esq., M.P., to the Under Secretary for Lands.

Sir, Moama, 12 July, 1888.

An application from residents of Tocumwall, presented by Mr. Barbour, about the 22nd of last month, requesting that town allotments opposite sections 1 and 2 might be surveyed and offered for sale, kindly inform me how this case stands. The allotments will sell readily when offered.

Residents of Tocumwall desire me to request you to grant a small site of land for the purpose of erecting a church (Wesleyan).

Residents also request that in all future sales of Crown lands at Tocumwall, that the sales be effected in that town, and not, as hitherto, at Corowa.

Will you kindly forward to me here a litho. plan of the town of Tocumwall. Your early attention and reply to the foregoing requests will much oblige

Yours, &c.,
J. M. CHANTER, M.P.

Mr. Barbour, M.P., was informed of reference to the District Surveyor yesterday.—E.C.M., 13/7/88. Inform Mr. Chanter of reference to the District Surveyor as to Tocumwall lots for auction. Then to me specially.—R.H.D., 14/7/88. Corres. Branch. Done, 14/7/88. Send a memo. on Monday to the District Surveyor, requesting early report. Papers now with him.—R.H.D. (for the Under Secretary), 14/7/88.

No. 10.

Memo. from The District Surveyor at Wagga Wagga to The Under Secretary for Lands.

Sir, 13 July, 1888.

With reference to your instructions of the 20th June, 1888, directing me to report upon a petition presented to you by the residents of Tocumwall, county of Denison, praying for the subdivision of certain unmeasured lands in the village of Tocumwall, on the north side of Deniliquin-street, I have the honor to report that the land referred to is inundated in high floods, and is not, in my opinion, as suitable for settlement as measured portions within the town boundaries which are yet unsold.

If the land is offered for sale, as petitioned for, the original design, effected at considerable expense, will be distributed, and the business centre removed from its present position to a new locality. I regret to say I cannot recommend approval of the petition.

I have, &c.,
WILLIAM ORR,
District Surveyor.

The recommendation of the District Surveyor is submitted.—E.C.M. (*pro* S.F.), 10/9/88.

The petitioners may be informed to the effect of the District Surveyor's report. If any further reasons for the sale of the land referred to can be urged the matter might be reconsidered.—C.O., 14/8/88.

Inform.—H.P., 25/8/88. Cor. Branch.—E.C.M., 25/8/88. See Aln. 88-4,432.

No. 11.

The Under Secretary for Lands to R. Barbour, Esq., M.P.

Sir, Department of Lands, Sydney, 13 July, 1888.

I have the honor to inform you that your letter of the 4th instant, applying for the revocation of certain reserves at Tocumwall, in the county of Denison, has been referred to the District Surveyor for report.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 12.

The Under Secretary for Lands to J. M. Chanter, Esq., M.P.

Sir, Department of Lands, Sydney, 14 July, 1888.

Referring to your letter of the 12th instant respecting the sale of certain Crown lands at Tocumwall, I have the honor to inform you that the matter has been referred to the District Surveyor for report.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

P.S.—It may be mentioned that Mr. Barbour, M.P., was advised to the above effect on the 12th idem.

No. 13.

Mr. F. Manning to The Under Secretary for Lands.

Sir, Tocumwall, 8 August, 1888.

I have the honor to inquire if your Department have any immediate intention of selling reserved land opposite sections 1 and 2 in this township. Many petitions and requests for the sale of above have been refused, the assigned reasons being an alleged title or no demand existing here for the land.

I have to state that so large a demand exists for the land in the township, that the allotments under notice will bring large prices at auction when offered. Please inform me whether the Department would entertain an offer from me of £50 per acre for the reserve under notice.

I have, &c.,
FRANCIS MANNING.

Mr. Legg,—Please quote the former papers.—E.C.M., 13/8/88. Aln. 88-3,472. Submitted, 11/8/88.

No. 14.

J. M. Chanter, Esq., M.P., to The Under Secretary for Lands.

Sir, Moama, 27 August, 1888.

Some time since I wrote you requesting that town lots might be offered at auction in the village of Tocumwall, county of Denison, land district of Corowa; also whether any persons would be justified in erecting buildings for business purposes upon any of the unsold lots prior to their being offered at auction, and whether in that case the value of improvements would be secured to the occupants.

I also, a considerable time since, requested that these lots might be sold at Tocumwall instead of at Corowa, and recommended Mr. Joseph Howard, auctioneer, of Tocumwall, as Government auctioneer. Your early reply to the foregoing matter will much oblige.

Yours truly,
J. M. CHANTER, M.P.

Mr. Legg,—Please quote former papers.—E.C.M., 29/8/88. Aln. 88-3,472. 4,037 Marr., 29/8/88. Papers herewith.—C.H., 31/8/88. Mr. Marr, Correspondence Branch.—To inform in accordance with approval on Aln. 88-3,472. Also inform Mr. Manning his offer cannot be entertained.—E.C.M. (*pro* R.H.D.), 8/9/88. Mr. Chanter and Mr. Manning informed of decision on Aln., 88-3,472, 12/9/88. If nothing further by the end of September, 1888, put away.—R.L. (*per* E.C.M.), 12/9/88.

No. 15.

The Under Secretary for Lands to Mr. F. Manning.

Sir, Department of Lands, Sydney, 12 September, 1888.

Referring to the petition signed by yourself and other residents of Tocumwall, praying that certain lands in the vicinity of that place may be offered for sale at auction, I am directed by the Secretary for Lands to inform you that it appears from the report of the District Surveyor that the land you desire so offered is inundated in high floods, and not so suitable for settlement as the unsold allotments within the town boundary; but, if any further reasons for the sale of the land can be urged, the matter will be reconsidered.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 16.

No. 16.

The Under Secretary for Lands to J. M. Chanter, Esq., M.P.

Sir, Department of Lands, Sydney, 12 September, 1888.

Referring to your letter of the 27th ultimo, asking that certain town lots in the village of Tocumwall may be offered for sale at auction, I have the honor to inform you that it appears from the report of the District Surveyor that the land which it is sought to have offered is inundated at high floods, and not as suitable for settlement as the measured portions within the town boundaries which are yet unsold; but, if any further reasons for the sale of the land in question can be urged, the matter will be reconsidered.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 17.

Mr. F. Manning to The Under Secretary for Lands.

Sir, Tocumwall, 17 September, 1888.

With reference to the sale of Government land in Tocumwall, which is advertised for the 28th instant, I have the honor to inform you that the allotments notified for auction on that occasion are too far out of the township to be of use for building purposes. At the same time I desire respectfully to bring under your notice the fact that for years past the people of this town and district have agitated for the sale of the Government land in the township opposite sections 1 and 2. Petitions have repeatedly been sent to your predecessors in office, representing the necessity for selling these lots, and the gross injustice it is to keep them locked up from the public. I only ask that you will inquire into this matter, and if you determine to have such land surveyed and put up for auction, an upset price of £40 per acre will be readily guaranteed.

Your unblemished reputation as a business man has led me to believe that if this matter were thus represented to you, you would at least investigate it, and favour me with a reply at your earliest convenience.

I have, &c.,
FRANCIS MANNING,
President, Tocumwall Progress Committee.

P.S.—Referring to the communication from the Under Secretary just received (88-4,432), I desire to state that this land has not been inundated since 1870, when miles of the surrounding country were also submerged.—F.M.

Special. Please submit the papers with a statement of the facts.—C.O., 21/9/88. Mr. De Low.

No. 18.

Office Memo.

Respecting sale of land at Tocumwall. It appears that a petition has been made by the residents of Tocumwall (see Aln. 88-557 herewith) urging sale of land in that township, situated opposite sections 1 and 2; the land forms part of two reserves (see tracing herewith), and situated outside the town boundary.

Reference was made to the District Surveyor as to the advisability of sale, and in his report, registered Aln. 88-3,472, he states that he is unable to recommend the sale of the land applied for, it being situated outside the town boundary, and would necessitate the expense of measurement and alteration of design, and that there are still other unsold allotments which are available and suitable for settlement.

The recommendation was approved, and petitioners informed that if any further reasons for the sale of the land referred to could be urged the matter would be considered.

As no objections are made to the sale now advertised, and as only four allotments are for sale on the 28th instant the sale may, perhaps, proceed.

R.H.D.,
21/9/88.

I do not quite understand how the subdivision asked, if made, would have the effect of altering the design of the town; it would extend it, but not alter it otherwise. So repeatedly has it been urged that the land in question should be submitted for sale that I think steps to that end may be now taken. The interest of the Crown may be protected in the absence of competition by placing sufficient upset prices on the land, which should not, however, be so fixed as to render the sale unattractive.—C.O., 22/9/88.

Approved.—J.N.B., 24/9/88. Inform Correspondence Branch, 29/9/88. F. Manning informed, 4/10/88. The District Surveyor, Wagga Wagga; for measurement, *vide* approval, 24/9/88.—E.C.M. (for the Under Secretary), B.C., 10/10/88.

No. 19.

The Under Secretary for Lands to Mr. F. Manning.

Sir, Department of Lands, Sydney, 4 October, 1888.

Referring to your letter of the 17th ultimo, urging the sale of certain land situated opposite sections Nos. 1 and 2, in the township of Tocumwall, county of Denison, I have the honor to inform you that the Secretary for Lands has decided that the necessary steps be taken as early as practicable to have the land in question submitted for sale, and with this object in view the papers in the case are about to be forwarded to the District Surveyor for measurement of the land.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 20.

No. 20.

Memo. from The District Surveyor at Wagga Wagga to Mr. Surveyor Barlow.

[Aln. 88-5,423 ; L.B.D. 88-11,458.] 18 October, 1888.

SALE of town land at Tocumwall. The accompanying papers are forwarded to Surveyor Barlow, in order that he might carry out the Minister's decision thereon as soon as possible.

Mr. Barlow will be good enough to design the unmeasured land at Tocumwall, bounded on the south-east by Deniliquin-street, and if there is no objection to the design shown on accompanying tracing, marked A, he should measure two or three sections to meet the present urgent demand.

A gully or lagoon passes between sections 2 and 3, which should not probably be sold.

The plan of the measured allotments should be sent on with the papers immediately after marking out, and the design may be furnished later on.

WILLIAM ORR,
District Surveyor.

Urgent. Plan transmitted with my letter No. 88-80 of 19/11/.—M. BARLOW, Surveyor.

No. 21.

Mr. G. R. Jeffries to The Secretary for Lands.

Sir, Tocumwall, 1 November, 1888.

In reference to the petition and letters which have of late been sent from here asking for a survey of certain land in this township, with a view of it being offered at auction, I have the honor, now that the surveyor is engaged on such work, to ask your attention to a few facts which may not have been brought before your notice, and which, I think, will be worthy of consideration.

If you will kindly look at the map of the village of Tocumwall, you will see that in the whole twenty-two sections into which it is divided, no provision is made for public buildings, with the exception of two reserves for schools, one of which is already built on, and from the way in which all the best land has been purchased, there is not now one available section suitable from its nature or position for the erection of permanent Government buildings. The Court-house, Barracks, and Lock-up, a Post and Telegraph Office, are all at present rented to the various Departments, but from the rapid strides which this district is making, there is no doubt that at no distant date requisitions emanating from Progress and other Committees will be sent in to the Government, asking for the erection of more suitable and commodious public offices, and from its position, facing as it does the main street of the township in close proximity to the river and to the surveyed bridge site, there is no land more suitable for these purposes than that opposite section 1 and 2, particularly section 1, which on the map before me is marked R, as though intended for some such purpose. If, before allowing this land to be gazetted for auction, you will cause inquiry to be made as to the suitability of it for the purpose I have mentioned, you will, I feel sure, find my statement fully borne out, and that a permanent reservation of the whole frontage will save the Government from the necessity of purchasing land for public purposes from those whose only ulterior object is to secure to themselves the best land in the township with a view to future profit when the demand sets in for improved public buildings here.

The importance of this subject, and the fact that the surveyor is now at work will, I trust, be accepted as my apology for the length of this letter. I have, &c.,

GEORGE R. JEFFRIES.

Submitted be referred to the District Surveyor for report, and Mr. Jeffries be so informed.—E.C.M., 5/11/88. Yes.—F.H.W. (for the Under Secretary), 7/11/88. Correspondence Branch. To inform, then to District Surveyor.—E.C.M. (for R.H.D.), 7/11/88. Mr. Jeffries informed, 13/11/88.

The District Surveyor, Wagga Wagga.—H.C. (for the Under Secretary), B.C., 13/11/88. Forwarded to Surveyor Barlow to peruse and place with L.B.D. 88-11,458, sent to him on 18/10/88.—WILLIAM ORR, District Surveyor, 16/11/88.

Placed with L.B.D. 88-11,458 accordingly.—M. BARLOW, Surveyor, 19/11/88.

No. 22.

Mr. G. R. Jeffries to The Secretary for Public Works.

G. R. Jeffries—*Re* reservation of land as a site for public buildings at Tocumwall.

Sir, Tocumwall, 1 November, 1888.

I have the honor to bring before your notice the fact that in this township in the whole of the twenty-two sections no reserves have been set apart for public buildings other than two for schools, one of which is already built on. The whole of the best of the land has been offered at auction in years gone by and purchased, the remainder of the section, consisting of undulating sand hill, totally unfitted for building purposes. The one exception to this is a piece of land on the north side of Deniliquin-street, opposite section 1 of the village survey, which is now being laid out by the surveyor with the view of it being submitted at auction. The land consists of good dry box forest, admirably suited, both from its position and nature, for public offices, and it would indeed be a great pity to see it pass into the hands of speculators, who would be the first to demand an exorbitant price from the various Departments when the demand exists—which undoubtedly will be soon—for the erection of more commodious public buildings than those at present in use at Tocumwall.

If you deem these remarks worthy of notice, it would be well to at once see to the permanent reservation of this frontage for public purposes before it is gazetted for sale.

I have, &c.,

GEORGE R. JEFFRIES.

This communication should be referred for the consideration of the Lands Department, and Mr. Jeffries informed.—A.G.M'L., 8/11/88. Do so.—N.G., 8/11/88. G. R. Jeffries, Esq., 12/11/88. The Under Secretary for Lands.—A.G.M'L. (for the Under Secretary), B.C., 12/11/88.

The District Surveyor at Wagga Wagga for report.—R.H.D. (for the Under Secretary for Lands), 21/11/88. G. R. Jeffries, 21/11/88.

No. 23.

No. 23.

The Under Secretary for Public Works to Mr. G. R. Jeffries.

Sir, Department of Public Works, Sydney, 12 November, 1888.

With reference to your letter of the 1st instant, pointing out that there is no land in the town of Tocumwall reserved as sites for public buildings, I have the honor to inform you that your communication has been transmitted to the Department of Lands, for the consideration of the Honorable the Secretary for Lands.

I have, &c.,
J. BARLING,
Under Secretary.

No. 24.

The Under Secretary for Lands to Mr. G. R. Jeffries.

Sir, Department of Lands, Sydney, 13 November, 1888.

I am directed to inform you that your letter of the 1st instant has been received, and that your application to have the land noted in the margin brought to auction is being forwarded to the District Surveyor for report.

Certain land in the Village of Tocumwall.

I have, &c.,
H. CURRY
(For the Under Secretary).

No. 25.

Telegram from the Under Secretary for Lands to The District Surveyor, Wagga Wagga.

16 November, 1888.

PLEASE telegraph when plan and report of Tocumwall lands will be furnished.

H. CURRY
(For Under Secretary for Lands).

Received 9·40 on 17th November, 1888, and replied to by wire at 10 a.m. same date. Surveyor Barlow, who is on the ground, also wired to by this office to hasten survey.—W.O., 17/11/88.

No. 26.

Telegram from The District Surveyor at Wagga Wagga to The Under Secretary for Lands.

17 November, 1888.

SURVEYOR BARLOW, now at Tocumwall, making survey of town lands there. Expect to have his plan and report in by 30th.

WM. ORR,
District Surveyor.

Correspondence Branch,—Please inform Mr. Chanter, M.P.—E.C.M., (*pro* R.H.D.), 17/11/88. Mr. Chanter, M.P., informed, 22/11/88. Mr. Legg,—Survey in yet?—E.C.M., 23/11/88. Yes; allotments in sections 24 and 25 only. (See Aln. 88-6,444).—R.L., 27/11/88.

No. 27.

Mr. Surveyor M. Barlow to Mr. District-Surveyor Orr.

(Papers L.B.D. 88-11,458 and plan herewith, No. 80).

Sir, Albury, 19 November, 1888.

In compliance with your instructions, No. 88-110, of 18th October, on paper L.B.D. 88-11,458, "to survey two or three sections within the village of Tocumwall, county of Denison, to meet present urgent demand," I have the honor now to transmit herewith a plan* of eighteen allotments, numbered 1 to 10, section No. 24, and 1 to 8, section No. 25, and to report,—

* Appendices B, C.

That, on account of the flooded nature of the land to the north of section No. 23 (Police reserve), I did not consider it expedient to lay out section No. 25 exactly in accordance with the design shown on tracing marked "A"; but I surveyed eight allotments as shown on plan which embraced all the available land outside the limit of inundation; at date of survey the land shown on plan as liable to inundation was perfectly dry, but in wet seasons the flood-water from the river backs up for a considerable distance over this area and renders it unfit for town settlement.

The allotments shown on accompanying plan will be sufficient to meet the present demand, but I will furnish a design in a few days' time for the measurement of all the available land within the village.

As the existing reserve for public buildings is in an unsuitable position, being on a sand-hill and some distance from the business centre of the township, I would strongly recommend that allotments Nos. 6 and 7 of section 24 be reserved for public buildings, as, no doubt, before long a Post and Telegraph Office and a Court-house will be required, and these buildings should be in the main street (Deniliquin-street).

It is expected that there will be considerable competition for the allotments when offered for sale, and I would therefore suggest an upset price of £50 per acre for allotments 1, 8, 9, and 10, and £40 per acre for allotments 2, 3, 4, and 5 of section No. 24; also an upset price of £40 per acre for allotments 1 and 8, and of £30 per acre for allotments 2 to 7, of section No. 25.

Allotments Nos. 6 and 7 of section No. 24, proposed to be reserved for public purposes, are worth at least £50 per acre.

As

As will be seen by plan, the telegraph line to Deniliquin passes through allotments 9 and 10 of section No. 24, and the road in present use to Deniliquin, which has been cleared, follows the direction of the telegraph line, and passes through the reserve for wharf and punt, crossing instead of following the surveyed road.

All the allotments measured by me are liable to inundation, to a slight extent, in very high floods, but they have not been covered since 1870, and then only to a depth of a few inches, by back water.

I took my azimuth for this survey from the southern boundary of section No. 23, which I found to agree with the azimuth of sections Nos. 3 and 4.

Date of survey, 2nd and 3rd November, 1888.

I have, &c.,
MAURICE BARLOW.

P.S.—As the present town boundary only extends as far as the northern boundary of Deniliquin-street it will be necessary to renotify it along the northern boundary of Sugden-street, and its prolongation easterly to the eastern boundary of Hannah-street, and therefore coincident with the present suburban boundary.—M. BARLOW.*

* The present suburban boundary follows the southern boundary of portion 98 and not the northern boundary of Sugden-street, (*Vide* Mr. Barlow's memo. of 23rd November, 1888).

T. 90-1,816 Roll. Mr. Meldrum for examination.—W.H.H., 22/11/88. Examined and charted. —T. B. MELDRUM, 23/11/88. Plan approved.

It is recommended that allotments 6 and 7 of section 24 be proclaimed as reserve for public buildings and the necessary description is enclosed. In view of the fact that the present survey does not interfere or cause any alteration in the design of the town, it is submitted that action under the 107th clause is unnecessary; should it be held otherwise I will forward the necessary descriptions and tracings immediately on being advised to do so. I would recommend that an upset price of £50 an allotment be placed on allotments 1, 8, 9, and 10, section 24, and allotment 8, section 25; £40 per allotment on allotments 2, 3, 4, and 5 of section 24, and allotments 1 to 4 of section 25; £35 per allotment on allotments 5, 6, and 7 of section 25; and £30 per allotment on allotments 2 and 3 of section 25.—WILLIAM ORR, District Surveyor, 24/11/88. The Under Secretary.

The recommendation of the District Surveyor is submitted for approval.—R.H.D. (*pro* S.F.), 29/11/88. Approved. Sale to be held at Tocumwall and advertised in local newspapers.—J.N.B., 10/12/88. Mr. O'Dwyer.—E.C.M., 11/12/88. Will Mr. Keating please state whether this action involves any alteration of design.—J.O'D. (*pro* R. H. DE LOW), 15/12/88. Mr. Keating. Urgent. No alteration of design in the sense of the 107th section is involved. Descriptions are enclosed for notification of extended village and suburban land.—J.T.K., 18/12/88. Mr. De Low. Executive Council Minute. Sale at Tocumwall, 29th July, 1889. Town lots. Allotments 1 to 5, 8 to 10, section 24, 1 to 8, section 25. Charted plan, T. 9, noted.—R.D.A., 18/3/89. Examined.—R.M., 20/3/89. Now for auction sale.—R.M., 20/3/89. Mr. Fowler.

No. 28.

The Under Secretary for Lands to Mr. G. R. Jeffries.

(Ms. 88-14,577.)

Sir, Department of Lands, Sydndy, 21 November, 1888.

I have the honor to inform you that your letter of the 1st instant, addressed to the Department of Public Works, on the subject mentioned hereunder, has been referred to Mr. District-Surveyor Orr for report.

I have, &c.,
R. H. DE LOW
(For the Under Secretary).

Application for reserve for public buildings at Tocumwall.

No. 29.

The Under Secretary for Lands to J. M. Chanter, Esq., M.P.

Sir, Department of Lands, Sydney, 22 November, 1888.

With reference to your letter of the 16th instant, asking when the Crown lands in the township of Tocumwall will be offered for sale by auction, I have the honor to inform you that the District Surveyor reports that Mr. Surveyor Barlow is now at Tocumwall making survey of town lands, and that his plan and report are expected by the 30th instant.

I have, &c.,
H. CURRY
(For the Under Secretary).

No. 30.

Telegram from Mr. F. Manning to The Under Secretary for Lands.

5 January, 1889.

WHEN will allotments here be sold? What causes great delay?

F. MANNING,
President, Progress Committee.

Mr. De Low,—What does this refer to? If land in Common Tocumwall, some recent action has, I think, been taken.—W.H., 7/1/89. Eighteen allotments, in sections 24 and 25, are being put in schedule for sale. Government Printer.—E.C.M., 8/1/89.

No. 31.

Messrs. Chanter and Barbour, M's.P., to The Secretary for Lands.

Survey of Lands for Auction Sales in Town of Tocumwall.

Dear Sir, Parliament House, Sydney, 10 January, 1889.

The allotments have been surveyed. The people ask that they may be gazetted for sale at once. We approve of the sale as early as possible.

J. M. CHANTER, M.P.
ROBT. BARBOUR, M.P.

Have these lands not been advertised already; if not, what is the cause of delay?—J.N.B., 11/1/89. Schedule of eighteen lots now with the Government Printer, and will be advertised for sale about the end of January and offered for sale end of March, 1889.

[*Enclosure.*]

Messrs. Chanter and Barbour, M's.L.A., Sydney,—

Gentlemen, Tocumwall, January, 1889.

I send you herewith a petition hastily got up in favour of having the lots put up at auction.

The delay is inexplicable. Numbers of persons are constantly inquiring about them, and there appears to be a desire to settle here if persons could obtain the land. This they cannot do at present, and thus the progress of the place is retarded. Kindly urge for these lots to be put up this month if possible.

I have, &c.,
JONATHAN G. HOWARD.

[*Sub-enclosure.*]

Tocumwall, 7 January, 1889.

THE petition of the undersigned residents of Tocumwall and district, being desirous of purchasing building sites in the township of Tocumwall, respectfully request that you will be pleased to cause the allotments of land recently surveyed in the aforesaid township to be offered at public auction at an early date this month.

And your petitioners, as in duty bound, will ever pray.

J. G. Howard.....	Farmer, &c.....	Tocumwall.
Walter Whitehead.....	Auctioneer	Tocumwall.
Francis Manning	Manager	Commercial Bank.

[Here follow twenty other signatures.]

No. 32.

J. M. Chanter, Esq., M.P., to The Secretary for Lands.

Sir, Sydney, 16 January, 1889.

My constituents are complaining loudly at the continued delay in submitting to public competition the allotments recently surveyed in the town of Tocumwall. Will you kindly expedite matters and oblige.

Yours, &c.,
J. M. CHANTER.

Schedule of eighteen lots, now with the Government Printer.—E.C.M., 17/1/89. Mr. De Low. Inform as above to-day, please, and say sale will be held probably about end of March.—R.H.D., 17/1/89. Cor. Branch. J. M. Chanter, M.P., informed, 17/1/89.

No. 33.

The Under Secretary for Lands to J. M. Chanter, Esq., M.P.

Sir, Department of Lands, Sydney, 17 January, 1889.

Referring to your letter of yesterday, inquiring when the allotments recently surveyed in the town of Tocumwall will be offered for sale at auction, I have the honor to inform you that the schedule of eighteen lots is now with the Government Printer, and that the sale will be held probably about the end of March.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 34.

Executive Council Minute.

Urgent. Recommending Site for Village, &c.

Department of Lands, Sydney, 19 January, 1889.

IT is recommended to His Excellency the Governor and the Executive Council that the portion of land within described, containing about 300 acres, be declared under the 101st section of the Crown Lands Act of 1884, to be set apart as the site for a village to be called Tocumwall, with suburban lands about 160 acres to be attached thereto, and that the herein defined area of 1 acre, in the parish of Tocumwall, county of Denison, be reserved from sale, under the section quoted, for public buildings.

It is further recommended that so much of the notification in the *Government Gazette* of the 20th March, 1885, as relates to the setting apart of village and suburban lands at Tocumwall be cancelled.

WILLIAM JOHN LYNE.

The Executive Council advise that the recommendation in each case, herein set forth, be approved, and the necessary notices issued.—ALEX. C. BUDGE, Clerk of the Council. Minute 89/7, 22/1/89. Approved.—CARRINGTON, 22/1/89. Executive Council minute gazetted and Land Agent informed, 25/1/89. Confirmed, 29/1/89. Land Agent, with description, 7/2/89. Mr. Keating, 7/2/89.

No. 35.

No. 35.

Gazette Notice.

Department of Lands, Sydney, 25 January, 1889.

Site for a Village at Tocumwall.

His Excellency the Governor, with the advice of the Executive Council, directs it to be notified that, in pursuance of the provisions of the 101st section of the Crown Lands Act of 1884, the following portions of Crown lands are declared to be set apart as sites for the village of Tocumwall, and of suburban lands to be attached thereto.

WILLIAM JOHN LYNE.

Amended boundaries of Village Lands at Tocumwall.

County of Denison, parish of Tocumwall, area about 300 acres: Commencing on the right bank of the Murray River, at its intersection with the western side of Murray-street; and bounded thence by that side of Murray-street bearing northerly about 18 chains to the northern side of Sugden-street; thence by that side of that street and its prolongation bearing north-easterly to the eastern side of Hannah-street; thence on the eastern side of that street southerly to the south side of Kelly-street; on part of the south by the south side of that street westerly to the west side of Morris-street; and on part of the west by that side of that street northerly to the south side of Tuppal-street; thence on the remainder of the south by part of that side of that street westerly to the Murray River, and on the west by that river downwards, to the point of commencement.

Boundaries of the Suburban Lands at Tocumwall.

County of Denison, parish of Tocumwall, area about 160 acres: Commencing on the right bank of the Murray River, at its intersection with the western side of Murray-street; and bounded thence by that side of that street and a north-eastern boundary of portion 98 of 400 acres bearing north-westerly to the western extremity of a south-eastern boundary of same portion; thence by that boundary and its prolongation bearing north-easterly to its intersection with the western boundary of portion 44 of 320; thence by part of that boundary south to its southern extremity; thence a line partly forming the south-west boundaries of portions 44 and 43 bearing south-easterly to its intersection with a north-west boundary of last-mentioned portion; thence a line partly forming the north-west boundaries of portions 43 and 46 bearing south-westerly to the northern extremity of the east boundary of J. Page's portion 47 of 40 acres; thence by a north-east boundary of that portion north-westerly to its north-east corner; and thence on the south by the north boundary of that portion, being a line bearing west 2 minutes north 21 chains 75 links to the right bank of Murray River; thence by that bank of that river downwards, to the point of commencement,—but exclusive of the village of Tocumwall, as notified this day.

The above boundaries are in lieu of those proclaimed in *Gazette* of 20th March, 1885, and which are hereby cancelled.

[Aln. 88-6,444]

No. 36.

Gazette Notice.

Department of Lands, Sydney, 25 January, 1889.

Reserves from Sale for Public Buildings.

His Excellency the Governor, with the advice of the Executive Council, directs it to be notified that, in pursuance of the provisions of the 101st section of the Crown Lands Act of 1884, the land specified in the Schedule appended hereto shall be reserved from sale for public buildings, and is hereby reserved accordingly.

WILLIAM JOHN LYNE.

EASTERN DIVISION.

Land District of Corowa.

No. 8,500. County of Denison, parish of Tocumwall, containing an area of 1 acre. The Crown lands within the boundaries of allotments 6 and 7 of section 24, village of Tocumwall,—as shown on plan catalogued T. 19-1,816.

[Aln. 88-6,444]

No. 37.

The Under Secretary for Lands to The Crown Lands Agent at Corowa.

Sir, Department of Lands, Sydney, 25 January, 1889.

I have to invite your attention to this day's *Government Gazette*, containing notification of the amended boundaries of village and suburban lands at Tocumwall.

I am to explain that a tracing, showing the land referred to, will be forwarded as soon as practicable.

I have, &c.,

R. H. DE LOW

(For the Under Secretary).

No. 38.

No. 38.
Gazette Notice.

LAND SALE.

Department of Lands, Sydney, 28 May, 1889.

IN pursuance of the provisions of the "Crown Lands Act of 1884," I the Minister for Lands, do hereby notify that the following lots of land will be offered for sale by public auction, at the undermentioned place, at twelve o'clock noon on the day specified, at the upset price affixed to each lot respectively.

JAMES N. BRUNKER.

Sale at Tocumwall, on Monday, the 29th day of July, 1889.

Town Lots.

No. of Allotment.	No. of Section.	Area.	Upset Priee per Lot.	County.	Parish.	Situation.	Remarks.
		a. r. p.	£ s. d.				
1	24	0 2 0	50 0 0	Denison...	Tocumwall...	In the village of Tocumwall, having frontages to Barooga, Deniliquin, Morris, and Murray Streets, and near the right bank of the Murray River.	The village of Tocumwall is situated on the right bank of the Murray River, about 45 miles westerley from Corowa.
2	,,	0 2 0	40 0 0	do ...	do ...		
3	,,	0 2 0	40 0 0	do ...	do ...		
4	,,	0 2 0	40 0 0	do ...	do ...		
5	,,	0 2 0	40 0 0	do ...	do ...		
8	,,	0 2 0	50 0 0	do ...	do ...		
9	,,	0 2 0	50 0 0	do ...	do ...		
10	,,	0 2 0	50 0 0	do ...	do ...		
1	25	0 2 0	40 0 0	do ...	do ...	In the village of Tocumwall, having frontages to Barooga, Sugden, Murray and Bent Streets. Aln. 88-6,444; T. 9-1,816 Roll; and Aln. 89-2,219.	
2	,,	0 2 0	30 0 0	do ...	do ...		
3	,,	0 1 20	30 0 0	do ...	do ...		
4	,,	0 1 20	40 0 0	do ...	do ...		
5	,,	0 2 0	35 0 0	do ...	do ...		
6	,,	0 2 0	35 0 0	do ...	do ...		
7	,,	0 2 0	35 0 0	do ...	do ...		
8	,,	0 2 0	50 0 0	do ...	do ...		

No. 39.
R. Barbour, Esq., M.P., to The Secretary for Lands.

Dear Sir, Parliament House, Sydney, 12 June, 1889.

Our constituents at Tocumwall request Chanter and myself to ask you to make a reduction of £10 on the upset of the town allotments advertised to be sold on the 29th July.

These lands as sites for business will be much competed for—the people were very desirous of getting them sold, but change of Ministry and some instructions given by Mr. Lyne delayed the sale, this has caused the people to think that some person had blocked the sale, and we are requested to ask the papers in the case to be laid upon the Table of the House.

I however think that if you would write me a letter giving reasons for the delay, it may be sufficient.

I have, &c.,

ROBT. BARBOUR.

Inform Mr. Barbour that the upset prices were recommended by the District Surveyor, and inferring from his (Mr. Barbour's) representation that the land will probably be briskly competed for, it is not desirable in the public interest to reduce the upset prices. Mr. Barbour may also be informed why the sale has been delayed.—J.N.B., 13/6/89.

Corresponding Branch,—Mr. Barbour informed, 13/6/89.

No. 40.
The Under Secretary for Lands to R. Barbour, Esq., M.P.

Sir, Department of Lands, Sydney, 13 June, 1889.

Referring to your letter of the 12th instant, urging a reduction of £10 on the upset price of the town allotments advertised to be sold on the 29th proximo at Tocumwall, I am directed by the Secretary for Lands to inform you that the upset prices were recommended by the District Surveyor, and inferring from your representation that the land will probably be briskly competed for, it is not desirable in the public interest to reduce the upset prices.

I am to add that the delay of sale is owing to the total suspension of all auction sales of Crown lands since the 19th March last.

I have, &c.,

H. CURRY

(For the Under Secretary).

No. 41.
Mr. W. Whitehead to The Under Secretary for Lands.

Dear Sir, Tocumwall, 3 July, 1889.

I have received the lithos., &c., all right this morning and posted the others back. I suppose I shall receive more instructions as to terms, &c., before the sale day; unless the terms are pretty good, I almost think buyers would pay cash. What about No. 10 block that J. G. Howard has leased and erected a public-house on that will be opened about the middle of the month?

Yours, &c.,

WALTER WHITEHEAD.

Terms and conditions of sale sent Mr. Whitehead. Cor. Branch,—Please inform Mr Whitehead and the Crown Lands Agent, Corowa, that allotment 10, of section 24, has been withdrawn from sale, 29th July instant, at Tocumwall.—E.C.M. (*pro* R.H.D.), 13/7/89.

Mr. Whitehead and Crown Lands Agent, Corowa, informed. Notice to *Gazette* and schedule noted, 19/7/89.

No. 42.

No. 42.

Gazette Notice.

Withdrawal of Land from Sale.

Department of Lands, Sydney, 15 July, 1889.

NOTICE is hereby given, that the undermentioned portion of land, advertised in the *Government Gazette* of the 28th May (No. 274), for sale at Tocumwall, on the 29th July next, has been withdrawn from sale, namely:—Allotment No. 10, section 24, county of Denison, parish of Tocumwall.

STEPHEN FREEMAN,
Under Secretary.

[Occ. 89-6,163]

No. 43.

The Under Secretary for Lands to The Crown Lands Agent, Corowa.

Sir, Department of Lands, Sydney, 17 July, 1889.

I have the honor to inform you that allotment 10, section 24, has been withdrawn from sale advertised to be held at Tocumwall on the 29th instant. I have, &c.,

H. CURRY
(For the Under Secretary).

No. 44.

The Under Secretary for Lands to Mr. W. Whitehead.

Sir, Department of Lands, Sydney, 17 July, 1889.

Referring to your letter of the 3rd instant, I have the honor to inform you that allotment 10, section 24, has been withdrawn from sale advertised to be held at Tocumwall on the 29th instant.

I have, &c.,
H. CURRY
(For the Under Secretary).

[Four plans.]

Sydney: Charles Potter, Government Printer.—1889.

[2*s.* 6*d.*] 618—C

APPENDIX A. Enclosure to No 2.

Land Board District
No 1799.
7th Jun 87.
Head Office Albury.

Village of Tocumwal
of Allotments 4.5.6.&7. of Section 8

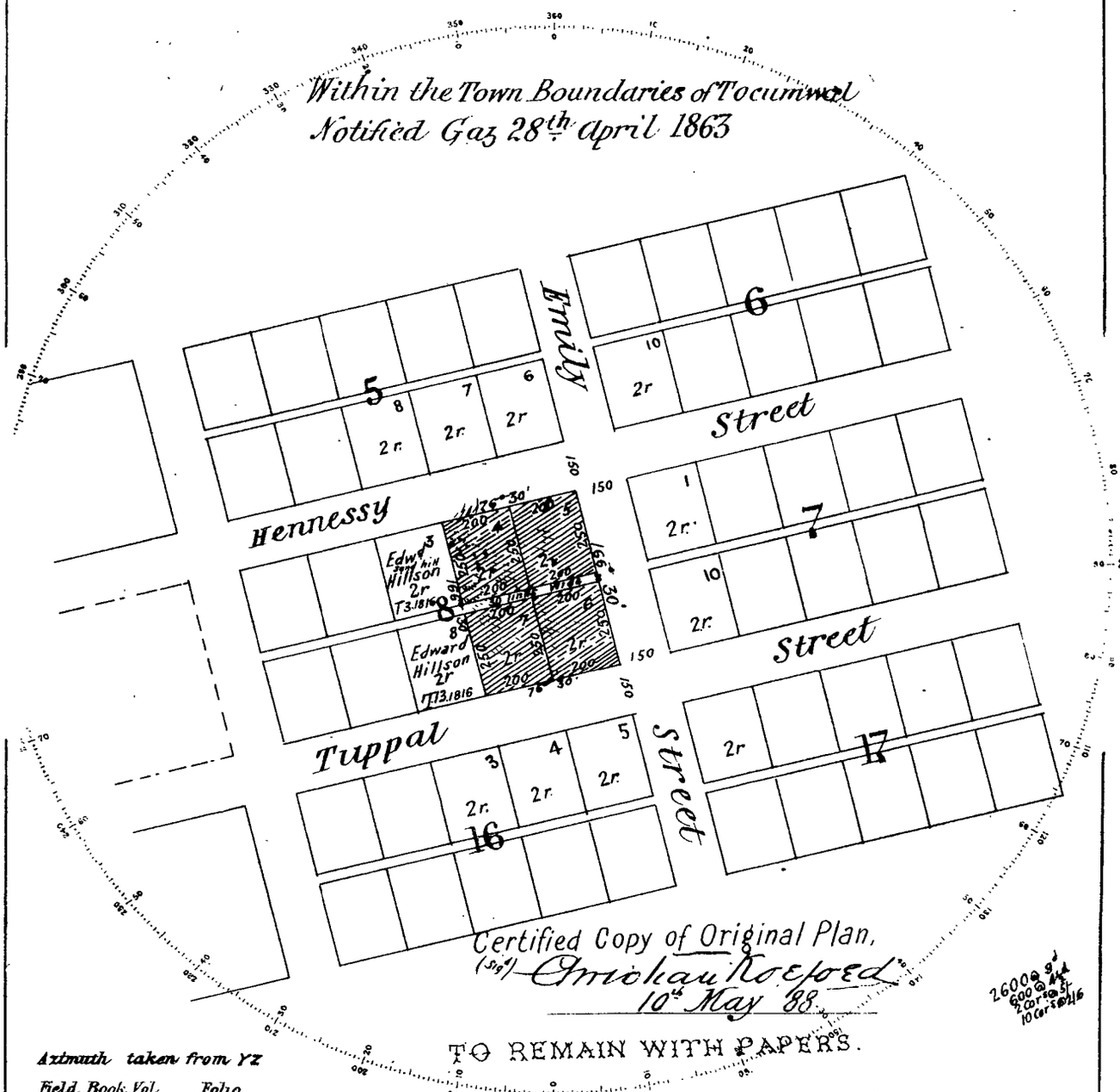
Central Division

PLAN OF PORTION

County of Denison — Parish of Tocumwal

LAND DISTRICT OF Corowa — LAND BOARD DISTRICT OF Wagga Wagga

Applied for under the Section of the Crown Lands Act of 1884 by



Certified Copy of Original Plan,
(Sigd) Michael Roefoed
10th May 88.

2600 @ 9d
600 @ 4d
2 Cors @ 5d
10 Cors @ 2d 16

TO REMAIN WITH PAPERS.

Azimuth taken from YZ

Field Book Vol Folio

Reference to Corners

Corner	Bearing	From	Links	No on Tree

Numbered stakes at all corners

(Note)

Red on Original Hatch'd thus here

Reference to Traverse

Line	Bearing	Distance

I hereby certify that I in person made and on the 5th March 1887 completed the survey represented on this plan, on which are written the bearings and lengths of the lines measured by me, and I declare that the survey has been executed in accordance with the regulations published for the guidance of Licensed Surveyors and the practice of the Department of Lands.

(Sigd) Wm Freed
Licensed Surveyor

Transmitted to the District Surveyor with my letter of 31st May 87 F. 24

Voucher No 87/30 Passed (Signed) J.T.K. 3rd May 88

Calculation Book No 935 Folio 13.

Checked and Charted (Sd) J J Quinn 12th apl 88

Examined (Signed) J.T.K. 3rd May 88

Plan approved 3rd May 1888.

Situated in the
Value of Improvements

T.8. 1816

Scale 4 Chains to an Inch.

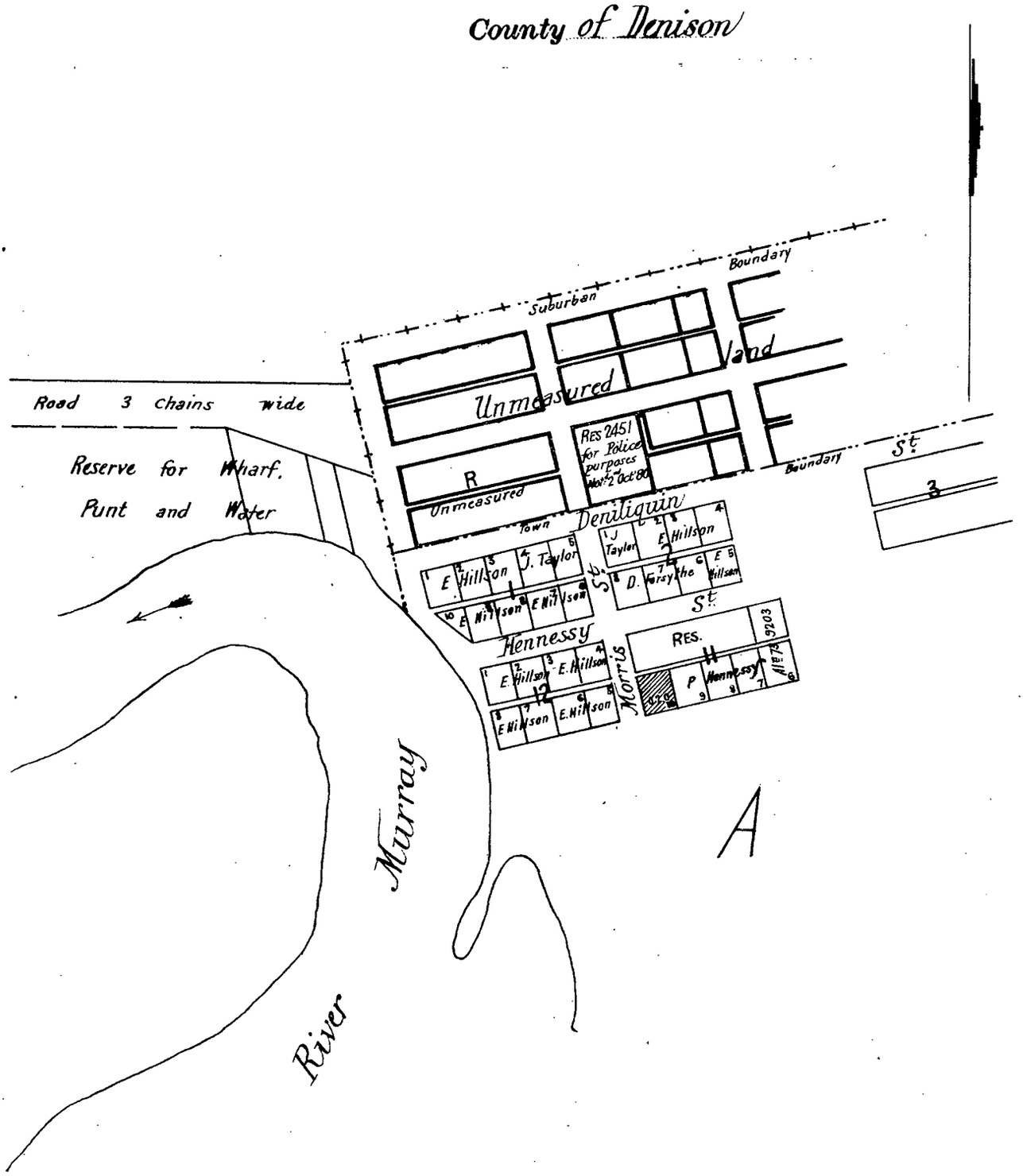
(Signed) William Orr. District Surveyor

(Sig 618.-)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

APPENDIX B. **TRACING** Enclosure to No. 27.

Showing part of the Village of Tocumwal
Parish of Tocumwal
County of Denison



(Note) Red tint on Original, Hatched thus here ////
Red lines on Original show thus here ———
(Signed)

(Sig. 618-)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

APPENDIX C.

12692

Land District of Corowa

Enclosure to No. 27

PLAN

of Sections 24 and 25

VILLAGE OF TOCUMWAL

PARISH OF TOCUMWAL - COUNTY OF DENISON

4 3 2 1 0 1 4 8 12

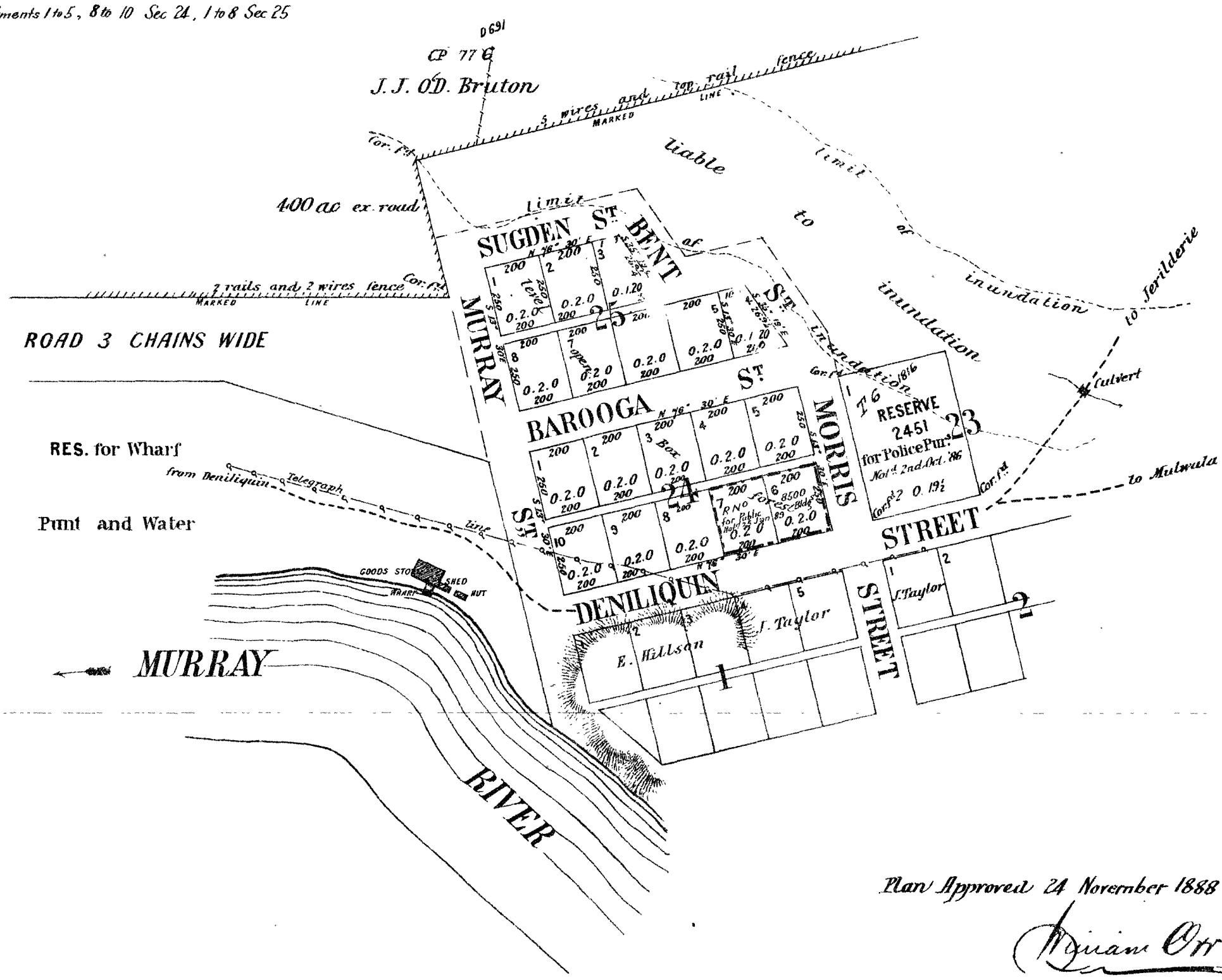
Total area measured for sale 8 ac. 2rd 10p. (3rds)

Sale at Tocumwal 29th July 1889

Town lots

Allotments 1 to 5, 8 to 10 Sec 24, 1 to 8 Sec 25

98



Plan Approved 24 November 1888

Miriam Orr

D.S. Wagga

Azimuth taken from Section No. 23

Date of Survey 2nd & 3rd November 1888

Marked in accordance with Regulations

Transmitted to the District Surveyor with my letter No. 80 of the 19th November 1888

Maurice Barlow

Surveyor

(Sig 618.)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

APPENDIX D.

L B. 86/1903 Albury

Land District of Corowa
Central Division

Plan

of 56 allotments
Subdivisions of Sections 5 6 7 15 16 & 17
in the
Village of Tocumwal

COUNTY OF DENISON

Total Area 27a 3r 26p.

Scale

CHAINS 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 CHAINS

Cor found

John Morris CP 73 1729

320 ac

Cor found

ROAD 3 CHAINS WIDE to Crown

43

Cor found

G. F. Sugden

200 ac.

Situation of Land applied for by petition

Land wanted here shown

Sec 2.

R

Boundary

Village

DENILIQUIN

BAKER

CHARLOTTE

EMILY

HANNAH

HENNESSY

TUPPAL

ADAMS

STREET

Allot. Sale 28th Sept. 86.

Denham

Hinson

Keily

Deakin

Improvements on allotments 1 2 3 4 & 5 of Section 6, Fencing E on each Azimuth from Tuppal Street

Numbered stakes at all corners

Cor found

I hereby certify that I in person made and on the 14th August '86 completed the survey represented on the plan on which are written the bearings and lengths of the lines measured by me, and I declare that the survey has been executed in accordance with the regulations published for the guidance of Licensed Surveyors, and the practice of the Surveyor General's Department

Licensed Surveyor

Transmitted to the Dist Sur with my letter of 15th Sept 86/39

(Seg. 618)

PHOTO-LITHOGRAPHED AT THE GOVT PRINTING OFFICE,
SYDNEY NEW SOUTH WALES

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

REPORT FROM THE SELECT COMMITTEE

ON

CONDITIONAL PURCHASES MADE UPON BARRATTA RUN;

TOGETHER WITH THE

PROCEEDINGS OF THE COMMITTEE,

MINUTES OF EVIDENCE,

AND

APPENDICES.

ORDERED BY THE LEGISLATIVE ASSEMBLY TO BE PRINTED,
4 *September*, 1889.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1889.

[1*s*. 6*d*.] 314—*a*

1889.

EXTRACTS FROM THE VOTES AND PROCEEDINGS OF THE LEGISLATIVE ASSEMBLY.

VOTES No. 8. TUESDAY, 2 APRIL, 1889.

8 CONDITIONAL PURCHASES MADE UPON BARRATTA RUN:—Mr. Barbour moved, pursuant to *amended* Notice,—

(1.) That a Select Committee be appointed, with power to send for persons and papers, to inquire into and report upon all conditional purchases made upon the run of Barratta (Henry Ricketson, lessee), from January, 1872, till December, 1882; how many were lapsed or forfeited; what became of the improvements; how many were converted into improvement purchases.

(2.) That such Committee consist of Mr. Lyne, Mr. J. P. Abbott, Mr. Alison, Mr. Copeland, Mr. Chapman, Mr. T. G. Dangar, Mr. Brunker, Mr. Hugh Taylor, Mr. Woodward, and the Mover.

Question put and passed.

VOTES No. 14. TUESDAY, 16 APRIL, 1889.

2. CONDITIONAL PURCHASES MADE UPON BARRATTA RUN:—Mr. Lamb presented a Petition from Henry Ricketson, of Barratta Station, referring to the Select Committee now sitting upon this subject; and praying that he may be heard by Counsel, Attorney, or Agent before such Committee, with liberty to adduce such evidence as may be within his power.

Petition received.

Mr. Lamb (*by consent*) moved, without Notice, That the prayer of the Petitioner be granted.

Question put and passed.

VOTES No. 87. WEDNESDAY, 4 SEPTEMBER, 1889.

4. CONDITIONAL PURCHASES MADE UPON BARRATTA RUN:—Mr. Barbour, as Chairman, brought up the Report from, and laid upon the Table the Minutes of Proceedings of, and Evidence taken before, the Select Committee for whose consideration and report this subject was referred on 2nd April, 1889, together with Appendices.

Ordered to be printed.

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Report	3
Proceedings of the Committee	5
Minutes of Evidence	1
Appendices	17

1889.

CONDITIONAL PURCHASES MADE UPON BARRATTA RUN.

REPORT.

THE SELECT COMMITTEE of the Legislative Assembly, appointed on the 2nd April, 1889, "*with power to send for persons and papers to inquire into and report upon all Conditional Purchases made upon the Run of Barratta (Henry Ricketson, lessee), from January, 1872, till December, 1882; how many were lapsed or forfeited; what became of the improvements; how many were converted into improvement purchases,*"—have agreed to the following Report:—

1. Your Committee having examined the witnesses, whose evidence is appended hereto, find as follows:—

(1.) The conditional purchases made upon Barratta Run from January, 1872, till December, 1882, numbered 89 (eighty-nine), and contained an area of about 20,000 (twenty thousand) acres.

(2.) *How many were forfeited.*—Seventy-five out of the eighty-nine conditional purchases were forfeited; one only obtained a certificate of conformity by Henry Ricketson, the owner of the run; the remaining thirteen being treated as null and void, as it does not appear that any improvements were effected upon them.

(3.) *Improvements.*—The improvements made upon the seventy-five forfeited conditional purchases, according to the valuation of the Inspectors, averaged nearly twenty shillings per acre, or a total of upwards of £18,000 (eighteen thousand pounds), and consisted of tanks or dams, fencing, and buildings.

(4.) *What became of the Improvements.*—Twenty-six of the forfeited conditional purchases were, sometime after, sold by auction to Henry Ricketson, and the value of the improvements was added to nine of them, and there is no evidence before the Committee to show that there were any improvements upon the other seventeen at the time they were sold by auction. Twelve of the forfeited conditional purchases are still Crown Lands, and so far as your Committee were able to ascertain the improvements are still upon the land, and the land and improvements are in possession of Henry Ricketson.

(5.) *How many were converted into Improvement Purchases.*—Thirty-seven of the forfeited conditional purchases have been purchased by Henry Ricketson as improvement purchases. Application was made by him to purchase each of these immediately after forfeiture had appeared in the *Gazette;* in twelve cases he made application only two days after forfeiture, viz., they were gazetted forfeited on the 7th of August, 1876, and his application is dated 9th August, 1876. In three other cases, three days elapsed; in others, seven days, fourteen days, twenty-one days, and so on, and so far as your Committee could ascertain the most of the improvements claimed in the applications appear to be those that are described as being upon the forfeited conditional purchases at the time of forfeiture. The area so dealt with is between 9,000 and 10,000 acres, and Crown grants have been obtained for the whole at prices varying from 20s. to 25s. per acre.

2. In the evidence given by the Under Secretary for Lands (questions 278 to 283) it appears that the Supreme Court has decided that when conditional purchases become forfeited the improvements thereon belong to the Crown. No evidence was adduced before your Committee showing that the improvements upon lands which Mr. Ricketson had been permitted to purchase as improvement purchases had not been erected by him either partly before and partly after, or wholly after the time the said lands had been conditionally purchased.

ROBT. BARBOUR,
Chairman.

No. 3 *Committee Room,*
Sydney, 4 *September,* 1889.

PROCEEDINGS OF THE COMMITTEE.

WEDNESDAY, 10 *APRIL*, 1889.

MEMBERS PRESENT:—

Mr. Barbour, | Mr. Alison,
Mr. Hugh Taylor.

Mr. Barbour called to the Chair.

Entry from Votes and Proceedings appointing the Committee *read* by the Clerk.

Committee deliberated.

Ordered,—That an intimation be sent to Mr. Henry Ricketson (lessee of the Barratta Run) that the Committee intended to proceed with the inquiry, and that it was open to him to petition the House for leave to be represented before the Committee should he so desire.

[Adjourned.]

Re-assembling of the Committee to be arranged by the Chairman.

TUESDAY, 14 *MAY*, 1889.

MEMBER PRESENT:—

Mr. Barbour.

In the absence of a quorum the meeting called for this day lapsed.

WEDNESDAY, 15 *MAY*, 1889.

MEMBERS PRESENT:—

Mr. Barbour, | Mr. Chapman.

In the absence of a quorum the meeting called for this day lapsed.

THURSDAY, 16 *MAY*, 1889.

MEMBERS PRESENT:—

Mr. Barbour in the Chair.

Mr. T. G. Dangar, | Mr. Woodward.

Entry from Votes and Proceedings, granting leave to Henry Ricketson to appear by Counsel before the Committee, *read* by the Clerk.

Committee deliberated.

[Adjourned till Tuesday, 28 May, at *Two* o'clock.]

TUESDAY, 28 *MAY*, 1889.

MEMBER PRESENT:—

Mr. Barbour.

In the absence of a quorum the meeting called for this day lapsed.

WEDNESDAY, 29 *MAY*, 1889.

MEMBER PRESENT:—

Mr. Barbour.

In the absence of a quorum the meeting called for this day lapsed.

THURSDAY, 30 *MAY*, 1889.

MEMBERS PRESENT:—

Mr. Barbour in the Chair.

Mr. Alison, | Mr. T. G. Dangar,
Mr. Hugh Taylor.

Present:—Thomas Robertson, Esquire (*Solicitor for Mr. Henry Ricketson*).

Frank Griffin (*Clerk, Conditional Sales Branch, Department of Lands*), called in, sworn, and examined.

Witness handed in schedule showing particulars of all conditional purchases made upon Barratta Run, from January, 1872, till December, 1882. Ordered to be appended. (*See Appendix* A1).

Witness withdrew.

[Adjourned till Wednesday next, at a *quarter past Two* o'clock.]

WEDNESDAY,

WEDNESDAY, 5 *JUNE*, 1889.

MEMBER PRESENT:—

Mr. Barbour.

In the absence of a quorum the meeting called for this day lapsed.

WEDNESDAY, 3 *JULY*, 1889.

MEMBER PRESENT:—

Mr. Barbour.

In the absence of a quorum the meeting called for this day lapsed.

THURSDAY, 4 *JULY*, 1889.

MEMBERS PRESENT:—

Mr. Barbour in the Chair.

Mr. T. G. Dangar, | Mr. Hugh Taylor,
Mr. Alison.

Present:—Thomas Robertson, Esq. (*Solicitor for Mr. Henry Ricketson*).
Stephen Freeman (*Under Secretary for Lands*) called in, sworn, and examined.
Witness withdrew.

[Adjourned till to-morrow at *half-past Eleven* o'clock.]

FRIDAY, 5 *JULY*, 1889.

MEMBERS PRESENT:—

Mr. Barbour in the Chair.

Mr. Alison, | Mr. Hugh Taylor.

Present:—Thomas Robertson, Esq. (*Solicitor for Mr. Henry Ricketson*).
Henry Ricketson called in, sworn, and examined.
Witness handed in copy of a letter dated 23rd December, 1888, from Robert Barbour, M.P., to witness in reference to improvements on Barratta Run. Ordered to be appended. (*See Appendix* B1.)
Witness withdrew.

[Adjourned.]

FRIDAY, 2 *AUGUST*, 1889.

MEMBERS PRESENT:—

Mr. Barbour, | Mr. Chapman.

In the absence of a quorum the meeting called for this day lapsed.

WEDNESDAY, 14 *AUGUST*, 1889.

MEMBERS PRESENT:—

Mr. Barbour in the Chair.

Mr. T. G. Dangar, | Mr. Hugh Taylor.

Committee deliberated.
Chairman submitted Draft Report.
On motion of Mr. Hugh Taylor, in consequence of the absence of Mr. Alison, a member of the Committee, who desired to be present when the Report was dealt with, the consideration thereof was postponed.

[Adjourned till Wednesday, 28 August, at *Three* o'clock.]

WEDNESDAY, 28 *AUGUST*, 1889.

MEMBER PRESENT:—

Mr. Barbour.

In the absence of a quorum the meeting called for this day lapsed.

7

WEDNESDAY, 4 SEPTEMBER, 1889.

MEMBERS PRESENT:—

Mr. Barbour in the Chair.

Mr. Alison, | Mr. Brunker,
Mr. Hugh Taylor.

Chairman submitted Draft Report, as follows:—

"THE Select Committee of the Legislative Assembly, appointed on the 2nd April, 1889, '*with power to send for persons and papers to inquire into and report upon all Conditional Purchases made upon the Run of Barratta (Henry Ricketson, lessee), from January*, 1872, *till December*, 1882; *how many were lapsed or forfeited; what became of the improvements; how many were converted into improvement purchases*,'—have agreed to the following Report:—

"1. Your Committee having examined the witnesses, whose evidence is appended hereto, find as follows:—

"(1.) The conditional purchases made upon Barratta Run from January, 1872, till December, 1882, numbered 89 (eighty-nine), and contained an area of about 20,000 (twenty thousand) acres.

"(2.) *How many were forfeited.*—Seventy-five out of the eighty-nine conditional purchases were forfeited; one only obtained a certificate of conformity by Henry Ricketson, the owner of the run; the remaining thirteen being treated as null and void, as it does not appear that any improvements were effected upon them.

"(3.) *Improvements.*—The improvements made upon the seventy-five forfeited conditional purchases, according to the valuation of the Inspectors, averaged nearly twenty shillings per acre, or a total of upwards of £18,000 (eighteen thousand pounds), and consisted of tanks or dams, fencing, and buildings.

"(4.) *What became of the improvements.*—Twenty-six of the forfeited conditional purchases were, sometime after, sold by auction to Henry Ricketson, 'but although all of these were improved, only upon nine of them was anything added to the upset price for the improvements, consequently seventeen of such cases, averaging nearly £300 each, of improvements, became the property of Henry Ricketson without anything having been paid for such improvements.' Twelve of the forfeited conditional purchases are still Crown Lands, and so far as your Committee were able to ascertain the improvements are still upon the land, and the land and improvements are in possession of Henry Ricketson.

"(5.) *How many were converted into Improvement Purchases.*—Thirty-seven of the forfeited conditional purchases have been purchased by Henry Ricketson as improvement purchases. Application was made by him to purchase each of these immediately after forfeiture had appeared in the *Gazette*; in twelve cases he made application only two days after forfeiture, viz., they were gazetted forfeited on the 7th of August, 1876, and his application is dated 9th August, 1876. In three other cases, three days elapsed; in others, seven days, fourteen days, twenty-one days, and so on, and so far as your Committee could ascertain the most of the improvements claimed in the applications appear to be those that are described as being upon the forfeited conditional purchases at the time of forfeiture. The area so dealt with is between 9,000 and 10,000 acres, and Crown grants have been obtained for the whole at prices varying from 20s. to 25s. per acre.

"2. In the evidence given by the Under Secretary for Lands (questions 278 to 283) it appears that the Supreme Court has decided that when conditional purchases become forfeited the improvements thereon belong to the Crown. 'Your Committee are of opinion that the greater part, if not the whole of the described improvements were upon the land at the time that the selections were forfeited, and were therefore the property of the Crown, and that Henry Ricketson wrongfully claimed the said improvements to be his own property, and in consequence he was allowed to purchase the land as improvement purchases, and he has thereby obtained thirty-seven Crown grants which should not have issued in the circumstances.'"

Same read paragraph by paragraph.

Paragraph 1 read and agreed to.

Sub-paragraphs (1) to (3) read and agreed to.

Sub-paragraph (4) read, amended on motion of Mr. Brunker, by *omitting*, from lines 2 to 7,—"but although all of these were improved, only upon nine of them was anything added to the upset price for the improvements, consequently seventeen of such cases, averaging nearly £300 each, of improvements, became the property of Henry Ricketson without anything having been paid for such improvements," and *inserting*, "and the value of the improvements was added to nine of them, and there is no evidence before the Committee to show that there were any improvements upon the other seventeen at the time they were sold by auction,"—and agreed to.

Sub-paragraph (5) read and agreed to.

Paragraph 2 read amended, on motion of Mr. Brunker, by *omitting* from lines 3 to end of paragraph, the words "your" to "circumstances," and inserting "No evidence was adduced before your Committee showing that the improvements upon lands which Mr. Ricketson had been permitted to purchase as improvement purchases had not been erected by him either partly before and partly after or wholly after the time the said lands had been conditionally purchased,"—and agreed to.

Chairman to report to the House.

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1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

MINUTES OF EVIDENCE

TAKEN BEFORE

THE SELECT COMMITTEE

ON

CONDITIONAL PURCHASES MADE UPON BARRATTA RUN.

THURSDAY, 30 *MAY*, 1889.

Present:—

MR. T. G. DANGAR. | MR. BARBOUR.
MR. ALISON. | MR. HUGH TAYLOR.

R. BARBOUR, ESQ., IN THE CHAIR.

Thomas Robertson, Esq., Solicitor, appeared on behalf of Mr. Henry Ricketson.

Frank Griffin called in and examined:—

1. *Chairman.*] You are a clerk in the Lands Office? Yes; in the Conditional Sales Branch.
2. We want to know what conditional purchases were made on the Barratta Run from 1872 to 1882. What was the first one that was taken up after 1872? The first one I have any trace of is dated the 7th August, 1873.

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3. What is the name? H. J. Ricketson.
4. What was the area? 320 acres.
5. What is the parish? Parish of Banangalite.
6. Have you any reports from Conditional Inspectors as to the improvements that were made upon that conditional purchase? Yes, a report by Mr. Keele; that is dated 1876.
7. What do you say about the date of lapsing? It was declared lapsed on the 7th May, 1877.
8. What does he report as to the improvements that were on that conditional purchase? Fencing, £140.
9. And what next? That is all that he reports.
10. Have you any other reports? Not on that conditional purchase.
11. What is the date of the inspection? The 2nd July, 1876, by Mr. Keele.
12. And the improvements were fencing? Yes.
13. Was that conditional purchase lapsed or forfeited? It was lapsed on the 7th May, 1877.
14. When was it gazetted? That was the date of the gazetting.
15. Was it gazetted as lapsed or forfeited? As lapsed.
16. The two words mean the same thing, don't they? No. Forfeiture would be for non-compliance with conditions of residence and improvements. A conditional purchase lapses when no declaration is sent in or no instalments are paid.
17. Both are for non-fulfilment of conditions? Yes. But one might be after inquiry in open Court.
18. Can you tell us anything more about that conditional purchase? Yes; that same land was applied for by R. Barbour, on the 20th November, 1873.
19. That was a long time before? Yes.
20. And whilst it was a conditional purchase? Yes.
21. And what was done with that? That was declared void, because it was the same land already applied for by H. J. Ricketson.
22. What was done with it after it lapsed? On the 28th May, 1877, Henry Ricketson applied for it as an improvement purchase.

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23. What were the improvements described as in the Inspector's report? The report was dated the 5th September, 1883.
24. Is that the report upon the application for the improvement purchase? Yes.
25. What is the report on the improvements? Wool-scouring establishment, £180; fencing, £172; a tank, £90.
26. Do you know if that fencing is the same fencing as was described in the conditional purchase? No; I could not say.
27. How long was the date of it after the lapsing? Three weeks.
28. What was the number of acres applied for as the improvement purchase? 320.
29. Was it granted? Yes.
30. And have the deeds issued? Yes.
31. When did they issue? On the 6th November, 1884.
32. Can you tell us anything more about that improvement purchase? The price was £1 5s. per acre.
33. That is the whole, is it? Yes.
34. What is the next conditional purchase? The next is on the same date, by F. W. Ricketson.
35. What is the area of that? 240 acres.
36. Was there any inspection of that? Yes; on the 26th June, 1876, Mr. Keele inspected it.
37. And what were the improvements then? A bridge and a house valued at £240.
38. Was that subsequently lapsed or forfeited? That lapsed on the 7th May, 1877.
39. Was that applied for as an improvement purchase? Yes; on the 28th May, 1877.
40. And what were the improvements in connection with the improvement purchase on the date of the surveyor's valuation? Fencing, £109 17s.; a tank, £94 10s.; a bridge, £50.
41. No house? No house.
42. Was that improvement purchase sold? Yes; in November, 1884.
43. As an improvement purchase? Yes.
44. At £1 5s. an acre? Yes.
45. Can you tell us anything more about that purchase? No.
46. What is the date of the next conditional purchase? The 14th August, 1873.
47. What is the name of the purchaser? F. W. Ricketson.
48. What is the area? 320 acres.
49. Was there any inspection of that? Yes; Inspector Carne inspected it.
50. What is the date? 17th June, 1878. That is after it lapsed.
51. What were the improvements? Stable for Cobb & Co., £175; fencing, £160; and tank, £132 6s. 8d.; total, £468 6s. 8d.
52. Was that subsequently lapsed or forfeited? It was lapsed before that inspection, on the 7th May, 1877.
53. Was it afterwards applied for as an improvement purchase? Yes, on the 21st May.
54. In what year? 1877.
55. What improvements were reported? The improvements were the same. It was the same inspection connected with the improvement purchase, the inspection being after the lapsing.
56. What was the time between the lapsing and the application for it as an improvement purchase? About three weeks, and from the date of application to the date of inspection about twelve months.
57. What did the improvement purchase claim as an improvement? A house, tank, fencing, &c.
58. Is there any difference between the improvements mentioned in the application for the improvement purchase and the improvements reported? The only difference is that the house is called a stable in the report.
59. Can you tell us any more about that purchase? The deed was issued, and the price was £1 2s. 6d. an acre.
60. What is the next conditional purchase? The next was on the same date, by W. F. Ricketson, 14th August, 1873.
61. Can you give the area of that conditional purchase? Yes; 320 acres.
62. Was that inspected? Not till after it was lapsed.
63. When was it inspected? On the 17th June, 1878. It was lapsed on the 7th May, 1877.
64. What were the improvements on it? An iron house, £160; fencing, £160; and an old hut, £5; total, £325.
65. Was that applied for as an improvement purchase? Yes; on the 21st May, 1877.
66. What were the improvements mentioned in that application? A house, fencing, &c.
67. Do these correspond with what was reported as on the conditional purchase? Yes, but the improvement purchase was refused.
68. Has it been applied for again? No; it was sold at auction at the upset price of £1 12s. 6d. an acre.
69. Is these anything said in the papers about the improvements being included? I do not think so.
70. What is the next case? The next is on the same date, by C. M. Ricketson.
71. What is the area? 320 acres, in the parish of Ricketson.
72. Was that inspected? Yes; by Mr. Smith.
73. What was the date? 14th August, 1873.
74. What were the improvements reported by Mr. Smith on the 12th April, 1876? There was a hut, £15; fencing, £180; and a tank, £100. There was an inquiry by Commissioner Johnson, on the 8th May, in connection with that purchase, and it was declared forfeited on the 7th August. 1876.
75. Was it subsequently applied for as an improvement purchase? Yes; on the 9th August, 1876, by Henry Ricketson.
76. And what improvements were claimed for? I have not got the papers of that particular improvement purchase.
77. Have you any report upon it? Yes; Mr. Licensed Surveyor Finlay reported upon it.
78. What did he say the improvements were? Fencing, £160; tank, £150; hut, £15;—£325 altogether.
79. Are these the same improvements that were on the forfeited conditional purchase? The same class—hut, fencing, and tank.
80. The total amount of the one corresponds with the total amount of the other? No; there was £295 worth on the conditional purchase, and £325 was the value for the improvement purchase.

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81. They were the same items? Yes.
82. Can you tell us anything more about it? Yes; the deed issued for that purchase at £1 an acre.
83. On what date? The 20th August, 1879.
84. What is the next conditional purchase? On the same date, by Amy G. Ricketson.
85. What is the area? 320 acres.
86. In what parish? Ricketson.
87. Any improvements reported upon it? Yes; Mr. Smith, on the 12th April, 1876, reported a hut, £15; fencing, £180; a tank, £150; total value, £345. Commissioner Johnson held an inquiry on the 8th May. It was forfeited on the 7th August, 1876.
88. Was it subsequently applied for as an improvement purchase? Yes.
89. What was the date of the application? 9th August, 1876.
90. And what are the improvements claimed for? A house, a tank, post and wire fencing.
91. And the value? £350.
92. Is that for the same improvements that are on the conditional purchase? Yes, the same items—a hut, fencing, and a tank. Mr. Carne inspected that on the 7th September, 1879. He found a hut, value £30; a dam, £20; fence, £160; tank, £120; iron hut, £60; total, £390. It was again inspected by Mr. Landon on the 15th June, 1881.
93. Do the improvements differ in any way? No; there were two tanks, fencing, and a hut, valued at £300.
94. Do they seem to be all the same improvements, but differently valued? The same class of improvements. Only 240 acres of that was granted out of the 320 acres applied for.
95. Have the deeds been issued for that? Yes; on the 30th July, 1883, at £1 1s. an acre; the balance of that portion is now an auction purchase.
96. What is the next case? The next is on the 20th November, 1873—George Boyd, selector, of 320 acres, in the parish of Billabong.
97. Was that inspected? No; that was declared lapsed on the 16th May, 1877.
98. Were there any improvements reported? No; it was sold by auction.
99. What was the next case after that? The next is on the same date, 20th November, 1873, by J. M. C. Orton.
100. Did anything come of that? That lapsed on the 16th May, 1877.
101. Were there any improvements reported? Yes; on the 12th October, 1878, by Inspector Carne.
102. What are the improvements? A house, £160; fencing, £180—£340 altogether. That was applied for as an improvement purchase on the 14th June, 1877, but it was refused.
103. Was it applied for again? No.
104. What was subsequently done with it? It was sold at auction.
105. What was the upset price? I have not got that.
106. What is the next case? The next is on the 20th November, 1873, by Frederick Gee, 320 acres, in the parish of Ricketson.
107. Was that reported upon? Yes, on the 24th December, 1874. Inspector Street reported upon it.
108. Was there a subsequent inspection? Yes, on the 7th September, 1879, by Inspector Carne.
109. What were the improvements reported on by Street? A hut with an iron roof.
110. And by Mr. Carne, in September, 1879? Fencing, £75; a tank, £20 9s. 4d.; and fencing again, £70.
111. Was there any subsequent inspection of that? Yes, in 1886.
112. And what were the improvements reported then? Fencing, £90; tank, £300.
113. Was that subsequently applied for as an improvement purchase? Yes, in 1877.
114. On what date? I cannot give the date; the application was refused.
115. Was there a subsequent application? I do not think so. It is now an auction purchase. I have no particulars as to the price.
116. What is the next case? The next one is on the 20th November, 1873, by Samuel Tucker; area, 160 acres.
117. Was that inspected? Yes; by Mr. Keele, on 7th July, 1876.
118. What did he report? A hut, value £5.
119. Was that all? That was all.
120. Was there any other inspection? Yes; on the 17th August, 1878, by Mr. Carne. He found a tank, £111 6s. 8d., and a hut, £10. Then Mr. Landon, on the 14th June, 1881, reported a hut, £20, a tank, £93 15s., and 93¾ acres were granted for the improvement purchase.
121. What was the date of the application for that improvement purchase? 13th June, 1877.
122. Did you say whether that was lapsed or forfeited? It was declared lapsed on the 16th May, 1877.
123. What is the next conditional purchase? On the 20th November, 1873, Fanny Barbour.
124. Was that reported on? That was an application for 320 acres, but only 158 acres were allowed. That is in the parish of Banangalite.
125. Was that inspected? It does not appear to have been inspected until after it was forfeited on the 19th March, 1878; it was inspected on the 10th July, 1880, by Mr. Carne.
126. What were the improvements? Cottage, £40; another, £25; shed, &c., £24; fencing, £134; total, £223.
127. Was that applied for as an improvement purchase? Yes; on the 26th March, 1878, by Henry Ricketson.
128. Was it allowed to be purchased? No; it was refused.
129. Do you know if anything was done with it subsequently? Yes; it was notified as reserved from sale and lease on the 26th March, 1878. That is the day on which it was applied for as an improvement purchase.
130. Do you know if anything has since been done with it? No; I think that case is proceeding now.
131. Is there anything to show whether it is gone from the Crown? It is still in the hands of the Crown.
132. What is the next case? The next case is that of Margaret Barbour, 20th November, 1873.
133. What is the area? 288½ acres.
134. Was that inspected? Not till after it was declared forfeited.
135. When was it declared forfeited? On the 7th August, 1876.
136. On what date was it inspected? On the 8th August, 1880, by Inspector Carne.

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137. What were the improvements? Fencing, £180; tank, £140; house, £160; total, £480.
138. Was that applied for as an improvement purchase? That was applied for as an improvement purchase by Henry Ricketson.
139. On what date? On the 27th November, 1876, the application being allowed for 144¼ acres.
140. What were the improvements claimed? It was originally applied for in connection with another conditional purchase, portions 3, 4, and 23, comprising 468¼ acres, and that was afterwards split into three. That was claimed in virtue of three tanks, valued at £495, and fencing, valued at £169 10s.
141. Then what was the other conditional purchase that was joined on to that one? That was the purchase of Josiah Pitty, 180¼ acres.
142. Have you Pitty's improvements? Yes. Pitty's improvements on the 12th April, 1876, were a hut, £20; fence, £90; another fence, £180; making a total of £290.
143. When was that forfeited? On the 7th August, 1876.
144. When was it applied for as an improvement purchase? On the 22nd November, 1876; but only 144¼ acres were granted at that time.
145. Was some other land granted subsequently? Yes; it was granted in three lots.
146. And what were the improvements on the three lots? The improvements on the 144¼ acres were valued by Surveyor Broughton on the 16th July, 1886—a tank, £62 10s.; fence, £85 10s.; total, £148; that is on portion 3. On portion 4 of the same area he found a tank, value £117 10s.; a fence, £28 10s.; total, £146. On portion 23 of Pitty's selection, a tank, £162 10s.; a dam, £10; and fence, £11 5s.; total, £183 15s.
147. Do these improvements correspond with the improvements reported on the conditional purchase? They reported a tank and a fence, but I do not know whether they are the same.
148. Does the next correspond with them? No. The deeds were issued on this third portion on the 3rd February, 1888; £1 5s. an acre was the price.
149. Have you given us the improvements that were inspected on all those conditional purchases? Yes; there were only two conditional purchases, but three portions.
150. Then what is the next conditional purchase on the Barratta Run? The next is George P. Barbour's.
151. What is the area? 320 acres.
152. And the date? The 20th November, 1873.
153. Were the improvements inspected? Yes. On the 12th April, 1876, Inspector Smith found a hut, value £20; fence, £90; tank, £60; total, £170.
154. Has there been any further inspection? Yes; it was inspected by Mr. Carne on the 9th August, 1880.
155. What did he report? He found a tank made by the selector valued at £26 15s. 4d.; improvements made by the lessee of the run, tank and fencing, valued at £324 3s. 4d. That was forfeited on the 7th August, 1876; that is portion 14 in the parish of Ricketson.
156. When was it applied for as an improvement purchase? On the 31st December, 1877.
157. And was it sold as an improvement purchase? No; it was refused.
158. Is it still Crown land? It appears to be still Crown land.
159. What is the next conditional purchase? The next is George Pitty's, 20th November, 1873, 144¼ acres; this is portion 5.
160. What improvements are reported? Inspector Smith, on the 12th April, 1876, found a hut, valued at £20, and a fence, £160. That was forfeited on the 7th August, 1876, and applied for as an improvement purchase on the 2nd May, 1878.
161. What improvements were claimed? A house and a tank.
162. Are those the same improvements that were on the conditional purchase? No; not according to the Inspector. He said there were a hut and a fence.
163. And the improvement purchase application is for a house and a tank? Yes.
164. What is the amount? On the 17th June, 1878, Inspector Carne found that there was a hut, £85, and a tank, £100.
165. Was that selection forfeited? It was forfeited on the 7th August, 1876.
166. When was it applied for as an improvement purchase? On the 2nd May, 1878.
167. Are the improvements different from the first one? The improvements made by the selector are valued at £76, and those of the lessee at £130 13s. 4d.
168. Was that sold as an improvement purchase? Yes, the deed was issued on the 24th October, 1881; the price was £1 an acre.
169. What is the next one? The next one is Thomas Kerr, 20th November, 1873, 320 acres. That was declared forfeited on the 1st October, 1878.
170. What were the improvements on it? They were not given till afterwards—the 7th September, 1879, there was a hut, tank, and fence, valued at £209 1s.
171. When was it applied for as an improvement purchase? On the 8th October, 1878.
172. What improvements were claimed? That was a conditional improvement purchase.
173. Have you any improvements reported? Yes; by Mr. Surveyor Orr, on the 6th July, 1881.
174. Was that inspection in consequence of the improvement purchase application? Yes.
175. What improvements did he report? A tank, £156 5s.; fencing, £125; a house, £110; total, £391 5s.
176. Do any of these correspond with the improvements on the conditional purchase? The same class of improvements—a hut, tank, and fence.
177. Was that sold as an improvement purchase? Yes; the deed was issued on the 2nd January, 1882, and the price was £1 5s. an acre.
178. What is the next conditional purchase? Mary K. Barbour, 20th September, 1873, area 320 acres, in the parish of Ricketson.
179. Was there any inspection of that conditional purchase? Yes; on the 24th December, 1874, Inspector Street reported that there were a hut and fencing, but no value was stated.
180. Was there any subsequent inspection? Yes; by Inspector Carne, on the 9th August, 1880.
181. What are the improvements? He found that the improvements made by the selector amounted in value to £105 16s. 8d., and those made by the lessee to £508 6s. 8d.
182. Was that applied for as an improvement purchase? Yes, on the 9th August, 1876. First of all it was applied for on that date as portions 10 and 11, 640 acres.

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183. Was the conditional purchase of M. K. Barbour allowed to be purchased? Not at first; subsequently, on the application of 5th February, 1877, it was.
184. By whom? By Henry Ricketson, 640 acres.
185. That included Catherine Barbour's conditional purchase? Yes.
186. What is the area of the two portions? 640 acres.
187. What improvements are reported on the last conditional purchase? Inspector Carne, on the 9th August, 1880, valued the improvements by the selector at £145, and those by the lessee at £331 13s. 4d.
188. What was the date of the application for that improvement purchase? The one granted was dated 5th February, 1877.
189. And were those the improvements that the improvement purchase was sold for? Licensed Surveyor Rigaut, on the 29th March, 1877, found on the block of 640 acres a tank valued at £450 7s. 6d.; a dam at £20; another tank, £166 14s. 6d.; a cottage, £70—total, £707 1s. 6d.; and the deed issued for that block on the 1st June, 1880, at £1 an acre.
190. Inspector Carne's inspection was in 1880? Yes.
191. When was the conditional purchase forfeited? It was forfeited on the 27th August, 1876.
192. And when was the application for the improvement purchase dated? There were two applications. First, 9th August, 1876; that was refused. And the second on 5th February, 1877.
193. And the second time the two conditional purchases were joined? On both occasions they were.
194. Is there any reason given for the first improvement purchase being refused? Yes—for not being within a block 5 miles square. That was a conditional improvement purchase.
195. And that was altered? Yes; on the 5th February, 1877, it was applied for as an improvement purchase.
196. At first it was applied for as a conditional improvement purchase, and that was refused? Yes.
197. And subsequently it was applied for as an improvement purchase, and that was granted? Yes.
198. Are the same improvements stated in both? The improvements in the conditional improvement purchase would not be on it.
199. Have you any improvements reported on about the date of the conditional improvement purchase? No; not about that date, but about four years afterwards. The improvements intended to be erected on the conditional improvement purchase were a house, tank, and post and wire fencing.
200. Were they put on? I do not know; that application was refused.
201. Are the improvements that were on the conditional purchase traceable in the purchase that was afterwards granted as an improvement purchase? They may be. There was a cottage valued at £70 on the improvement purchase, and two huts on the selection; that would be all. There is no mention of the two tanks or the dams being on the selection.
202. I think you said Mr. Carne's report was that a certain value of improvements were effected by the selectors? On Catherine Barbour's conditional purchase to the value of £145.
203. What was the value of the improvements reported to have been made upon the other conditional purchase? £105 16s. 8d.
204. These sums should amount to what? £250 16s. 8d.
205. And these are the two conditional purchases that were subsequently amalgamated in the improvement purchase of 640 acres? Yes.
206. What is the next conditional purchase? The next is Leighton Barbour, 20th November, 1873, 320 acres.
207. What are the improvements reported? The improvements reported on 10th August, 1880, by Inspector Carne, are a tank, £500; fence, £40—made by the lessee.
208. Was that applied for as an improvement purchase? Yes, that in conjunction with Robert Barbour, junr.'s, conditional purchase.
209. Was it an improvement purchase or a conditional improvement purchase? Both; that case is not settled yet.
210. What is the next conditional purchase? The next is J. Dougharty, in the parish of Banangalite, 238½ acres.
211. What improvements are reported there? Inspector Smith, on 12th April, 1876, reported a hut, £15; tank, £200; a fence, £78: total, £293. That was declared forfeited on the 7th August, 1876.
212. Was it applied for as an improvement purchase? Yes; on 9th August, 1876.
213. And what were the improvements claimed? A house, post and wire fencing, and a tank.
214. Are those the improvements that were on the conditional purchase? They are of the same class.
215. Do they differ in price or in the description? The valuation given by Mr. Finlay was only £263 6s. 3d.
216. And that was the valuation in consequence of the improvement purchase? Yes.
217. Does that differ from the first valuation? The first was £293.
218. Would a similar amount cover the necessary expenditure to enable the improvement purchase to be made? Yes; it is only 238 acres.
219. And the difference in price may be accounted for in that way? Yes.
220. Mr. Finlay finds the smaller amounts sufficient to cover the improvement purchase? Yes.
221. Was it sold? Yes; the deeds were issued on the 1st November, 1878, to Mr. Ricketson for £1 per acre.
222. What is the next case? The next was J. Dougharty again, of 27th November, 1873, for 81½ acres, in the parish of Ricketson.
223. That would be an additional conditional purchase? Yes; to make up the area of 320 acres.
224. What improvements were reported in that case? The improvements were nil. It is now an auction purchase. It was forfeited on the 7th August, 1876.
225. What is the next case? J. Kelly, for 238½ acres, and also for 81½ acres.
226. That is an additional conditional purchase? Yes, the 81½ acres.
227. What are the improvements reported on it? On 12th April, 1876, Inspector Smith found a hut £15, and line of posts only for fence valued at £78.
228. Was there a subsequent inspection? No; that was forfeited on the 7th August, 1876.
229. Was either of these applied for as an improvement purchase? No; they were sold at auction.
230. At what price? I do not know the price.
231. What was the date of the grant? I do not know.

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232. You cannot tell the upset price? No.
233. Can you say of your own knowledge that the document before you is a true and correct abstract of the papers bearing upon the several matters set forth in it? Yes; I drew it up myself.
234. Do you hand that in as an abstract of all the particulars contained in those papers? Yes; as regards the headings given in accordance with the Chairman's memo.
235. And you say that that is a true abstract statement of the particulars therein contained? Yes, as far as it goes. Of course it does not show what became of the improvements. [*See Appendix* A 1.]
236. *Mr. T. G. Dangar.*] Have Crown grants been issued in all the cases? No.
237. *Chairman.*] Does that paper show in what cases the Crown grants have been issued? Yes.
238. And whether they have or have not? Yes.
239. *Mr. T. G. Dangar.*] Do I understand that all these improvement purchases were originally conditional purchases, and that they were afterwards sold as improvement purchases? Some of them, not all.
240. *Chairman.*] What you have given were original conditional purchases, were they not? They were all conditional purchases.
241. Were they all subsequently sold as improvement purchases? Not all of them.
242. And that paper sets forth which were sold as improvement purchases? Yes.
243. *Mr. Robertson.*] The Chairman has asked about several improvements made during the currency of the conditional purchases—that is, if the improvements were mentioned in the improvement-purchase applications were not identically those mentioned in the conditional-purchase applications? There would be no way of showing.
244. Are you familiar with the Land Act? Yes.
245. When an application is made for the purchase of an improvement purchase the Department requires improvements to the amount of £1 an acre, and that the applicant shall himself be the owner of those improvements at the time he makes the application? Yes, and they are to be necessary for the working of the run.
246. All these essentials being there, the Department is satisfied? Yes.
247. Must not the Department have been satisfied, before granting leave to Mr. Ricketson to make improvement purchases that he had improved the land to the value of £1 an acre? Yes.
248. Do you know that all lapsed or forfeited conditional purchases revert to the run? Yes.
249. And that all improvements on these lapsed or forfeited conditional purchases then become the property of the lessee of the run? No. I did not know that.

THURSDAY, 4 *JULY*, 1889.

Present:—

MR. HUGH TAYLOR, | MR. ALISON,
MR. T. G. DANGAR.

R. BARBOUR, ESQ., IN THE CHAIR.

Thomas Roberston, Esq., Solicitor, appeared on behalf of Mr. Henry Ricketson.

Mr. Stephen Freeman called in, sworn, and examined:—

Mr. S. Freeman. 4 July, 1889.

250. *Chairman.*] You are the Under Secretary for Lands? Yes.
251. We have taken evidence before in this case, and an abstract was handed in by one of your clerks, Mr. Griffin;—is he a reliable officer? Yes.
252. And, as far as you know, the evidence that he gave is correct? I have no knowledge of his evidence.
253. Do you know the Barratta Run? Yes, on the map.
254. Who is the lessee? Henry Ricketson, I believe.
255. He has been for some years? Yes, for a good many years.
256. Have you got a copy of the evidence given by Mr. Griffin? Yes, I have, and also a schedule handed in by him.
257. In addition to what is supplied there, are there some conditional purchases which were afterwards bought as improvement purchases? Yes.
258. And some were made as auction purchases? Yes, I believe they were.
259. Have you a list of the improvements, if any, that were on the selections at the time they were sold by auction? Yes. I should like to qualify that. I should mention that it is not possible for the department to know exactly what improvements are on any portion of land that may be forfeited, because the inspection leading up to the forfeiture takes place some time before then, and delays occur, so that the forfeiture is not carried out until long after the inspection. It is impossible therefore for the department to say what was the actual value of the improvements at the date of the forfeiture.
260. You have no personal knowledge of the matter? No.
261. And the evidence you give us will be from the records in your office? Yes.
262. There is a great number of them, and the Committee, on the last occasion, asked Mr. Griffin to tabulate them;—have you done the same thing? I have particulars of the forfeited conditional purchases sold at auction, showing the area, the parish, the portion number, date of auction sale, value of the improvements, if any, added to the upset price, and for whose benefit.
263. And the upset price? No, I have not the upset price. The upset price in those days was almost invariably £1 an acre, irrespective of any question of improvements.
264. Will you hand in the list? Yes. The list contains a few other notes for my information, which will enable me to say when the Inspector visited the land in some cases, and what he found on the land.
265. To save time, would you hand in the list to the Committee? Yes.
266. And do you say it is correct? I believe it is correct. I have not myself obtained the information, but it has been obtained in the office by reliable officers.

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267. And you believe it is correct? I have no doubt about it.
268. *Chairman.*] Will you state to the Committee the full particulars of the statement contained in that list? Yes. The first is conditional purchase 73-8,450; portion 48, parish of Barratta, 320 acres; £321 18s. 6d. added to the upset price for Mr. Ricketson's protection, he being understood to be the owner of the improvements. The sale took place on the 2nd November, 1888. The next is conditional purchase 73-12,282, portion 10, parish of Billabong, 320 acres; nothing added to the upset price. Mr. Carne inspected the land in October, 1878, and found £340 worth of improvements on it. The sale took place in December, 1881, the land being sold by auction. Conditional purchase 73-12,289, portion 6, parish of Ricketson, 320 acres; nothing was added for improvements. Mr. Carne inspected the land in September, 1879, and found improvements on it to the value of £12 9s. 4d. The land was sold in May, 1879. Conditional purchase 73-12,526, portion 7, Banangalite, 238½ acres; nothing was added for the value of improvements. Inspector Smith saw the land in April, 1886, and found improvements on it to the value of £93. The sale took place on the 29th May, 1879. Conditional purchase 73-12,528, portion 11, Banangalite, 320 acres; nothing added to the value for improvements. Inspector Smith, in April, 1876, found improvements on the land to the value of £315. The sale took place on the 29th November, 1876. Conditional purchase 73-12,529, portion 28, parish of Ricketson, 320 acres, £160 added for the protection of the Crown; and conditional purchase 73-12,532, portion 27, the same parish; 320 acres, £212 added for the protection of the Crown. Conditional purchase 73-12,851, portion 3, parish of Staniforth, 320 acres, had nothing added. Inspector Keele, in January, 1876, found that there were £5 worth of improvements. The sale took place on the 26th September, 1877. Conditional purchase 73-12,855, portion 21, parish of Ricketson, 320 acres; value of improvements, £327; added for the protection of the Crown. Conditional purchase 73-12,856, portion 10, Banangalite, 320 acres, nothing added. Inspector Smith, in April, 1876, found £205 worth of improvements. The sale took place on the 29th November, 1876. Conditional purchase 73-12,859, portion 19, parish of Ricketson, 320 acres; nothing added for value of improvements. Inspector Keele, in June, 1876, found £180 worth of improvements. The land was sold in September, 1872. Conditional purchase 73-12,862, portion 22, parish of Ricketson, 320 acres; nothing added for improvements. Inspector Rigaut, in April, 1877, found improvements to the value of £337 10s. Sale took place on the 5th January, 1882. Conditional purchase 75-12, portion 30, Banangalite, 40 acres; nothing added for improvements. Inspector Carne, in September, 1877, found improvements on the land to the value of £50. The sale took place in December, 1878. Conditional purchase 75-100, portion 15, parish of Carribarri, 320 acres, had £14 10s. added for improvements for the protection of the Crown. Conditional purchase 75-101, portion 72, same parish, 320 acres, had £109 added for the protection of the Crown.
269. In one case you said that the improvements were added to the upset price for Mr. Ricketson's protection? Yes.
270. Did that mean that he did not pay anything for improvements, but paid only the price of the land? Yes, the price of the land irrespective of improvements.
271. Because the improvements were recognized as belonging to him? Yes.
272. In two of the cases £212 and £327 were added for the protection of the Crown;—does that mean that the Crown received those amounts in addition to the upset price of the land? Yes. There are five cases like that.
273. In those cases, where you say that the improvements belonged to the Crown, the Crown received payment in the purchase? Yes.
274. Was any application made for improvement purchases for any of those pieces which were subsequently sold by auction? I cannot say.
275. The Committee want you to furnish a list of what improvements were applied for under certain improvement-purchase applications;—have you a list of those? Yes.
276. Can you hand that list in? Yes.
277. That list shows the applications for improvement purchases with the particulars of the improvements? Yes, the nature and value of the improvements in virtue of which the purchases were applied for.
278. Can you tell us whether any steps were taken to put those forfeited conditional purchases back into the leasehold? No step was necessary, the law in 1875 declaring that they fell back into the lease—section 19 of the Act of 1875.
279. Were any steps taken by the department to value those lands and the improvements that were put on them in order to assess the rent to be paid? I cannot say that, but there is a Supreme Court decision which seems to bear on the point as to what should be charged for those lands.
280. Were any steps taken by the department to ascertain? Not that I know of.
281. *Mr. Robertson.*] What case did you refer to? It is the case of Peterson *v.* Prowse, vol. 2, page 292, "Reports of Supreme Court Decisions." I will quote the part of the decision referring to this matter. Mr. Justice Faucett in giving his decision said:—

> "The 90th section of the Act of 1875 says that when lands conditionally purchased are forfeited they revert to the lessee. It follows that the improvements go to the lessee for the term of his lease, and subject to such lease they are vested as well as the land in the Crown."

That decision bears on the point, and definitely states that the improvements go to the lessee with the land.
282. *Chairman.*] That is the use of them? Yes, I suppose so.
283. Then comes the question again, were any steps taken by the department to assess the rent. Of course those forfeited conditional purchases going back into the run would not go back for nothing;—would not the department expect rent for them? The department should expect rent for them, and I have not the slightest doubt that when the succeeding term of five years was under appraisement it was the duty of the appraiser to consider the land that fell in to the lease prior to the appraisement.
284. Can you tell us of your own knowledge whether they did carry out their duty and ascertain the rent? I cannot say that, because the records of these appraisements were destroyed in the Garden Palace fire.
285. Can you give the rents charged for the Barratta Run for the years 1876, 1878, 1879, and 1880? Yes. In 1876, 1877, and 1878 the rent was £65 a year; in 1879 it was £127, and in 1880 it was the same.

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286. I saw by the schedule that was handed in by Mr. Griffin that in 1876 there were upwards of 7,000 acres forfeited or lapsed? I don't know whether that is so. No doubt it is so, but I have not inquired into that.
287. That was in 1876, and if the rent for 1877 was the same as in 1876 there was nothing added for that year for those lands that went back into the run? I cannot say that, because an area might have been selected in 1877 equivalent to that which fell in.
287½. But as far as is shown by the figures the rent was the same in 1877 as it was in 1876? Yes.
288. In 1877 then the area that reverted or lapsed was 8,000 acres, and as the rent for 1878 was the same as it was in 1877 the presumption is that nothing was added that year for the additional area? I cannot say that, because an equivalent area may have been selected.
289. *Mr. Robertson.*] With reference to the auction sale of land, with improvements valued at £318 18s. 6d., for the protection of Mr. Ricketson, I presume that that was bought by Mr. Ricketson? The whole of those lands were bought by Mr. Ricketson.
290. Had it been purchased by a stranger, would he not have had to pay the price with that amount added to it? Yes.
291. And the improvement money would not have been added in the case of Mr. Ricketson? Yes, that is so.
292. In the other cases the additional money would have gone into the Treasury? Yes.
293. But where you say it is for the protection of the Crown? Yes; anybody buying had to pay that to the Crown.
294. You mentioned a third class of cases where Inspector Carne reported certain improvements up to £50 in value, which were not taken notice of at the time of the sale? Yes.
295. If those improvements which Mr. Carne referred to had been made by Mr. Ricketson, and he became the purchaser at auction at the upset price, then I presume that no injustice was done? Not if those improvements were made by Mr. Ricketson during his tenure of the land; but if they were made by Mr. Ricketson during somebody else's tenure it would have been improper to add anything for Mr. Ricketson's protection.
296. Take one of the auction blocks advertised for sale without mentioning the improvements upon which Mr. Carne subsequently reported. That land having been sold without any additional price having been put upon it, the purchaser paid the upset price without any charge for improvements, but if the improvements had been made by Mr. Ricketson, no injustice was done either to the country or to Mr. Ricketson? No, certainly not, if Mr. Ricketson made those improvements whilst the land was under tenure to him.
297. *Chairman.*] But when it was under tenure to others? If the others forfeited their rights the improvements belonged to the Crown, and the department should have seen that they were paid for.
298. *Mr. Robertson.*] But that would not have been the fault of Mr. Ricketson? Certainly not.
299. About the forfeited selections with improvements on them, you have read the judgment of Mr. Justice Faucett that makes the improvements go to the lessee for the period of his lease? Yes.
300. Has a lessee any different ownership of improvements on other parts of his run? Yes.
301. In what respect? He has if he effects the improvements himself.
302. Assuming that the squatter makes improvements on his run, I want to know in what different position he stands in regard to those improvements from his position with regard to the improvements on the forfeited selections which may have reverted to his run? The distinction is rather marked. In the one case, where a pastoral tenant improves the run at his own expense, that fact is taken into account by the Crown when considering the sale of the land, if it should be sold.
303. We will assume that a squatter having improved a block of his own run to the amount of £320 comes to the end of his lease, what relationship does he hold in regard to those improvements? Under the existing law he has no claim for compensation in virtue of the improvements.
304. Therefore, inasmuch as Mr. Justice Faucett said that the lessee would have the other improvements during the rest of his term, virtually both classes of improvements are on the same footing? At the end of the term they would be if his tenure expired.
305. Then they are no more and no less than the other improvements? I would again repeat that if the Crown is considering the sale of the land the fact of the pastoral tenant being the owner of the improvements is taken into account, and he is protected to the extent of his improvements if the ground is sold to some one else.
306. *Chairman.*] If the Crown owns the improvements, what then? Then the Crown gets the benefit under the existing law.
307. Does the Crown discriminate between the improvements that are the lessee's and improvements that are the Crown's? I cannot say, because the leases have not ended so far. There has been invariably a renewal of the leases where they have paid their rents.
308. But suppose that at the end of December in one year there are certain lands improved which are forfeited conditional purchases, and certain other improved lands which are leased to the pastoral tenant;—is there any distinction in those two cases? I don't quite follow you.
309. To whom do the improvements on forfeited conditional purchases belong? To the Crown.
310. *Mr. Robertson.*] Of course you have a form of application for purchases;—a lessee of a run desiring to purchase has to apply in a particular form, and to state that he applies in virtue of the improvements, the words being, "which have been erected by me," or "of which I have become the proprietor"? Yes.
311. I think you have plainly demonstrated that a squatter is only in a limited sense the proprietor of the improvements made by himself,—that is, that at the end of his term they cease to be his, unless something happens which has not happened yet? Yes.
312. Therefore, the other improvements made on forfeited selections being in the same position in each case, the proprietorship for the time being appears to be the same? I am not sure about it, and I will tell you why. In the one case, under the law that was repealed in 1884, he might have been permitted to purchase in virtue of his own improvements. He certainly would not have been permitted to purchase in virtue of the other improvements, and there is the distinction.
313. We are speaking now of the time antecedent to that of 1884. We are speaking of the law under the Acts of 1861 and 1875. I want to see if it can be demonstrated that there is any distinction as to the ownership of the improvements during the currency of the lease? Yes; and I would define the distinction this way,—that where the Crown would recognize ownership to improvements effected by the pastoral tenant

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tenant it would not recognize the ownership of improvements if application were made for the purchase of forfeited conditional purchases that had reverted to the lessee during the term of his lease.
314. If the return shows that, as a matter of fact, they have done so, what you mean is that in your opinion they ought not to have done so? I do not follow that.
315. If this return before us shows that in some instances selections were forfeited on a given day, and applied for within a week as improvement purchases, and the improvements reported to have been on those selections at the time of the forfeiture are the same as described in the application, and the purchases were allowed? I do not know that any of those purchases were allowed in virtue of improvements which were on the conditional purchases when they were forfeited.
316. That answer is equally satisfactory to me, because if it had happened, and I could show that it was legal, that would have been a complete answer. Can you say that it has not happened? I do not know that it has. I may have my own opinion, but my opinion is worth nothing. Mr. Ricketson may have been wonderfully quick in the way that he effected improvements. There is strong presumptive evidence in one or two cases that he did apply to purchase in virtue of improvements that were effected prior to forfeiture of the conditional purchase?
317. The words in the form do not say "having erected and become the proprietor," but it says, "having erected becomes the proprietor of" the improvements? Yes.
318. Under the Act of 1861 it was decided by the Privy Council that vicarious selection was lawful;—I am referring to the case of Barton v. Muir? You are referring to selection before the Act of 1875 came into force.
319. But all these selections were taken up during the currency of the Act of 1861, at a time when vicarious selection or dummyism was lawful? Yes.
320. In the case of Barton v. Muir, I was solicitor for Mr. Barton, and sent the case Home. Muir was a shepherd in Mr. D. Barton's employ. Mr. Barton paid for his selection, and made all the improvements, Muir fulfilling the condition of residence. After the expiry of three years Barton called upon Muir to transfer the land to him, but Muir refused to do so, and set up the defence that nobody could be recognized in law but himself. The case came before the Supreme Court, and the Court decided that vicarious selection was illegal. Mr. Barton sent the case Home, to the Privy Council, who decided that vicarious selection was perfectly lawful, and that the selection and all the improvements were the property of Mr. Barton. When that decision was made a judgment of our Supreme Court, Muir's selection was transferred to Barton. You will admit that if Mr. Barton had failed to make improvements on the selection it would have been forfeited? Yes; it should have been.
321. Consequently, when the property was made over to Barton, it was not only because he paid for the land, but because he was owner of the improvements? Yes.
322. Ergo, Barton had erected those improvements. Supposing, instead of all this litigation, Muir had failed to observe the terms of residence, and consequently that that selection had been forfeited, would not that selection under the Act of 1875 have gone back into Barton's run? Yes.
323. Could not Barton then with perfect truthfulness have sent in this application under form A, having erected the improvements therein detailed? He could have sent in the application.
324. And could he not have said, with the history of the Privy Council's decision behind him, that he erected those improvement? Yes.
325. Where the two things coincided, this was a portion of his run containing improvements to the value of about a pound an acre, and those improvements having been erected by himself, were not the requisites there to entitle the Government, if they chose—because it is only optional after all—to sell him the land by appraisement? No; because the improvements were forfeited when the conditional purchase was forfeited.
326. But the forfeited conditional purchase reverts back to the run, and becomes part of the run. It has improvements on it, and those improvements were erected by the lessee. I am not speaking about the spirit of the law, but the letter of the application. According to that application, would not three incidents have happened—that is, first, a portion of a run under lease; second, improvements made upon the run; and third, that they were rented by the applicant;—would not those three incidents have arisen? They would have arisen, but if you mean to ask whether they would have entitled him to make the purchase, I must say no.
327. Is that not a matter of opinion? No; I do not think so. I had better explain why the form was drawn up in that manner. The form refers not only to improvement purchases made by a pastoral tenant on his leasehold, but to purchases under gold-field tenure (miners' rights owners). It frequently happens that a person who erects a house in a proper way, having a miner's right, sells his right to the house and clears out, and the buyer by the term is the person contemplated "having become the proprietor of" when that form was drawn up.
328. Suppose that I was acquainted with a gold-field licensee, and he says you put up a house for me, and I do so. By-and-bye he wants to leave the diggings, and he transfers his right to me in order that I may be recouped my outlay. Can I not then apply for an improvement purchase, the improvements having been erected by me? Yes; but the Act itself goes further. The clause allowing improvement purchases says that the land shall be sold to the owner of the improvements.
329. I have shown that during the currency of the lease the squatter has a limited ownership of the improvements during the term of his lease, and has he not precisely the same with reference to improvements on forfeited selections according to Judge Faucett's dictum in this case? No; it is not precisely the same. The Judge said that improvements go to the lessee "for the term of his lease." That is not ownership.
330. You cannot draw any distinction between one class of improvements and the other. Both are the squatter's during the term of his lease. It appears that no squatter could apply under this form, as he cannot say that he is the owner, because at the end of his lease the improvements will go to the Crown, but, notwithstanding that, is he not allowed to say that he is the proprietor? No; it says that the improvements on forfeited conditional purchases will go to to the lessee for the term of his lease. Interpreted by an average mind, that means that the improvements are held by him.
331. But his own improvements are just the same? No; they may have given him a right to purchase.
332. Suppose a lessee has a stockyard upon his run, he has the use of that during the term of his lease, and he applies for permission to buy? Yes.
333. In that case you do not say that he is not the proprietor, because at the end of the term he may lose

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the land? No. We recognize him as the owner in such a case, but we do not recognize him as the owner of improvements on a forfeited conditional purchase, but he is entitled to the use of them during the term of his lease.

334. *Mr. Alison.*] Is that your opinion, or has it been decided? I am quoting the decision of the Supreme Court.

335. *Mr. Robertson.*] That decision says that the improvements go to the lessee for the term of his lease—you have stated that the other improvements go a little further, and on the expiry of the lease the whole of the improvements remain behind him according to law? Yes.

336. We all know that under the law anything attached to the freehold by the tenant is supposed to become the property of the landlord, but I do not think that there has ever been any objection raised to squatters removing their fences, or their stockyards, or their woolsheds. I have never heard of a case? No, nor I. I do not know what right we have to object to it--the improvements are there during the term of the lease for the pastoral tenants to do what they like with.

337. During the term of the lease the squatter would have as much dominion over the improvements on the forfeited selection as he would have over improvements erected by himself? I do not think so. I should say that he could remove his own improvements—that he could alter, reduce, or increase them, but I question whether he could do that with the improvements on a forfeited selection.

338. *Mr. Alison.*] That is your opinion? It seems perfectly clear. The improvements are his during the term of his lease.

339. *Mr. Robertson.*] Suppose that a 40-acre selection was forfeited and falls back into a run, and that 40 acres is surrounded by a three-rail fence, and has upon it a hut and other improvements of that kind, do you contend that in that case the squatter must allow that 40 acres to remain fenced in for the rest of his term? I should contend that, undoubtedly. I should say that he has no right to remove that fence or that hut without the permission of the Crown.

340. The law says it forms part of his leasehold for the term of his lease. Is there anything in the lease that prevents a squatter from removing improvements? Nothing that I know of.

341. Then, when selections are forfeited and revert to the leasehold, by what law could you prevent the squatter from removing the improvements? I am aware of no law beyond this definition that the improvements are his for the term of his lease. It seems to me a clear straining of the law to say that he should be allowed to remove the improvements on forfeited selections, as they are not his property.

342. You admit that there is nothing in the lease to prevent the squatter from removing his own improvements, and I want to know where you find a law that says that he shall not remove them? I do not know of any law to prevent him from removing his own improvements, or altering, adding to, or reducing them.

343. We are told that during the term of his lease the improvements are his, and the Judge would say exactly the same about his own improvements? The Judge said something more. He said that, subject to such lease, they are vested in the Crown.

344. The improvements on all runs when the lease is up belong to the Crown; but up to that time the squatter has a legal ownership—he is owner of those improvements subject to his tenure expiring? Whilst the Judge said the improvements go to the lessee, he said that they are vested, as well as the land, in the Crown, and the vesting defines the ownership.

345. My argument is that it is impossible to draw a distinction between the two classes of improvements—when the lease terminates they all become the property of the Crown? When the lease terminates there is no difference.

346. *Mr. Alison.*] It seems to me that if the opinion you have expressed is correct we have got a perfect *reductio ad absurdum*. Suppose that a 40-acre selection has been completely fenced all round without a gateway, has the lessee no right to touch that? I cannot say that he has any right to reduce the improvements in value, or to destroy or remove them.

347. Suppose that the land is completely fenced so that he could not get any stock on to it? It is impossible to suppose that. I never knew of such a case.

348. Suppose it were so? I cannot imagine it.

349. He would not be able to use the land at all? I could not suppose that such a thing would be.

350. At the same time it might? Any mechanical fact is possible.

351. Any selector, if he chose to do it, could do it, and if the land reverted to the run what could the lessee do? He could get the permission of the Crown to alter the improvements so as to make the land available and useful.

352. *Mr. Robertson.*] Can you show any distinction in the law as to the right of a lessee to a run to deal with improvements made by himself and with improvements which have been upon the selection subsequently forfeited? Yes. The sections of the Acts of 1861 and 1875 providing for the purchase of land by virtue of improvements to the "owner."

353. Show us the clause? Clause 8 of the Act of 1861 and clause 2 of the Act of 1875.

354. Can you show me any distinction between the two classes of improvements? Yes. In one case the Crown will allow the lessee to buy by virtue of improvements, but in the other case the lessee will not be allowed to buy. The word "owner" means that he is to be the owner of the improvements, but not as Mr. Justice Faucett put it in the other case—subject to the rights of the Crown and to his limited tenure.

355. *Chairman.*] You say that the Act says that the lessee is the owner, but that is only when he has actually purchased the improvements? I interpret the Act to mean that the man is the owner when he has paid for the improvements.

356. Would you apply the term owner to a man who held improvements on a forfeited selection belonging to the Crown? No. Section 8 of the Act of 1861 describes the person entitled to purchase as the "improver," or his alienee. Section 2 of the Act of 1875, which repealed the other, empowered the Crown to sell to the "owner" of the improvements. In one place it is the "improver" or his alienee, and in the other it is the owner.

357. You mean the man who paid for them? Yes.

358. *Mr. Dangar.*] You admit that the whole of the improvements on the forfeited selection go to the lessee during his lease. You must allow that they belong to him, because you allow him to purchase the land? Not in virtue of the conditional purchaser's improvements, but in virtue of improvements that were recognized to be his. Whether in this case of Mr. Ricketson's they were the same as the conditional purchaser made or not I cannot say.

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359 These purchases reverted to the lessee of the run, and you allowed him to purchase them? I do not admit that he was allowed to purchase them by virtue of the improvements found on the forfeited selections. I say that the purchases are allowed in virtue of improvements that were claimed by the applicant and admitted to be his property.
360. The Crown did not challenge them because the deeds have been issued? I do not know that the Crown did not challenge them. I believe that in those days the administration was very lax in that and in many other matters.
361. *Chairman.*] Will you look at the list that was handed in by Mr. Griffin. On page 4 you will find conditional purchase 73-12,299? Yes.
362. What is the date of the forfeiture of that conditional purchase? It was forfeited on the 7th August, 1876.
363. What was the date of Mr. Ricketson's application to purchase it as an improvement purchase? The 9th August, 1876.
364. How long was that after the forfeiture? Two days.
365. What are the improvements said to be on that land? According to Mr. Smith's report, dated 12th April, 1876—a hut, £15; yard, £35; building, £15; fencing, £160—total £225.
366. Is it possible that these improvements could be erected in two days? It is possible, but highly improbable.
367. On the next page you will find the selection of J. Doherty, conditional purchase portion 8;—what is the date of the forfeiture? 7th August, 1876.
368. What is the date of the application for the improvement purchase? 9th August.
369. How many days had elapsed? Two days.
370. Next you will find the conditional purchase of William Liscombe;—when was it forfeited? On the 7th August, 1876.
371. When was application made for the improvement purchase? On the 9th August.
372. What length of time had elapsed? Two days.
373. Look at the next one, A. W. Robertson's selection; when was that forfeited? On the 7th August.
374. When was it applied for as an improvement purchase? On the 9th August.
375. What time had elapsed in that case? Two days.
376. Then there is D. Macpherson's purchase;—what is the date of the forfeiture of that? 7th August, 1876.
377. What is the date of the application by Mr. Ricketson to purchase the land by virtue of improvements? 9th August.
378. What time had elapsed? Two days.
379. Then there is the case of George Dogherty;—what was the date of the forfeiture of that lease? 7th August, 1876.
380. What was the date of the application to purchase by virtue of improvements? The 9th August.
381. How much time had elapsed in that case? Two days.
382. Then there is the case of William Dogherty;—what is the date of the forfeiture? 7th August.
383. What is the date of the application to purchase the land by virtue of improvements? 9th August.
384. What amount of time had elapsed? Two days.
385. The next is the case of Charles Miller;—what is the date of the forfeiture of that selection? 7th August.
386. And what is the date of the application to purchase it as an improvement purchase? The 9th August.
387. What was the lapse of time in that case? Two days.
388. There is another one, Fanny A. Carter;—what is the date of the forfeiture of that selection? 7th August, 1876.
389. What is the date of Ricketson's application to purchase by virtue of improvements? 9th August.
390. What time had elapsed in that case? Two days.
391. There is another case a little further down, that of Thomas Adams;—when did that lapse? On the 20th July, 1878.
392. When was it applied for as an improvement purchase? On the 29th August.
393. Were those forfeitures published in the *Gazette*? Yes.
394. Is the *Gazette* published in Sydney? Yes
395. How long would it take for the *Gazette* to reach Deniliquin? In those days it would take about two days and a half.
396. Is it reasonable to expect that when those forfeitures appeared in the *Gazette* several days had elapsed before Mr. Ricketson could see them? Yes, if he was living at Deniliquin; but still it was possible for him to know about them within half an hour, as he might receive the information by telegraph, or he might know a week beforehand that they were going to be forfeited. I think I should mention that a number of these applications made by Mr. Ricketson were refused, and other applications were afterwards made, which were granted.
397. And some were sold by auction, and he became the purchaser? Yes; but a number of his improvement purchase applications were refused.
398. Did those forfeited lands go into the lease for any considerable time, or were they almost immediately applied for to be purchased by virtue of improvements or sold by auction? Almost immediately most of them were applied for to be purchased by virtue of improvements.
399. And some were sold by auction? Yes.
400. And in such cases as these, would they be likely to go into the lease? I do not quite understand. They did fall into the lease the moment that the forfeiture took place.
401. But as there was only two days between the forfeiture and the application to purchase in virtue of improvements, would those forfeited selections go into the lease? Unquestionably, the moment that the forfeiture took effect.
402. How long? Until the land was sold.
403. Suppose that no rent was paid at all for the selections, would they form any part of the lease? Yes, they would still form part of the lease.
404. Without payment of rent? Yes; that is a matter for the department to look after.
405. Can a man be a leaseholder without being charged for rent? I do not see why a lease should not be granted for a nominal consideration.

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406. Has anything been paid? For the lease—yes; but for these lands I fear there has not.
407. As far as you know? As far as I know, rent was probably not paid for some of these selections, for a time at any rate.
408. *Mr. Robertson.*] You notice that the whole of the selections which you refer to were made under the Act of 1861? Yes.
409. And if in these cases these people whose names have been given were the vicarious selectors or dummies of Mr. Ricketson. I suppose you are not prepared to say that as far as the Crown knows Mr. Ricketson did not make the improvements on those selections? I do not know. He may have made them for all I know. It is only right to say that the appraisements were carried out every five years, and the lands that fell into the lease were not taken into account until the five-years term had expired.
410. *Mr. Alison.*] In those days the rent was so much a block? Yes.
411. *Chairman.*] Was this charged for in that way? That is conclusive when I point out that the rent in 1876, 1877, and 1878 amounted to £1 7s. 7¼d per section, showing that it must have been calculated at per block.
412. What became of those forfeited conditional purchases? They reverted to the pastoral lease in which they were situated.
413. And they were declared to be—what? They were declared by the Supreme Court to go to the pastoral tenant for the term of his lease. Mr. Ricketson was the registered holder, from and after the 12th February, 1874. The Australian Mortgage Land and Finance Company transferred to him on that date.

FRIDAY, 5 JULY, 1889.

Present:—

MR. ALISON, | MR. HUGH TAYLOR.

R. BARBOUR, ESQ., IN THE CHAIR.

Thomas Robertson, Esq., Solicitor, appeared for Mr. Henry Ricketson.

Mr. Henry Ricketson called in, sworn, and examined:—

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414. *Chairman.*] You are the lessee of the Barratta Run? Yes.
415. *Mr. Robertson.*] In the return which has been placed before the Committee there is a selection that was made on the 20th November, 1873, by Fannie Barbour, conditional purchase No. 73, portion 3;—what has become of this conditional purchase? I applied for it under the 31st clause of the Act, and put on my own improvements, which were passed.
416. The 31st clause gave the lessee a right to apply for land in virtue of prospective improvements—improvements which it was intended to make afterwards? Yes.
417. You stated that you intended to make certain improvements on the land? Yes.
418. And did you make those improvements? I did.
419. Have you obtained a grant of the land? No, not yet.
420. Then there is a selection in the name of Margaret Barbour;—what became of that? It was taken up by Margaret Barbour, and then forfeited.
421. And what happened after that? I applied for it under the 31st section of the Act, but it was refused. I was informed that I could apply under the 2nd section, which I did. It has been granted since.
422. Between the time of the first and the second application you improved the land? Yes.
423. And you applied under the 2nd clause, which gives a right to purchase by virtue of improvements? Yes.
424. And your application was granted? Yes.
425. And you have the Crown grant for that land? I think so; I do not know.
426. You have paid up for it? Yes.
427. I now come to another selection—R. Barbour's, portion 23, parish of Ricketson;—what was the history of that conditional purchase? It was taken up by J. Pitty, parish of Ricketson.
428. What did Pitty do with it? It was forfeited, and I applied for it, and that was dealt with in the same way.
429. You first of all applied for it under the 31st clause, and the Government granted it under the 2nd? Yes.
430. And you have a Crown grant? I believe I have; I paid for one.
431. I come now to portion 14, parish of Ricketson, selected by S. P. Barbour, 320 acres;—what is the history of that? It was forfeited.
432. What did you do after that? I applied for it under the 2nd clause, and put on the necessary improvements.
433. Was it granted? No; it is not granted yet.
434. Another selection was taken up by Mary K. Barbour—portion 10, parish of Ricketson;—what is the history of that purchase? It was forfeited.
435. It was forfeited on the 7th August, 1876;—did you apply for it afterwards? I applied for it under the 31st clause, but my application was refused, and I was told that I could have it under the 2nd clause, and it was granted under the 2nd clause.
436. There was another selection made by Catherine Barbour on the 20th November, 1873,—portion 11, county of Ricketson? It was taken up at the same time. They were forfeited, and I got them under the 2nd clause, having first applied for them under the 31st clause.
437. Another selection is that of Leighton Barbour, portion 13, parish of Ricketson. It was taken up on the 20th November, 1873;—was that forfeited? Yes; and I took it up under the 31st clause and put on the improvements.
438. *Chairman.*] Has it been purchased? It has not been granted yet.
439. *Mr. Robertson.*] Another selection is that of R. Barbour, junior—portion 12;—was that forfeited? Yes; I applied for that under the 31st clause, but to neither of these have I got a title. 440.

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440. The whole of these selectors whose names you have mentioned are I believe children of the Chairman of the Committee, except J. Pitty? Yes, and he is his brother-in-law.
441. When these conditional purchases were forfeited, had they any improvements upon them; and if so, what was the nature of the improvements, and what became of them? There were no improvements that were any good except what I had put on the land myself. What I had put on I removed and put on new ones.
442. *Mr. Taylor.*] What improvements were on the land when the selection was forfeited? There was fencing of my own there, and there is fencing put on by the selector which is useless—it can neither keep stock in nor keep them out. It was fencing made of pine sticks 15 or 17 yards apart with corroded iron ruined by saltwater. These formed a part of what Mr. Barbour called improvements. These improvements were sold to me by Mr. Barbour.
443. *Mr. Robertson.*] When you speak of improvements made on the selections by you, do you mean boundary fences or improvements that you have made before the land was selected? Improvements made by me before the selections were forfeited to keep my stock off Mr. Barbour's land.
444. Then they were boundary fences? Yes.
445. Will you say that you purchased these improvements from Mr. Barbour. I presume you are referring to an award in the matter of arbitration between you, by which you were adjudged to pay? Yes.
446. What were you ordered to pay for these improvements? I objected to their going into the reference paper. I told Mr. Barbour that he could not get the land in virtue of them, but he said that if I would let them go into the reference paper he would get the Government to put the land so that I should have it at 30s. an acre. He said he could get the land for £1 an acre if I would allow it to go into the reference paper. The improvements were useless; they were all pine sticks, except a few gum posts, which belonged to me. He got them off my land, and some he took after they had been put into a pile on the run. Some were rejected posts of mine. Mr. Barbour had no business with them. Evidence on that point has been given by a man named Isaac Everett.
447. Under the award you were adjudicated to pay Mr. Barbour 10s. an acre for the improvements upon his forfeited selections? Yes, when a grant was procured from the Crown.
448. Did you succeed in getting that grant? Never.
449. And consequently the condition on which you were to pay that money was not fulfilled? No.
450. And you refused to pay it? I refused to pay.
451. And the improvements were of no use to you? Of no use whatever.
452. Does not Mr. Barbour consider that he has a grievance because you have not paid this 10s. an acre? He assumes to have a grievance, but he knows well that the improvements were no good. On portion 14 there is a fence which is useless—a calf could run through it—the posts are only little pine sticks. He could not get any others about there, the selectors having taken them all.
453. Is it not on account of Mr. Barbour's supposed grievance as to your not paying this 10s. an acre for the improvements that this Committee is sitting here to-day? Yes, it is. He tried to sell me the land the day after he selected it. He did not tell me the exact words, but I put a witness in the box who said that Mr. Barbour had stated that if I did not buy him out he would make the land cost me £5 an acre.
454. What have you done in reference to getting these grants? I had to put on the proper improvements and get the grants under the 2nd or 31st clause.
455. Have you made the improvements required by the Act in addition to Mr. Barbour's improvements? Yes, I have.
456. You are giving the Committee to understand that the Government refused to grant a selection on Mr. Barbour's improvements? Yes; they would not allow anything for them. I had to put on my own improvements. Mr. Barbour was to have got the land from the Government before he could give me a title.
457. Did Mr. Barbour ever threaten you with Parliamentary action unless you satisfied his claim? Yes; he told me one time, in front of the Exchange, that if I gave him £150 we would be good friends.
458. What followed from that? I told him that I would do nothing of the kind—that his improvements were no good, and that he had not carried out what he stated he would in the reference paper. I had carried out my part of the award, but he had not carried out his part. He told me that if I did not do so he would get roads gazetted through my run.
459. At any rate you believe that this inquiry is a result of your refusing to satisfy Mr. Barbour's demands? Yes.
460. What happened the second time he spoke to you? It was in the "Exchange Hotel" that he saw me again, and he asked me if I was going to give him anything; he repeated almost exactly what he had said before, and wanted me to give him some money. I said that I would do nothing of the kind, and turned my back on him. I told him that if he talked to me like that again I would put him in the logs. To the best of my recollection that was a year ago last April or May.
461. *Mr. Taylor.*] If Mr. Barbour had carried out his agreement, what amount would you have had to pay him at 10s. an acre? If he had carried it out I should have had to pay him £700 or £800, and it would have saved me twice that amount, because I had to put on good improvements.
462. *Mr. Robertson.*] I have a letter here which I intend to put in as evidence—you have heard this letter read, and the copy which you have handed in;—is that a correct copy? Yes. [*Appendix* B 1.]
463. In reference to the improvements generally upon Barratta Run, how many men did you keep employed there at the time of the forfeiture of the selections? The number varied. Sometimes 150 men. At that time I had about 450 men in my employment, and about 150 were on the Barratta Run.
464. And your object was to be able to put on by an almost instantaneous process any amount of improvements? Yes. I could put £3,000 worth of improvements on in a day in the shape of iron houses.
465. As a matter of fact you put on a number of iron houses? Yes.
466. And you made application in virtue of them, and the Minister refused the application? Yes.
467. He would not recognize them as anything but temporary structures? No.
468. Amongst all this land that you have already obtained grants for, have you obtained a grant of any land to which you were not legally entitled? Not any. I may mention with regard to No. 27, on which it is said I put the improvements in two days, that my overseer made the application.

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application. Mr. Barbour himself saw that. On the 13th of September he was in the tank, and it was finished that morning. The selection was forfeited on the 7th August, and on the 12th or 13th September the tank was completed. There was a little hole before, about 150 yards. On the morning of the 13th I saw Mr. Barbour in the tank—there was then about 30 yards to come out. The next day he went and selected 170 acres, and took the tank in with it, which the morning before he saw I was putting down. This was fifteen or eighteen days after it was forfeited. Mr. Barbour knows that I put on the improvements, and that my improvements were added to the selection, and I had to pay for them again. That was portion 27. I saw Mr. Barbour in the tank, and he got up and ran through the fence, which was close to the boundary of the selection taken up by his daughter Margaret.

469. If Mr. Barbour offered to give the whole of the money that you have expended in improvements on the Barratta Run, and in paying the Government for the land, with interest for the time in which you so invested your capital, would you be glad to get that money back? I should be very glad to get it back—the improvements that I have put on the Barratta Run would come to £45,000 or £50,000. Besides paying for the land, I have put down 160 tanks on the Barratta Run, and some I put down on purchased land after I had bought it.

470. How much have you expended on improvements? I should say £45,000, and a great deal of the land I have bought at auction. I bought 10,000 acres one day without any tank on it, and I put tanks on that land too.

471. How much has the Barratta Run cost you altogether? For land and the improvements, reckoning Bank interest up to the present date, I should think £200,000—with Bank interest up to £250,000 or £300,000—more than I could get for it, a great deal. Taking the Bank interest the amount would come close up to £300,000; and as regards the selections, Mr. Barbour knows about Mr. Kelly's selection. About 100 yards out of that a small tank was made to hold water for the men to do work. When Mr. Barbour left portion 6 he knew that there was a tank on George Kelly's selection. He knew that it was not finished, and there was not over 150 yards out, yet after that £150 or £200 was put down for that tank, and they have charged for it, although Mr. Barbour knows that it was put down after the selection was forfeited, and it was added to my price. Mr. Barbour selected portion 27. He was in there on the 13th, and I think that on the 14th he selected it in the name of Ramsbotham. He had a man of that name in his employment.

472. You again repeat that not one block of land have you acquired except in accordance with law? Not one. My overseers put in applications, and Government officers were sent to inspect the improvements, but they would not recognize iron houses, and they would not pass the improvements until tanks were put down.

473. I suppose that a great many of your applications were refused in the first instance? Yes, they were, and further applications were sent in. I knew very well that there were always officers sent down to inspect the lands immediately they were forfeited. When the selections were forfeited my improvements were put on. I had to put on improvements to keep my stock off Mr. Barbour's land. I was not going to let Mr. Barbour get the better of me at law. He was waiting for that. I fenced all round portion 10. He ran up a fence between my boundary and portion 9, but it was no good. I had to put up another fence 6 inches from it. When I did that Mr. Barbour took up that fence and put it in another place. He then sent his children out there for three weeks, and they cut up the fence and burnt it. I put up a new fence there again. Mr. Barbour knows all that. A man named Beady was teaching his children for three weeks out there.

474. *Chairman.*] Will you look at this schedule—there is a selection there in the name of F. W. Ricketson, taken up by Henry Ricketson as agent for him, 320 acres;—when was that selection taken up? I think some time in August.

475. What improvements did you put upon that selection? Improvements enough.

476. Did you put up stables for Cobb & Co.? Yes.

477. When did you put up the improvements mentioned in the schedule? I think the day after the house went on the land, and after it was forfeited.

478. Were those improvements put on whilst it was a conditional purchase? They were not.

479. You applied to purchase that on the 21st May, and it was forfeited on the 7th May? Yes.

480. Do you want the Committee to believe that between the 7th May and the 21st—fourteen days—you put up stables that cost £175, fencing that cost £160, and made a tank that cost £133. Yes.

481. Do you expect the Committee to believe that in fourteen days you made improvements amounting to £468? Yes.

482. Were those improvements put up after the 7th May, and before the 21st May? Yes; the improvements in virtue of which I got the land were put on after the forfeiture of the selections.

483. The stables for Cobb & Co. £175, the fencing £160, the tank £133;—did you put all these improvements on the land between the 7th and the 21st May, a period of fourteen days? I could not swear to the fourteen days, but the stables were put up the day after the forfeiture. I was always looking out for these things.

484. Again I ask did you erect the whole of these improvements in fourteen days? Some may have been later than fourteen days. I think I was on there some days after putting up a fence, and some of the officers visited the place. It was a month after. The men had not finished all the fencing, but there was enough to take the land.

485. Did you put any of those improvements on before the 7th May—before the selection was gazetted forfeited? Not to my knowledge, I had the fencing round the margin of the selections ready to be put up.

486. Did you not put up the improvements before the 7th May, 1877. No; I did not. If there was anything at all there it would be a little hole to hold the water.

487. There is a selection in the name of C. N. Ricketson, No. 8, parish of Ricketson, 320 acres;—was that a selection that you took up in the name of one of your children? Yes, it was.

488. What improvements did you put on during the time it was a selection? There were some improvements on the land before it was a selection.

489. That is not an answer to the question;—what improvements did you put on during the time that it was a selection? I do not really know. My overseers were there; they made out the application, but another went in after. I know that the improvements were put on after. I do not remember much about it; but I know that there was a tank there before the land was selected, which I think you saw. 490.

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490. When Smith, the Inspector of Conditional Purchases, visited that selection on the 12th April, 1876, he reported that there was a hut valued at £15; fencing, £180; a tank, £100? That was some months before the selection was forfeited. It was forfeited on the 7th August, and his report is dated the 12th April, 1876.
491. I suppose that that report is true, is it not? I know that there was some tank marked out, and Mr. Smith asked if I was going to put a tank there, and I told him I was.
492. At the time Smith called, when you took him round, he reported that there was a hut, valued at £15; fencing, valued at £180; a tank, at £100,—were these improvements there when he visited the selection? I do not remember it; it is a number of years ago. I do not know what value he put on the improvements. I know there were tanks put down after the land was forfeited, and you remember it too. You saw the men at work there.
493. Will you answer my question. Were there any improvements made on this selection whilst it was a selection? Yes. I daresay there was something in the way of a hut, but I think that was put on before it was selected.
494. I wish you would say yes or no? It is a thing I cannot recollect.
495. You can say you don't know? I will say what is correct.
496. You say that there was something put on the land before it was selected? If it was it was taken off again, and other improvements were made.
497. You say something was put on;—was that the hut which is valued at £15? I know there was a hut on it.
498. Was the fencing valued at £180? I cannot remember. All the ground was laid out with fencing
499. If you are determined not to answer the question say so, and I will not ask you any more? You can ask whatever questions you like. The improvements that the land was taken under were put on after it was forfeited.
500. Were those improvements which I mentioned just now put on the selection whilst it was a selection? I think there is some exaggeration as to their value.
501. Who removed them? I do not know—some of the men.
502. Who instructed them;—they could not do it without your instructions? I could move my fencing where I liked.
503. Did they remove it against your instructions? Some of the men would do it under the directions of the overseer.
504. *Mr. Taylor.*] You have overseers? Yes.
505. They could give orders? Yes.
506. *Mr. Alison.*] They might act without your knowledge? Yes.
507. *Mr. Taylor.*] They have the power? Yes; they have power to make paddocks.
508. *Chairman.*] You mean that the improvements were moved either by your consent or by your authority? If I put up a fence I had a right to take it down. They certainly knew my fencing from anything you put up. Your fences were all pine sticks.
509. They removed the improvements then without your authority? I do not know anything about it—what you call improvements were no use at all—anyone could knock them down with his hands. There were seven horses in a paddock, and when they were running one of them struck your fence and knocked seven panels down. A two-year-old foal got entangled in the wire and broke off a dozen of them.
510. The next selection is in the name of M. A. G. Ricketson;—was that also one of your children? Yes.
511. That selection was subsequently forfeited, was it not? Yes, and there was a tank on it before it was selected.
512. Were the improvements on it put on it by you for your daughter whilst it was a selection? If they were put there there were others put on afterwards.
513. There is a hut £15, fencing £180, tank £150. Those were improvements that Inspector Smith found there? Yes; those are portions 8 and 9. To the best of my knowledge the hut was put on before it was made a selection.
514. And was the fencing put on whilst it was a selection? No; to the best of my knowledge there was a portion of it fenced, but the fencing did not remain there.
515. Was the tank put on whilst it was a selection? No; it was finished after it was forfeited. The tank had been commenced, but was not completed. Almost all the work was put on after the forfeiture—you would hardly call it a tank that was there before the forfeiture.
516. It is reported by Smith as having been there? Yes, but it went on before.
517. Were the tank and fencing put on the land whilst it was a selection? No. I do not say any such thing. There was some fencing on it, but it came off.
518. Who took it off? My men, I suppose.
519. By your instructions? I do not remember instructing them. I told them to put a new fence on, so that we could apply for the land under the 2nd clause.
520. *Mr. Alison.*] There was some fencing, some sort of a tank, and some sort of a hut, I suppose? Yes. When it was taken up there was some sort of a tank on it, and I think the hut was on it. I put on the improvements.
521. *Chairman.*] Further on there is another selection taken up by you as agent for J. Dogherty—No. 8, Banangalite;—what improvements did you put on whilst it was a selection? I think there was a very small tank.
522. That selection was forfeited on the 7th August, 1876? Yes. To the best of my knowledge there was a small tank, which was made into a large one.
523. Was that inspected by Smith on the 12th April? I do not know.
524. He says there were a hut valued at £15, a tank valued at £200, and a fence £78;—is that true or not? I do not know. I cannot say what was Mr. Smith's valuation. It was certainly not worth that, but it was made up to that.
525. You were with him on the 12th April, some six months before the thing happened, and this is his report, as shown by the papers? I know that the tanks were all made into large tanks after the land was forfeited.
526. From April to August is four months. Before the land was forfeited Smith found those improvements on it;—is that true or false? When Mr. Smith saw those improvements he asked me if I intended to finish the tank, and I said yes.

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527. A few months afterwards Mr. Finlay visited the selection and found fencing to the value of £120, a tank valued at £133, and a hut valued at £10;—is that true? Yes; it was going on when Mr. Finlay was there.
528. Were they there when he called? There was fencing going on then. If there was any fencing on it it had not been completed. The old fencing had been removed. It ran up against your house.
529. You took up a selection as agent for William Liscombe? Yes.
530. Did you put any improvements on the land whilst it was a selection? That I cannot say. There were improvements put on after. The officers inspected the land two or three times, and would not allow for the iron houses, and tanks were put down to make it up.
531. That was forfeited on the 7th August, and Smith had reported on 12th April that there was a hut valued at £15 and fencing of the value of £135? There was fencing and a house, but the fencing is outside the line; it is not on Liscombe's land.
532. The next selection is A. W. Robertson's;—did you take that up as agent for Robertson? Very likely I did.
533. Did you put any improvements on that land whilst it was a selection? A small tank, I think, and a hut.
534. And some fencing? There may have been some fencing. There was some fencing around the margin of the selection.
535. That land was also forfeited on the 7th August, 1876? Yes.
536. And Smith visited the land on the 12th April and reported these improvements, which you say were a hut, fencing, and tank? There might have been a small tank on it. There was a larger tank put on it afterwards.
537. Was that after the 12th April, the time when Smith was there? It was made into a large tank after Smith had been there.
538. There was a tank there when Smith was there? I would not swear it. If Smith reports that there was it was only a small tank.
539. There is another selection in the name of D. Macpherson;—did you take up that land in the name of D. Macpherson? Yes.
540. What improvements did you put on whilst it was a selection? A hut and a little tank, and that was going on at the very time when you were on the selection.
541. Was there a fence? Not a complete fence. I had fencing there.
542. If Smith reported that there was fencing there would he be telling the truth? Oh, there would be some fencing there, I daresay, but the same fencing is not there now.
543. *Mr. Robertson.*] And you have not got the land? No; but I have some fencing there.
544. Have you removed the fencing there? Decidedly. I have not one mile of my old fencing that was standing on the 7th August. It was all renewed, to the best of my knowledge.

CONDITIONAL PURCHASES MADE UPON BARRATA RUN.

APPENDIX.

[To Evidence of F. Griffin.]

A 1.

C.P. or I.P. No.	Date	Selector.	Name of Agent (if any).	Area.	Portion No.	Parish.	Inspectors' Reports, Date and Value of Improvements, and Improvements claimed in I.P. application		By whom Inquiry held, and date.	Fate of Application	By whom Improvements valued in connection with I.P. application.		Date of Alienation, and price per acre, and Upset Price at Auction	Remarks, and amount added for Improvements
				acres.										
C.P., 73-8167	7 Aug, 1873	H. J. Ricketson..	F. W. Ricketson.	320	1	Barangalite.	Keele, 2 July, 1876—Fencing	£140 0 0	Rose, 14 May, 1877	Lapsed, 7 May, 1877			.. .	This land was applied for by R Barbour, 20 Nov, 1873. C.P 73-12293 Void, 24 July, 1874.
I.P., 77-1066	28 May, 1877	Hy Ricketson ..	. .	320	1	do .	House, stable, fencing, tank	£320 0 0			On 5 September, 1883— Wool scouring . . . . Fencing . . . . . Tank	£180 0 0 172 7 0 90 0 0	Deed issued, 6 Nov., 1884; £1 5s. per acre.	
												£442 7 0		
C.P., 73-8168	7 Aug., 1873	F. W. Ricketson .	. .. .	240	2	do ..	Keele, 26 June, 1876— Bridge and house	£240 0 0	Rose, 14 May, 1877	Lapsed, 7 May, 1887	.. . ..		. .	The land was applied for by Wm. Barbour, 20 Nov, 1873 C.P. 73-12292. Void 24 July, 1874.
I.P., 77-1067	28 May, 1877	Hy. Ricketson	...	240	2	do .	House, fencing, tank . .	£240 0 0			On, 5 September, 1883— Fencing . . . . . Tank . . . . . Bridge	£107 17 0 94 10 0 50 0 0	Deed issued, 6 Nov, 1884, £1 5s. per acre.	
												£252 7 0		
C.P., 73-8449	14 Aug, 1873	F. W. Ricketson..	Hy. Ricketson	320	19	Barratta .	Caine, 17 June, 1878- Stables for Cobb & Co. Fencing . . . . . Tank	£175 0 0 160 0 0 133 6 8		Lapsed, 7 May, 1877	. .		.	
								£468 6 8						
I P., 77-1064	21 May, 1877	Hy. Ricketson	...	320	19	do .	House, tank, fencing .	£320 0 0			Caine, 17 June, 1878— Stables . . Fencing Tank . .	£175 0 0 160 0 0 133 6 8	Deed issued, 22 May, 1882, £1 2s 6d. per acre.	
												£468 6 8		
C.P., 73-8450	14 Aug, 1873	W F Ricketson..	Hy. Ricketson	320	48	do .	Caine, 17 June, 1878— Iron house .. . Fencing . . Old hut . . .	£160 0 0 160 0 0 5 0 0		Lapsed, 7 May, 1877	. . . . .		.. ..	
								£325 0 0						
I.P., 77-1065	21 May, 1877	Hy. Ricketson	.... ..	320	48	do .	House, fencing, etc	£320 0 0		Refused	N Paton, 24 June, 1878— Iron house .. . . .. Fencing	£100 0 0 140 0 0	Sold at auction 2 Nov, 1888; upset price, £2 12s. 9d.	£321 18s. 6d added on improvements.
												£240 0 0		
C.P., 73-8451	14 Aug., 1873	C. N Ricketson	Hy. Ricketson	320	8	Ricketson	Smith, 12 April, 1876— Hut . . . Fencing .. .. . Tank	£15 0 0 180 0 0 100 0 0	Johnson, 8 May, 1876	Forfeited, 7 Aug., 1876	. . ....		. . ..	
								£295 0 0						
C.P., 76-130	14 Sept, 1876	W. Dodemaide ..	. . ..	320	8	do	. . . .			Void, 18 April, 1879	Improvements sufficient to bar selection . .		....	
I.P., 76-1737	9 Aug., 1876	H. Ricketson	. ..	320	8	do	House, tank, post and wire fencing	£350 0 0	. . .	.	Finley— Fence .... Tank . ... . Hut	£160 0 0 150 0 0 15 0 0	Deed issued, 20 Aug., 1879; £1 per acre.	
												£325 0 0		

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C P, 73-8452	14 Aug , 1873	Amy G Ricketson	Hy Ricketson	acres 320	9	Ricketson	Smith 12 April, 1876— Hut £15 0 0; Fencing 180 0 0; Tank 150 0 0; £345 0 0. Carne, 7 September, 1879— Hut £30 0 0; Dam 20 0 0; Fence 160 0 0; Tank 120 0 0; Iron hut 60 0 0; £390 0 0	Johnson, 8 May, 1876	Forfeited, 7 Aug , 1876			
I P, 76-1738	9 Aug 1876	Hy Ricketson		240 (Part of por 9)	61	do	House, tank, post and wire fencing £350 0 0			Landon, 15 June, 1881— Tank £22 0 0; Do 78 0 0; Fencing 160 0 0; Hut 40 0 0; £300 0 0	Deed issued, 30 July, 1883, £1 1s per acre	
C P, 73-12281	20 Nov , 1873	Geo Boyd	Hy Ricketson	320	33	Billabong			Lapsed, 16 May, 1877		19 Dec , 1877, £330 lot	
C P, 73-12282	20 Nov , 1873	J N C Orton	Hy Ricketson	320	10	do	Carne, 12 October, 1878— House £160 0 0; Fencing 180 0 0; £340 0 0		Lapsed, 16 May, 1877			
I P, 77-1388	14 June, 1877	Hy Ricketson		320	10	do	Hut, house, and fencing £320 0 0		Refused	Landon, 3 December, 1880— House £160 0 0; Fencing 105 0 0; Do 20 0 0; £285 0 0	7 Dec , 1881, £1 5s per acre	
C P, 73-12289	20 Nov , 1873	Fredk Gee	R. Barbour	320	6	Ricketson	Street, 24 December, 1874—Hut, iron roof. Carne, 7 September, 1879— Fencing £35 0 0; Tank 20 9 4; Fencing 70 0 0; £125 9 4. Carne, 16 March, 1886— Fence £90 0 6; Tanks 300 0 0; £390 0 0		Lapsed, 16 May, 1877. Lapsing reversed, 27 Oct , 1877. Forfeited, 28 Jan , 1882		.....	
C I P, 77-1423		H Ricketson		320	6		House and tank (intended)		Refused		7 May, 1879, £1 5s per acre	
C P, 73-12290	20 Nov , 1873	Samuel Tucker	R Barbour	160	1	Ricketson	Keele, 2 July, 1876—Hut £5 0 0. Carne, 17 August, 1878— Tank £111 6 8; Hut 10 0 0; £121 6 8	Rose, 23 May, 1877	Lapsed, 16 May, 1877			
I P, 77-1385	13 June, 1877	Henry Ricketson		93¾ (Part of por 1)	1	do	Tank and cottage £160 0 0			Landon, 24 June, 1881— Hut £20 0 0; Tank .. 93 15 0; £113 15 0	Deed issued, 18 Nov , 1884, £1 5s per acre	
C P, 73-12291	20 Nov , 1873	Fanny Barbour	R Barbour	320 now 158	3	Bananga-lite	Carne, 10 July, 1880 Cottage £40 0 0; Cottage 25 0 0; Shed, &c 24 0 0; Fencing 134 0 0; £223 0 0. Carne, 8 August, 1880— Shed, &c £24 0 0; Fencing 134 0 0; £158 0 0	Rose, 3 Sept , 1877	Forfeited 19 March, 1878	....	.. ..	

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C.I.P., 78-1607	26 Mar., 1878	Henry Ricketson..	Wm. Hawley.	acres. 166	3	Banangalite	House, tank, dam	.. .. .	Refused, 8 July, 1878	. . . .	.....	Notified 26 March, 1878, reserve from sale and lease.
C.P., 3-12294	20 Nov., 1873	Margaret Barbour	R. Barbour ..	288½	3 & 4	Ricketson	Carne, 8 August, 1880— Fencing ... . . . £180 0 0 Tank .. .. 140 0 0 House 160 0 0 £480 0 0	Johnson, 6 May, 1876	Forfeited, 7 August, 1876	. .. .	. .	
I P., 6-2973	22 Nov., 1876	Henry Ricketson.	. . .	144¼	3	do ..	Tank and house £320 0 0	.. ..	. . . .	Broughton, 16 July, 1886— Tank . £62 10 0 Fence 85 10 0 £148 0 0	Deed issued. 3 Feb., 1888; £1 5s per acre.	
I.P., 77-171	19 Feb., 1878	Henry Ricketson.	.... .	144¼	4	do ..	Two tanks, dam, and house £470 0 0	.. ....	. .	Broughton, 16 July, 1886— Tank .. .. £117 10 0 Fence 28 10 0 £146 0 0	do .	
C.P , 73-12302	20 Nov., 1873	Josiah Pitty	R. Barbour..	180¼	23	do ..	Smith, 12 April, 1876— Hut . . . . . £20 0 0 Fence .. . . 90 0 0 Fence 180 0 0 £290 0 0	Johnson, 5 May, 1876	Forfeited, 7 August, 1876	. . . .. .	. .. .. .	
I.P , 76-2972	22 Nov., 1876	Henry Ricketson.	... ..	180¼	23	do ..	Tank and dam £175 0 0	..... .	. . .	Broughton, 16 July, 1886— Tank . . . . £162 10 0 Dam . .. .. . 10 0 0 Fence 11 5 0 £183 15 0	Deed issued, 3 Feb., 1888; £ 5s. per acre.	
I.P., 77-384	19 Feb., 1877	J. Ramsbottom	R. Barbour.	469¼	3, 4, & 23	do	....	.. ...	Refused	. . ..	.	
C.P., 73-12295	20 Nov., 1873	Geo P. Barbour .	R. Barbour .	320	14	do ..	Smith, 12 April, 1876— Hut .. . £20 0 0 Fence . . . . 90 0 0 Tank .. 60 0 0 £170 0 0 Carne, 9 August, 1880— By Selector, tank . . . ... £26 13 4 By Lessee, house, tank, and fence £324 3 4	Johnson, 6 May, 1876	Forfeited, 7 August, 1876	.. . .	. . ..	
C.P., 76-97	10 Aug., 1876	E. Willan.	.....	320	14	do	....	..... .	Void, 19 June, 1877	Contains improvements	. .	
I.P., 77-4264	31 Dec., 1877	H. Ricketson ..	. . ..	320	14	do	Tank, house, fencing £320 9 0	. . .	Refused ...	Landon, 6 December, 1880— Tanks, house, and fencing £337 0 0	. .. .	Appears to be still Crown Land.
C.P. 73-12296	20 Nov., 1873	George Pitty .	R. Barbour..	144¼	5	do .	Smith, 12 April, 1876— Hut . .. . £20 0 0 Fence . .. . 160 0 0 Carne, 8 August, 1880— By Selector . . . . £76 0 0 By Lessee £130 13 4	Johnson, 5 May, 1876	Forfeited, 7 August, 1876	. .. ..	.	
C.P., 76-98	10 Aug., 1876	William McDonald	.....	144¼	5	do .	....	... ..	Void, 19 June, 1877	Being for improved land	.. .	
I.P. 78-7	2 May, 1878	Henry Ricketson..	.. ...	144¼	5	do .	House and tank £144 0 0	....	.	Carne, 17 June, 1878— Hut . ... £85 0 0 Tank . . . 100 0 0 £185 0 0	Deed issued, 24 Oct., 1881; £1 per acre.	
C.P., 73-12297	20 Nov., 1873	Thomas Kerr. ...	R. Barbour.	320	4	. ..	Carne, 7 September, 1879— ,, 8 August, 1880— Hut, tank and fence £209 1 0	Rose, 7 Nov., 1877	Forfeited, 1 Oct., 1878	....	. ..	
C I P., 78-1668	8 Oct., 1878	Henry Ricketson..	.....	320	4	. . . .	Building, tank, and fencing	.....	.. ...	Orr, 6 July, 1881— Tank .. .. £156 5 0 Fencing .... 125 0 0 House..... ..... . 110 0 0 £391 5 0	Deed issued, 2 Jan., 1882; £1 5s. per acre.	

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C.P., 73-12298	20 Nov., 1873	Mary K. Barbour	R. Barbour	acres 320	10	Ricketson	Street, 24 December, 1874— Hut and fence .... Burdett, 8 April, 1874—Hut . £20 0 0 Carne, 9 August, 1880— By selector . . . . . 105 16 8 By lessee . 508 6 8	Johnson, 6 May, 1876.	Forfeited, 7 Aug., 1876			
C.L.P., 76-893	9 Aug., 1876	Hy. Ricketson		640	10 & 11	do	House, dams, tanks, fence		Refused			Not being within a block of 5 miles square.
I.P., 76-1745	9 Aug., 1876	Do		320	10	do	House, tank, fence £320 0 0		Refused	Finley, 27 November, 1876— Tank . . . . . £ 70 0 0 Hut . . . . . 5 0 0 Fence . . . . . 75 0 0 £150 0 0 Excavation for tank . 187 10 0 £337 10 0		
C.P., 73-12299	20 Nov., 1873	Catherine J. Barbour.	R. Barbour	320	11	do	Smith, 12 April, 1876— Hut . . . . £15 0 0 Yard . . . . . 35 0 0 Buildings . . . . . 15 0 0 Fencing . . . . 160 0 0 Carne, 9 August, 1880— By selector . . . . 145 0 0 By lessee 331 13 4	Johnson, 5 May, 1876.	Forfeited, 7 Aug., 1876			
I.P., 76-1746	9 Aug., 1876	Hy. Ricketson		320	11	do	House, post and wire fence, and tank £350 0 0		Refused	Finley, 27 October, 1876— Fence . . . . . £150 0 0 Shed, &c. . . . . 80 0 0 Hut. 5 0 0 £235 0 0		
I.P., 77-172	5 Feb., 1877	Do		640	10 & 11		Two tanks and dam £675 0 0			Rigaut, 29 March, 1877— Tank . . . . . 450 7 6 Dam . . . . . 20 0 0 Tank . . . . . 166 14 0 Cottage 70 0 0 £707 1 6	Deed issued, 1 June, 1880; £1 per acre.	
I.P., 77-383	19 Feb., 1877	Wm. Dodemaine.		320	11	.....	Huts, woolshed, yards, fence .. . £320 0 0		Refused ..			
I.P., 77-384	19 Feb., 1877	J. Ramsbottom		320	10	.....			do			
C.P., 73-12300	20 Nov., 1873	Leighton Barbour	R. Barbour ..	320	13	Ricketson	Carne, 10 August, 1880— Tank . . . . . £500 0 0 Fence (lessee) 40 0 0 £540 0 0	Rose, 4 Sept. and 1 Nov., 1877.	Forfeited, 19 March, 1878			
C.P., 73-12301	20 Nov., 1873	R. Barbour, jun.	do	320	12	do	Burdett, 25 March, 1874—Hut £7 0 0 Keele, 2 July, 1876— Cottage . . . . £80 0 0 Tank . . . . . 35 0 0 £115 0 0 Carne, 10 August, 1880— Tanks . . . . £58 6 8 Fence . . . . 160 0 0 House 160 0 0 £378 6 8	Rose, 3 and 6 Sept., 1877.	do do	....		
C.L.P., 77-1391	28 May, 1877	Hy. Ricketson ..		320	12	do	Fencing, tank house		Refused . .			
C.L.P., 78-1599	19 Mar., 1878	Do		640	12 & 13	do	Tank-house, fencing					This case was referred to the Board for inquiry, but the papers were recalled for this inquiry.
C.P., 73-12524	27 Nov., 1873	J. Doughaty ...	H. Ricketson	238½	8	Bananga-lite.	Smith, 12 April, 1876— Hut . . . . . £15 0 0 Tank . . . . . 200 0 0 Fence 78 0 0 £293 0 0	Johnson, 8 May, 1876.	Forfeited, 7 Aug., 1876			

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I.P., 76-1740	9 Aug., 1876	Hy. Ricketson		acres. 238½	8	Bananga-lite.	House, post and wire fence, and tank, £340 0 0			Finley, 27 October, 1876— Fencing £120 0 0 Tank 133 6 3 Hut 10 0 0 £263 6 3	Deed issued, 1 November, 1878; £1 per acre	
C.P., 73-12525	27 Nov., 1873	J. Doughaty	H. Ricketson.	81½	29	Ricketson	Smith, 12 April, 1876 Nil.	Johnson, 8 May, 1876.	Forfeited, 7 Aug., 1876		22 Nov., 1876, £1 per acre.	
C.P., 73-12526	27 Nov., 1873	J. Kelly	do	238½	7	Bananga-lite.	Smith, 12 April, 1876— Hut £15 0 0 Posts 78 0 0 £93 0 0	do do.	do do.		29 Nov., 1876, £331 lot.	
C.P., 73-12527	27 Nov., 1873	do	do	81½	30	Ricketson	Smith, 12 April, 1876 Nil.	do do.	do do.		22 Nov., 1876, £1 per acre.	
C.P., 73-12528	27 Nov., 1873	Geo. Kelly	do	320	11	Bananga-lite.	Smith, 13 April, 1876— Hut £25 0 0 Tank 200 0 0 Fence 90 0 0 £315 0 0	do do.	do do		29 Nov., 1876, £635 lot.	
C.P., 73-12529	27 Nov., 1873	Wm. Liscombe	H. Ricketson	320	28	Ricketson	Carne, 17 June, 1878— Tank £246 13 0 Fence 80 0 0 £326 13 0 Smith, 12 April, 1876— Hut £15 0 0 Fencing 135 0 0 £150 0 0	Johnson, 8 May, 1876	Forfeited, 7 Aug., 1876			£156 5s added for tank
I.P., 76-1749	9 Aug., 1876	H. Ricketson		320	28	do	House, post and wire fencing, and tank £340 0 0		Refused	Finley, 27 October, 1876— Tank £156 5 0 Fence 40 0 0 House 160 0 0 Hut 5 0 0 £361 5 0	8 March, 1882, £1 14s. 9d. per acre.	
I.P., 77-246	8 Feb., 1877	do		320	28	do	House, tank, fencing, £400		do			
C.P., 73-12530	27 Nov., 1873	A. W. Robertson.	Hy. Ricketson	320	32	do	Smith, 12 April, 1876— Hut £25 0 0 Fence 90 0 0 Tank 200 0 0 £315 0 0	Johnson, 8 May, 1876	Forfeited 7 Aug., 1876			
I.P., 76-1748	9 Aug., 1876	Hy. Ricketson		320	32		House and tank £350 0 0		Refused	Finley, 27 October, 1876— House £160 0 0 Tank 143 15 0 Hut. 17 0 0 £320 15 0		
I.P., 77-239	8 Feb., 1877	do	Hoskins and Blomfield.	320	32	Ricketson	House, tank, hut £350 0 0			Rigaut— Tank £195 0 House 120 0 0 Hut 10 0 0 £325 0 0	Deed issued, 10 Feb., 1879; £1 per acre.	
C.P., 73-12531	27 Nov., 1873	D. M'Pherson	Hy. Ricketson	320	25	do	Smith, 12 April, 1876— Hut £25 0 0 Fence 180 0 0 £205 0 0 Carne, 17 June, 1878— Fence £160 0 0 Tank 180 0 0 £340 0 0	Johnson, 8 May, 1876	Forfeited, 7 Aug., 1876			
I.P., 76-1743	9 Aug., 1876	H. Ricketson		320	25		House, tank, fencing £350 0 0		Refused	Finley, 27 October, 1876— Tank £140 10 0 Hut 15 0 0 Fence 120 0 0 £275 10 0		

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I.P., 77-244	8 Feb., 1877	H. Ricketson	.....	acres. 320	25	Ricketson	House, tank, fencing £320 0 0	...	Refused	...	.....	
C.P., 73-12532	27 Nov., 1873	John Catto	H. Ricketson	320	27	do	Smith, 12 April, 1876— Hut £15 0 0 Tank 200 0 0 Fence 90 0 0 £305 0 0 Carne, 17 June, 1878— House £160 0 0 Tank 140 0 0 Fence 80 0 0 £380 0 0	Johnson, 8 May, 1876	Forfeited, 7 Aug., 1876	...	...	
C.P., 6-131	14 Sept., 1876	J. Ramsbottom ..	.....	175 (Part of por 27)	..	do	...	...	Void, 31 Aug., 1877	...	...	
I.P., 76-1793	10 Aug., 1876	Hy. Ricketson ..	.....	320	27	do ..	Tank, post and wire fence, and house £350 0 0	...	Refused, 15 Jan., 1877	Finley, 1 November, 1876— House £160 0 0 Tank 143 15 0 Hut 5 0 0 Fence 40 0 0 £348 15 0	13 April, 1881, £1 18s. 4d per acre.	13s. 4d. per acre
I.P., 77-246	8 Feb., 1877	do ..	.	320	27	do .	House, tank, fence £350 0 0	..	Refused, 9 April, 1879	Rigaut, 3 April, 1877— Tank £174 13 0 Fence 75 0 0 House 120 0 0 Hut 10 0 0 £379 13 0		
C.P., 73-12533	27 Nov., 1873	A Kelly	H. Ricketson	320	33	do .	Keele, 26 June, 1876—Hut £5 0 0 Carne, 17 June, 1878— Hut £25 0 0 Tanks 240 0 0 Fence 60 0 0 £325 0 0	Rose, 23 May, 1877	Lapsed, 16 May, 1877	...	..	
I.P., 77-1387	14 June, 1877	H. Ricketson	.....	320	33	do	Tanks, hut, fencing £320 0 0	...	.	Landon, December, 1880— Tank £107 0 0 ,, 169 0 0 Fence 27 0 0 £303 0 0 Orr, 11 July, 1882— Tanks, Fencing, and Hut £320 15 3	Deed issued, 2 July, 1883; £1 5s. per acre.	
C.P., 73-12534	27 Nov., 1873	Guy Dougharty..	H. Ricketson	320	15	do	Smith, 12 April, 1876— Hut £25 0 0 Fence 100 0 0 £125 0 0	Johnson, 8 May, 1876	Forfeited, 7 Aug., 1876	...	...	
I.P., 76-1747	9 Aug., 1876	H. Ricketson ..	.....	320	15	do	House, tank, post, and wire fencing £350 0 0	...	Refused	Finley, 27 October, 1876— Fence £82 10 0 Tank 33 8 9 House 160 0 0 £275 18 9	...	
I.P., 77-240	8 Feb., 1877	do	Hoskins & Blomfield.	320	15	do .	House, tank, fence £345 0 0	.....	...	Rigaut, 3 April, 1877— Fence £112 10 0 House 120 0 0 Hut 10 0 0 Tank 82 10 0 £325 0 0	Deed issued, 10 Feb., 1879; £1 per acre.	
C.P., 73-12535	27 Nov., 1873	Wm. Dougharty..	H. Ricketson	320	9	Bananga-lite.	Smith, 12 April, 1876— Hut. ..... £25 0 0 Posts ..... 35 0 0 Tank 130 0 0 £190 0 0	Johnson, 8 May, 1876	Forfeited, 7 Aug., 1876	.....	.....	

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I.P., 76-1736	9 Aug., 1876	H. Ricketson		acres. 320	9	Banangalite.	House, post and wire fencing, and tank £350 0 0			Finley, 27 October, 1876— Fence £80 0 0; Tank 137 18 9; Hut 15 0 0 — £232 18 9	Deed issued, 5 Feb., 1883; £1 per acre.	
										Orr, 30 December, 1881— Tank £125 6 3; Fence 200 0 0 — £325 6 3		
C.P., 73-12536	27 Nov., 1873	D. M'Alister		320	6	do		Johnson, 8 May, 1876	Forfeited, 7 Aug., 1876			
I.P., 76-1792	10 Aug., 1876	Hy. Ricketson		320	6	do	House, hut, fencing, bridge £380 0 0					
I.P., 77-173	5 Feb., 1877	do	Hoskins & Blomfield.	320	6	do	House and fencing £350 0 0			Rigaut, 3 April, 1877— Fencing £157 10 0; House 120 0 0; Bridge 46 0 0; Fencing 75 0 0 — £398 10 0	Deed issued, 10 Dec., 1879; £1 1s per acre.	
C.P., 73-12538	27 Nov., 1873	R. Reeves	H. Ricketson	320	1	Stannaforth.	Keele, 2 July, 1876— Hut, fencing, and dams £360 0 0	Rose, 22 May, 1877	Lapsed, 16 May, 1877			
I.P., 77-1381	13 June, 1877	Hy. Ricketson		320	1	do	Tank, house, fencing, dam £320 0 0		Refused			
C.P., 73-12539	27 Nov., 1873	Chas. Mullen	H. Ricketson	320	20	Ricketson	Smith, 12 April, 1876— Hut £25 0 0; Tank 200 0 0 — £225 0 0	Johnson, 8 May, 1876	Forfeited, 7 Aug., 1876			
I.P., 76-1742	9 Aug., 1876	Hy. Ricketson		320	20	do	House and large tank £350 0 0		Refused	Finley, 27 October, 1876— Tank £200 0 0; House 50 0 0; Hut 10 0 0 — £260 0 0		
I.P., 77-241	8 Feb., 1877	do	Hoskins & Blomfield.	320	20	do	House and large tank £350 0 0			Rigaut, 3 April, 1877— House £70 0 0; Hut 10 0 0; Tank 241 2 0 — £321 2 0	Deed issued, 10 Feb., 1879, £1 per acre.	
C.P., 73-12546	27 Nov., 1873	Geo. Calvert	H. Ricketson	320	5	Stannaforth.	Keele, 2 July, 1876 - Hut £5 0 0	Rose, 23 May, 1877	Lapsed, 19 May, 1877			
I.P., 77-1835	14 July, 1877	H. Ricketson		320	5	do	Tank and hut £320 0 0			Rebello (see office memo.)—Tank £330 0 0	Deed issued, 12 Dec., 1881, £1 per acre.	
C.P., 73-12851	4 Dec., 1873	Thos. Pike	H. Ricketson	320	3	do	Keele, 2 July, 1876—Hut £5 0 0	Rose, 23 May, 1877	Lapsed, 16 May, 1877		26 Sept., 1877; £325 lot.	
C.P., 73-12852	4 Dec., 1873	Jane Reeves	do	320	6	do	Keele, 26 June, 1876—Hut £5 0 0	Rose, 23 May, 1877	Lapsed, 16 May, 1877			
I.P., 77-1837	14 July, 1877	Hy. Ricketson		240 Part of 320	6	do	Large hut, tank, and dam £320 0 0			Orr, 3 April, 1884— Tank £110 0 0; House 200 0 0; Tank 134 2 6 — £444 2 6	Deed issued, 19 Feb., 1886, £1 5s. per acre.	
C.P., 73-12853	4 Dec., 1873	Hy. Liscombe	H. Ricketson	320	7	do	Keele, 26 June, 1876—Nil	Rose, 23 May, 1877	Lapsed, 16 May, 1877			
I.P., 77-1284	8 June, 1877	Hy. Ricketson		235 Part of por. 7	34	do	Tank and fencing £320 0 0			Landon, 4 December, 1880— Tank £188 0 0; Fence 47 0 0 — £235 0 0	Deed issued, 10 Feb., 1885; £1 5s per acre	
C.P., 73-12854	4 Dec., 1873	R Grant	H. Ricketson	320	18	Ricketson	Street, 19 Dec., 1874—Hut and dam		Lapsed, 16 May, 1877			

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I P, 77-1282	7 June 1877	H Ricketson	H Ricketson	acres 320	18	Ricketson	Sheep yards, fencing, tank, dam, and hut £320 0 0			Landon, 3 Dec , 1880— Sheep yards £100 0 0 Iron huts 70 0 0 Tank 44 0 0 Dam 15 0 0 Fencing 110 0 0 £339 0 0	Deed issued, 30 Oct , 1882 £1 5s per acre	
C P, 73-12855	4 Dec , 1873	Alice Reeves	do	320	21	do	Keele, 26 June, 1876—Hut and tank £107 15 0 Carne, 17 June, 1878— Tank £266 13 4 Fence 40 0 0 Hut 20 0 0 £326 13 4	Rose, 23 May, 1877	Lapsed, 16 May 1877			
I P, 77-242	8 Feb , 1877	H Ricketson	Hoskins and Bloomfield	320	21	do	Large tank, fencing £350 0 0		Refused	Rigaut 3 April, 1877— Tank £299 2 0 Hut 10 0 0 Fence 18 15 0 £327 17 0	27 July 1881 , £2 5s 5d per acre	£10 5s 5d per acre
C P, 73-12856	4 Dec , 1873	R Reeves	H Ricketson	320	10	Barunga lite	Smith, 12 April, 1876— Hut £30 0 0 Posts 35 0 0 Tank 140 0 0 £205 0 0	Johnson, 8 May, 1876	Forfeited, 7 Aug , 1876		29 Nov 1876 £52s lot	£20
C P, 73-12857	4 Dec , 1873	J Wills	do	320	17	Ricketson	Street, 19 Dec , 1874—Small hut		Lapsed 16 May, 1877			
I P, 77-1280	9 June, 1877	H Ricketson		320	17		Tank, dam fencing, house and hut £320 0 0			Landon, 3 Dec , 1880— Tanks £327 0 0 Dam 100 0 0 Iron hut 60 0 0 Fence 55 0 0 £542 0 0	Deed issued 30 Sept 1884 £1 per acre	
C P, 73-12858	4 Dec , 1873	Selina Emery	H Ricketson	320	16	Ricketson	Keele, 10 June, 1876— House £200 0 0 Tank 150 0 0 £350 0 0	Rose, 14 May, 1877	Lapsed, 16 May, 1877			
I P, 77-1281	9 June, 1877	H Ricketson		280 Part 320	16	do	Tanks, house, and fencing £320 0 0			Landon, 3 Dec , 1880— Tanks £212 0 0 Fence 80 0 0 Iron hut 60 0 0 £352 0 0	Deed issued, 2 Dec , 1884 , £1 per acre	
C P, 73-12859	4 Dec , 1873	D Sheehan	H Ricketson	320	19	do	Keele, 26 June, 1876— Hut £5 0 0 Tank 175 0 0 £180 0 0	Rose, 23 May 1877	Lapsed, 16 May, 1877			
I P, 77-1283	8 June, 1877	H Ricketson		320	19	do	Tank, house, hut £320 0 0		Refused	Landon 2 Dec , 1880— Tank £167 0 0 Fence 18 0 0 Hut 40 0 0 £225 0 0	27 Sept , 1882 £1 0s per acre	
C P 73-12860	4 Dec 1873	L Denbigh	H Ricketson	320	15	Burnett	Keele 2 July 1876 Nil Carne, 17 June, 1878— House £160 0 0 Tank 173 6 8 £333 6 8	Rose, 23 May, 1877	Lapsed, 16 May, 1877			
I P, 77 1382	14 June, 1877	H Ricketson		320	15	do	Tank house fencing £320 0 0			Rebello, 24 Nov 1879— Tank £231 5 0 Fence 45 0 0 House 75 3 0 £351 8 0	Deed issued, 8 Aug , 1881 £1 per acre	

C.P or LP. No	Date	Selector.	Name of Agent (if any).	Area	Portion No.	Parish.	Inspectors' Reports, Date and value of Improvements, and Improvements claimed in I P application.	By whom Inquiry held, and date	Fate of Application.	By whom Improvements valued in connection with I.P. application.	Date of Alienation, and Price per acre, and Upset Price at Auction.	Remarks, nd Amount added for Improvements.
				acres.								
C.P., 73-12861	4 Dec, 1873	Jas Allen	H Ricketson	320	25	Bananga-lite	Street, 19 December, 1874—Hut		Forfeited, 6 May, 1875		.....	This land was sold as an annual lease, 2 Jan, 1889, to Hy. Ricketson.
C P, 75-209	22 April, 1875	do	do	320	25	do	Caine, 13 October, 1878— Hut £40 0 0; Fence 225 0 0; Bridge 65 0 0; Cutting burrs 7 0 0 — £337 0 0		Lapsed, 8 Jan, 1879		.....	
C P, 73-12862	4 Dec, 1873	J R Reeves	H Ricketson	320	22	Ricketson	Keele, 2 July, 1876—Hut and fence £110 0 0	Rose, 23 May, 1877	Lapsed, 16 May, 1877		.....	
I P, 77-243	8 Feb., 1877	H. Ricketson	Hoskins and Blomfield.	320	22	do	House, tank, fence £350 0 0		Refused	Rigaut, 3 April, 1877— Fence 75 0 0; Tank 142 10 0; House 120 0 0 — £337 10 0	25 Jan, 1882, £1 5s. per acre	
I.P, 77-1386	14 June, 1877	do		320	22	do	Fencing, house, tank £320 0 0		do		.....	
C P, 73-12863	4 Dec, 1873	Fanny A. Carter	H. Ricketson	226¾	17	Barratta	Smith, 13 April, 1876—Hut £15 0 0; Fencing 101 0 0 — £116 0 0	Johnson, 8 May, 1876	Forfeited, 7 Aug, 1876		.....	
I P, 76-1744	9 Aug, 1876	H. Ricketson.	. .	226¾	17	do	Tank, post and wire fence, house, &c. £350 0 0		Refused	Finley, 27 October, 1876— Tank £62 10 0; House 160 0 0; Fence 22 10 0 — £215 0 0		
I P, 77-236	8 Feb, 1877	do	Hoskins & Blomfield.	226¾	17	do	House, tank, fencing £330 0 0			Rigaut, 3 April, 1877— Tank £119 9 0; Fence 30 0 0; House 120 0 0 — £269 9 0	Deed issued, 19 Feb, 1879.	
C.P. 73-12867	4 Dec, 1873	Mary Kelly . .	H. Ricketson	200	16	Bananga lite			Forfeited, 6 April, 1875		.....	
C-P, 73-123-5	4 Dec, 1873	do	do	120	17	do			do		.....	
C P, 75-261	22 Apr, 1875	do	do	200	16	do	Caine, 7 December, 1877—Hut £50 0 0; Tank *100 0 0; Fencing *180 0 0 — £330 0 0	Rose, 29 June, 1878	Forfeited, 2 Sept, 1878		.....	*Note —Tank and fencing on part 17
I P, 76-1103	27 June, 1876	H. Ricketson		320 now 200	16	do	Tank, fencing, house £400 0 0				Deed issued, 14 Aug, 1882, £1 per acre	
I P, 77-170	5 Feb, 1877	do	Hoskins & Blomfield	1.0	17	do	Tank, fencing, house £400 0 0			Rigaut, 3 April, 1877— Fence £20 0 0; House 70 0 0; Hut 10 0 0; Tank 211 16 0; Dam 10 0 0; Fence 105 0 0 — £426 16 0	Deed issued, 18 Sept, 1882, £1 per acre.	
C P, 73-12868	4 Dec, 1873	Margaret Nolon	John Nolan	320	5	do	Cancelled, *vide* 74-7946 Aln.				.....	
I P, 74-2229	1 Apr, 1874	H Ricketson		320	5	do	Iron cottage £320 0 0			Folkes, 26 July, 1876— Iron house £180 0 0; Tank and dam 140 0 0 — £320 0 0	Deed issued, 5 April, 1880, £1 1s. per acre	
C P, 75-63	4 Feb, 1875	Wm. Chapman	R Boyd	320	5	do	L S Folkes, 26 July, 1876 — House £180 0 0; Tank, &c. 140 0 0 — £320 0 0		Void, 3 Sept, 1877		.....	Contains improvements.
C P, 73-12877	4 Dec, 1873	Ann James	H Ricketson	320	14	do	Street, 19 December, 1874 -Iron hut		Forfeited, 6 April, 1875		.....	
C P, 75-260	22 Apr, 1875	do	.... .	320	14	do			Lapsed, 5 July, 1881		.....	

C.P. or I.P. No.	Date	Selector.	Name of Agent (if any.)	Area.	Port No.	Parish.	Inspector's Reports, Date and Value of Improvements, and Improvements claimed in I.P. application.	By whom Inquiry held, and date.	Date of application.	By whom Improvements valued in connection with I.P. application.	Date of Alienation, and Price per acre, and Upset Price at Auction.	Remarks, and Amount added for Improvements.
				acres.								
I.P., 76-1739	9 Aug., 1876	H. Ricketson	.....	320	14	Bananga-lite.	House, tank, post and wire fencing £350 0 0	.....	Refused	Finlay, 27 October, 1876— Fencing ..... £115 0 0 Tank ..... 218 15 0 Hut 4 0 0 £337 15 0	.....	
I.P., 77-238	8 Feb., 1877	do	Hoskins and Bloomfield.	320	14	do	Tanks and fencing £330 0 0	.....	do	Rigant, 3 April, 1877— Tank ..... £282 6 0 ,, ... 37 10 0 Fencing 82 0 0 £401 16 0	.....	
C.P., 73-13062	11 Dec., 1873	W. Liscombe	C. Mullen....	320	13	do ..	Street, 19 December, 1874— Small hut	.....	Forfeited, 6 April, 1875	.....	.....	
C.P., 75-258	22 Apr., 1875	do	H. Ricketson	320	13	do ..	Carne, 18 June, 1878— Iron hut £160 0 0	.....	Lapsed, 10 Oct., 1878	.....	.....	
I.P., 79-1929	2 Oct., 1879	H. Ricketson	A. M. L. & F. Co.	320	13	do ..	Tanks £320 0 0	.. ..	.....	Landon, 15 January, 1880— Tank ..... £220 0 0 ,, ... 100 0 0 £320 0 0	Deed issued, 10 Dec., 1883; £1 per acre.	
C.P., 73-13063	11 Dec., 1873	H. Cole..	C. Mullen....	100	40	do ..	Carne, 18 June, 1878— Hut £40 0 0	.....	Lapsed, 16 May, 1877	.....	.....	
I.P., 77-1285	.....	H. Ricketson	.....	100	40	do ..	.....	.....	.....	.....	.....	
C.P., 74-3049	12 Mar., 1874	J. H. Bennett....	C. Mullen....	320	53	Hebden..	Carne, 17 June, 1878—Nil	.....	Lapsed, 9 Oct., 1877 ..	.....	16 Oct., 1878; £1 5s. per acre.	
C.P., 74-3050	12 Mar., 1874	W. H. Greaves ..	do ..	320	54	do ..	Carne, 17 June, 1878— Tank ..... £226 13 4 Fence 80 0 0 £306 13 4	.....	do ..	.....	.....	
I.P., 84-12	19 May, 1884	H. Ricketson	A. M. L. & F. Co.	190 Partof 320	71	do ..	Tank £190 10 0	.....	....	.....	Deed issued, 31 Feb., 1884; £1 5s. per acre.	
C.P., 74-4971	30 April, 1874	J. Caldwell	H. Ricketson.	150	37	Barratta	....	.....	Lapsed, 16 Feb., 1878..	....	.....	
C.P., 74-4972	30 April, 1874	Jas. Holmes	do ..	100	38	do ..	Carne, 13 October, 1878—Nil ..... Carne, 8 September, 1879—Nil.....	.....	Lapse, 8 Jan., 1879 ..	.....	29 Sept., 1880; £1 5s. per acre.	
C.P., 74-4994	30 April, 1874	W. Holmes	do ..	80	34	Billabong	Carne, 12 October, 1878—Nil.....	.....	Lapsed, 16 Feb., 1878..	.....	5 Jan., 1881; £1 5s. per acre.	
C.P., 74-4995	30 April, 1874	F. Hyde	do ..	80	9	do ..	Carne, 12 October, 1878—Nil.....	.....	do	.....	5 Jan., 1881; £1 5s. per acre.	
C.P., 74-5808	21 May, 1874	John Horne.....	do ..	120	5	Kirrabirri	.....	.....	do ..	.....	.....	
C.P., 74-5809	21 May, 1874	D. Caldwell.....	do ..	120	6	do ..	Carne, 12 October, 1878—Nil	.....	do ..	.....	9 April, 1879 ..	Withdrawn.
C.P., 74-5810	21 May, 1874	J. Boyd.....	do ..	150	45	Billabong	Carne, 12 October, 1878—Tank .. £120 0 0	.....	do ..	.....	28 May, 1879; £2 1s. per acre.	16s. per acre.
C.P., 74-6083	28 May, 1874	J. Horne	....	120	26	Bananga-lite.	Carne, 12 October, 1878—Nil	.....	do ..	.....	.....	
C.P., 74-14723	5 Nov., 1874	Thos. Adams	R. C. Boyd ..	320	11	Billabong	Carne, 12 October, 1878— Iron Cottage ..... £80 0 0 Building ..... 140 0 0 Fencing 200 0 0 £420 0 0	.....	Lapsed, 20 July, 1878	.....	.....	
I.P., 78-2084	29 Aug., 1878	H. Ricketson	.....	130	11	do ..	House and fencing £320 0 0	.....	.....	Rebello, 7 February, 1880— House ..... £80 0 0 Iron Building ..... 60 0 0 Fence 200 0 0 £340 0 0	Deed issued, 18 Nov., 1884; £1 per acre.	Applied for as 320 acres.
I.P., 83-2	9 Jan., 1883	do ..	.....	51	67	do ..	Fencing £41 0 0	.....	Refused *.....	.....	....	*Refused; as the wires had been drawn from fence. Now freehold.
C.P., 74-12724	5 Nov., 1874	Lucy Adams	R. C. Boyd ..	139 320	66 31	..... do ..	..... Carne, 12 October, 1878— Cottage ..... £70 0 0 Fencing 270 0 0 £340 0 0	....	..... Lapsed, 20 July, 1878	....	....	

C P or I P No	Date	Selector	Name of Agent (if any)	Area	Portion No	Parish	Inspector's Reports, Date and value of Improvements and Improvements claimed in I P application		By whom Inquiry held, and date	Fate of Application	By whom Improvements valued in connection with I P application		Date of Alienation and Price per acre, and Upset Price at Auction	Remarks, and Amount added for Improvements
I P, 78-2083	29 Aug , 1878	H Ricketson		Acres 100 (Part of 320 ac	31	Billabong	House and fencing	£320 0 0			Rebello, 7 February, 1880— Fencing House	£270 0 0 70 0 0	Deed issued, 2 Dec , 1884 £1 5s per acre	Applied for as 320 acres
												£340 0 0		
I P, 83 3	9 Jan , 1883	do	A M L & F	71 (Part of 329 ac	69	do	Fencing	£71 0 0			Callaghan, 31 August, 1883—Fence	£70 10 0	Deed issued, 10 Feb 1886, £1 5s per acre	
				149	68									Now an auction purchase.
C P, 74-12725	5 Nov , 1874	R Bowie		320	12	do	Carne, 12 October, 1878—Tank Dam Fence	246 13 4 40 0 0 67 10 0		Lapsed, 20 July, 1878				
								£354 3 4						
I P, 78-2082	2 Sept , 1878	H Ricketson	R C Boyd	320	12	do	Large tank and dam	£320 0 0			Rebello, 7 February, 1880— House Piggery Shed Well Garden Yard Tank Fence	£150 0 0 10 0 0 10 0 0 25 0 0 25 0 0 20 0 0 231 5 0 67 10 0	Deed prepared, 12 Dec , 1881, £1 per acre	
												£518 15 0		
C P, 75 12	12 Jan , 1875	Geo Friday	R C Boyd	40	30	Bananga lite	Carne, 7 December, 1877– Hut Fence	£5 0 0 45 0 0	Rose, 3 Sept , 1878	Lapsed, 10 Oct , 1878			27 Dec , 1878 £2 10s per ac	
								£50 0 0						
C P, 75 92	11 Feb , 1875	Jas McKay	H Ricketson	320	27	Barratta	Carne, 8 September, 1879—Nil			do			7 April, 1880, £1 5s per acre	
C P 75-99	18 Feb , 1875	Solomon Hewer	R C Boyd	320	24	Kirrabirri	Carne, 12 October, 1878—Nil			Lapsed, 10 Oct , 1878				
I P 78-3310	30 Dec , 1878	H Ricketson	A M L & F Co	53 (Part por 24)	38		Tank, dam, house	£320 0 0			Dawson, 11 Feb , 1880—Tank	£53 0 0	Deed issued, 25 July, 1884 £1 per acre	Applied for as 320 acres
C P 75 100	18 Feb , 1875	John Klemm	R C Boyd	320	1	do	Carne, 12 October, 1878—Iron hut	£15 0 0		Lapsed, 10 Oct , 1878			28 May, 1879, £1 5s 1d p ac	£14 13s 4d
C P 75 101	18 Feb , 1875	Mary Klemm	do	320	22	do	Carne, 12 October, 1878—Nil			Lapsed, 10 Oct , 1878			28 Sept , 1888, £1 12s p acre	£109
I P 79-502	10 Mar , 1879	H Ricketson		320	22	do	Tank	£320 0 0		Refused, 23 March, 1881	Lardner, 7 Dec , 1881—Tank	£109 0 0		
C P 75-103	18 Feb , 1875	Amy Tulk	R C Boyd	320	11	do	Carne, 12 October, 1878—Tank Hut	£280 0 0 55 9 0		Lapsed 10 Oct , 1878				
								£335 0 0						
I P 79 503	10 Mar , 1879	H Ricketson		320	11	do				Refused	No papers		28 May, 1879, £2 5s 11d p ac	11d per acre
C P 75-104	18 Feb , 1875	Lucy Tulk	R C Boyd	160	10	do	Carne, 12 October, 1878—Nil			Lapsed, 10 Oct , 1878			10 Sept , 1879 £1 5s per acre	
C P 75-105	18 Feb , 1875	Samuel Cox	do	160	37	Stanna-forth	Carne, 17 June, 1878—Nil							
C P 75-405	22 July, 1875	John Young	do	44	38	Bananga lite	Carne, 18 June, 1878—Tank	£53 6 8	Rose, 10 Dec , 1878	Lapsed, 3 April, 1879				
C P 75-424	29 July, 1875	R Willan	do	60	48	Hehden	Carne, 12 October, 1878—Nil			Lapsed, 3 April, 1879			10 Sept , 1879, £1 5s per acre	
C P 76 64	22 June 1876	S Nixon		40		Bananga lite				Void 23 May, 1877	Land included in a prior selection of M Kelly			
C P 77 101	19 Apl , 1877	J C Hervey		640	38 & 39	Billabong	Carne 10 July 1880 – Buildings Fence Cultivation Clearing Cottage Tank	£300 0 0 120 0 0 60 0 0 40 0 0 50 0 0 113 6 8						Certificate of conformity issued to H Ricketson (alienee), 29 September, 1880
								£683 6 8						

I certify that the information given in this schedule is taken from the papers in each case, and is correct,—

F GRIFFIN,
Clerk, Lands Department

30th May, 1889.

[*To Evidence of Henry Ricketson.*]

B 1.

Parliament, New South Wales, Sydney, 28/12/88.

Dear Sir,

In reply to your note of to-day inquiring whether I have anything to communicate, I have nothing but to refer you to my former letters, that letter that had the postcript which you have been showing to some of the Deniliquin people, to persuade them to sign your petition, several of whom have written to me to get their names struck off, as they say you misled them.

About the improvements, I will get a Select Committee when the House meets to go into the whole matter. They will deal with Barratta first, and take Arratulla, Cornallo, and the other stations after.

Truly yours,
R. BARBOUR.

Henry Ricketson, Esq.

Sydney: Charles Potter, Government Printer.—1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CONDITIONAL PURCHASES MADE UPON BARRATTA RUN.

(PETITION FROM HENRY RICKETSON, PRAYING TO BE HEARD BY COUNSEL BEFORE SELECT COMMITTEE ON.)

Received by the Legislative Assembly, 16 *April*, 1889.

To the Honorable the Speaker and Legislative Assembly of the Colony of New South Wales, in Parliament assembled.

The humble Petition of Henry Ricketson, of Barratta Station,—

RESPECTFULLY SHOWETH:—

1. That Mr. Barbour has moved for the appointment of a Select Committee, to consist of Mr. Lyne, Mr. J. P. Abbott, Mr. Alison, Mr. Copeland, Mr. Chapman, Mr. T. G. Dangar, Mr. Brunker, Mr. Hugh Taylor, Mr. Woodward, and the mover, with power to send for persons and papers, to inquire into and report upon all conditional purchases made upon the run of Barratta (Henry Ricketson, lessee) from January, 1872, till December, 1882, how many were lapsed or forfeited, what became of the improvements, and how many were converted into improvement purchases.

2. That your Honorable House has sanctioned this request and that the matter has been referred by your Honorable House to the Select Committee for inquiry and report.

3. That your Petitioner is interested in the lands on the Barratta Run under lease from the Crown, that many of the forfeited and lapsed conditional purchases on this run have been sold at auction and have been otherwise acquired and have been conveyed by Crown grant to him, and that he is in possession of information which would be of the greatest importance in adopting a report.

Your Petitioner therefore humbly prays that he may be heard by counsel, attorney, or agent before the Select Committee, with liberty to adduce such evidence as may be within his power.

And your Petitioner, as in duty bound, will ever pray.

HENRY RICKETSON.

Dated this 10th day of April, 1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

REPORT FROM THE SELECT COMMITTEE

ON THE

CLAIM OF ISAAC BARCLAY;

TOGETHER WITH THE

PROCEEDINGS OF THE COMMITTEE.

ORDERED BY THE LEGISLATIVE ASSEMBLY TO BE PRINTED,

17 *July*, 1889.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1889.

[3*d*.] 475—

1889.

EXTRACTS FROM THE VOTES AND PROCEEDINGS OF THE LEGISLATIVE ASSEMBLY.

VOTES No. 54. FRIDAY, 5 JULY, 1889.

7. CLAIM OF ISAAC BARCLAY :—Mr. Morton moved, pursuant to Notice,—
(1.) That a Select Committee be appointed, with power to send for persons and papers, to inquire into and report upon the claim of Isaac Barclay, Cambewarra, for compensation for losses sustained in defending his title to land held under Crown grant.
(2.) That such Committee consist of Mr. Hawken, Mr. Waddell, Mr. Stevenson, Mr. Brunker, Mr. O. O. Dangar, Mr. Garrett, Mr. Chapman, and the Mover.
(3.) That the Report from the Select Committee on the same subject, brought up on 17th July, 1888, be referred to such Committee.
Question put and passed.

VOTES No. 60. WEDNESDAY, 17 JULY, 1889.

2. CLAIM OF ISAAC BARCLAY :—Mr. Morton, as Chairman, brought up the Report from, and laid upon the Table the Minutes of Proceedings of, the Select Committee for whose consideration and report this subject was referred on 5th July, 1889.
Ordered to be printed.

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1889.

CLAIM OF ISAAC BARCLAY.

REPORT.

THE SELECT COMMITTEE of the Legislative Assembly, appointed on the 5th July, 1889,—"*with power to send for persons and papers, to inquire into and report upon the claim of Isaac Barclay, Cambewarra, for compensation for losses sustained in defending his title to land held under Crown grant*, and to whom was referred on the same day *the Report from the Select Committee of Session* 1887–8 *in reference to the said claim*,"—have agreed to the following Report:—

Your Committee having carefully considered the Report referred to them, find as follows:—

That in 1863 Isaac Barclay acquired by conditional purchase under the "Crown Lands Alienation Act of 1861," three allotments comprising 54 acres, and two additional of 40 acres each at Cambewarra, parish of Illaroo, county of Camden, and subsequently obtained his deeds for two of them.

That during the same year William Emery conditionally purchased 96 acres, the measurement of which Barclay objected to on the ground that the land measured was already in his possession, and on a resurvey being made on the authority of the Minister it was found that Emery's application clashed with Barclay's. The Minister decided, however, to uphold Barclay's.

That Emery subsequently entered an action in the Supreme Court against Barclay for trespass, and obtained a verdict, notwithstanding that Barclay held an indefeasible title from the Crown. The title of Barclay is therefore upheld by the Government, whilst the Supreme Court holds that the land belongs to Emery.

That the evidence given for the Crown before your Committee clearly admits Barclay's title, and that he was justified in defending such, the Crown grant being regarded as indefeasible, though held by the Court not to be so.

Your Committee are therefore of opinion that Isaac Barclay in having been, through a mistake on the part of the Crown, forced into litigation and deprived of his land, has established a just claim for compensation, and they recommend such claim to the favourable consideration of your Honorable House.

PHILIP H. MORTON,
Chairman.

No. 3 *Committee Room,*
Sydney, 17th July, 1889.

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PROCEEDINGS OF THE COMMITTEE.

WEDNESDAY, 17 *JULY*, 1889.

MEMBERS PRESENT :—

Mr. Morton, | Mr. Stevenson,
Mr. Chapman.

Mr. Morton called to the Chair.

Entry from Votes and Proceedings appointing the Committee, and referring Report from Select Committee of Session 1887-8, *read* by the Clerk.

Printed copies of the Report *referred* before the Committee.

Motion made (*Mr. Stevenson*), and question,—"That the Report brought up by a former Committee, and dated 17th July, 1888, be the Report of this Committee,"—put and passed.

Chairman to report to the House.

Sydney : Charles Potter, Government Printer.—1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

REPORT FROM THE SELECT COMMITTEE

ON

CONDITIONAL PURCHASE OF ZACHARY BENN, RICHMOND RIVER DISTRICT;

TOGETHER WITH THE

PROCEEDINGS OF THE COMMITTEE

AND

MINUTES OF EVIDENCE.

ORDERED BY THE LEGISLATIVE ASSEMBLY TO BE PRINTED,
30 *July*, 1889.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1889.

[9*d*.] 497—A

1889.

EXTRACTS FROM THE VOTES AND PROCEEDINGS OF THE LEGISLATIVE ASSEMBLY.

VOTES No. 62.—FRIDAY, 19 JULY, 1889.

6. CONDITIONAL PURCHASE OF ZACHARY BENN, RICHMOND RIVER DISTRICT:—Mr. Ewing moved, pursuant to Notice,—
(1.) That a Select Committee be appointed, with power to send for persons and papers, to inquire into and report upon the conditional purchase of Zachary Benn, in the district of the Richmond River, recommended for forfeiture by the Casino Land Board.
(2.) That such Committee consist of Mr. Lyne, Mr. Brunker, Mr. Lees, Mr. McFarlane, Mr. Cooke, Mr. Nicoll, Mr. Stevenson, Mr. Frank Farnell, and the Mover.
Question put and passed.

VOTES No. 65.—THURSDAY, 25 JULY, 1889.

3. CONDITIONAL PURCHASE OF ZACHARY BENN, RICHMOND RIVER DISTRICT:—Mr. Ewing (*by consent*) moved, without Notice, That the Return to Order, "Conditional Purchase of Zachary Benn," laid upon the Table and ordered to be printed on 3rd May, 1888, be referred to the Select Committee on "Conditional Purchase of Zachary Benn, Richmond River District."
Question put and passed.

VOTES No. 67.—TUESDAY, 30 JULY, 1889.

4. CONDITIONAL PURCHASE OF ZACHARY BENN, RICHMOND RIVER DISTRICT:—Mr. Ewing as Chairman, brought up the Report from, and laid upon the Table the Minutes of Proceedings of, and Evidence taken before, the Select Committee for whose consideration and Report this subject was referred on 19th July, 1889.
Ordered to be printed.

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1889.

CONDITIONAL PURCHASE OF ZACHARY BENN, RICHMOND RIVER DISTRICT.

REPORT.

THE SELECT COMMITTEE of the Legislative Assembly, appointed on 19th July, 1889, "*with power to send for persons and papers, to inquire into and report upon the conditional purchase of Zachary Benn, in the District of the Richmond River, recommended for forfeiture by the Casino Land Board,*" and to whom was referred on 25th July, 1889, "*the Return to Order in reference to the said conditional purchase,*"—have agreed to the following Report :—

Your Committee having examined the witnesses named in the List* (whose evidence will be found appended hereto), and carefully considered the papers referred, find as follows :— * See List page 4.

That on 24th July, 1884, Zachary Benn conditionally purchased 202½ acres of land in the county of Richmond, parish of Shannon, which land was subsequently forfeited on the ground of non-residence by the conditional purchaser.

That such forfeiture appears to your Committee to be against the weight of evidence.

That the evidence before your Committee, together with statutory declarations contained in the papers referred to them by your Honorable House, prove that the said Zachary Benn did reside upon his land.

Your Committee are therefore of opinion that the said conditional purchase should not have been recommended for forfeiture, and recommend the case to the favourable consideration of the Government.

THOS. EWING,
Chairman.

No. 2 *Committee Room,*
Sydney, 30 *July,* 1889.

PROCEEDINGS OF THE COMMITTEE.

TUESDAY, 23 *JULY*, 1889.

MEMBERS PRESENT:—

Mr. Ewing, | Mr. Frank Farnell,
Mr. Stevenson.

Mr. Ewing called to the Chair.
Entry from Votes and Proceedings appointing the Committee read by the Clerk.
Adjourned till Friday next at *Eleven* o'clock.

FRIDAY, 26 *JULY*, 1889.

MEMBERS PRESENT:—

Mr. Ewing in the Chair.

Mr. Stevenson, | Mr. Nicoll,
Mr. McFarlane.

Entry from Votes and Proceedings referring the Return to Order in reference to the conditional purchase of Zachary Benn to the Committee read by the Clerk.
Printed copies of the papers referred before the Committee.
William Henry Capper (*Chief Clerk, Conditional Sales Branch, Department of Lands*), called in, sworn, and examined.
Witness withdrew.
John Perry, M.P., called in, sworn, and examined.
Witness withdrew.
Adjourned till Tuesday next at a *quarter-past One* o'clock.

TUESDAY, 30 *JULY*, 1889.

MEMBERS PRESENT:—

Mr. Ewing in the Chair.

Mr. Stevenson, | Mr. Lees.

Patrick Hogan, M.P., called in, sworn, and examined.
Witness withdrew.
Committee deliberated.
Chairman submitted Draft Report.
Same read and agreed to.
Chairman to report to the House.

LIST OF WITNESSES.

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Capper, William Henry 5
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1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

MINUTES OF EVIDENCE

TAKEN BEFORE

THE SELECT COMMITTEE

ON THE

CONDITIONAL PURCHASE OF ZACHARY BENN, RICHMOND RIVER DISTRICT.

FRIDAY, 26 *JULY*, 1889.

Present:—

MR. EWING, MR. McFARLANE, | MR. STEVENSON, MR. NICOLL.

THOMAS THOMSON EWING, ESQ., IN THE CHAIR.

William Henry Capper called in, sworn, and examined:—

Mr. W. H. Capper. 26 July, 1889.

1. *Chairman.*] Do you come as a representative of the Lands Office? Yes.
2. You bring the particulars of the case of Zachary Benn? Yes.
3. In this case the selection has been declared forfeited by the Land Board? Yes.
4. And that was upheld in the Appeal Court on a technical point? Yes.
5. The merits of the case were not gone into, I believe, because the plaintiff had not appealed in time? Yes, that was the reason.
6. Therefore, the decision in the case is the result of the action of the Board? Yes.
7. That decision is, I believe, dependent upon the evidence first of all of Inspector Miller? Yes.
8. Also on the evidence of Mr. Fanning? Yes.
9. On evidence given by Mr. Taylor? Yes.
10. And Mr. Tandy and Mr. Alexander Campbell? Yes.
11. Have you looked through the papers? I have.
12. Those whom I have mentioned are all employees on the station? That is a detail which I did not take notice of.
13. You will see that Mr. Fanning is the manager of the station? Yes.
14. If you look at the evidence of Mr. Taylor you will see that he is a stockman, and that he was sent from the station to see into the matter? Yes.
15. Then you will see that Mr. Tandy says in his evidence, "I got my instructions to go from my employers?" Yes.
16. What is Mr. Alexander Campbell? Overseer of Wooroowoolgan Station.
17. So that all the evidence except that of the Inspector of the Department was evidence given by men who at the time were employed on the station? Yes.
18. And who were interested in having the land forfeited? I do not know whether all the witnesses were interested, but no doubt the owner of the station was.
19. He had an interest in the forfeiture? Yes.
20. If you look at page 8 (Mr. Fanning's evidence), you will find that he says, "By obtaining the forfeiture of the conditional purchase, we would be getting rid of an undesirable neighbour, and the land would revert to the run?" Yes,

Mr. W. H. Capper. 26 July, 1889.

21. There is no doubt that Mr. Fanning, part owner of the station, says that he gave evidence with the idea of procuring the forfeiture of the selection in the interests of the station? Yes.
22. All this evidence then, except that of your Inspector, was given by people who were interested in the forfeiture? Yes.
23. And I presume that they brought such evidence as would enable the forfeiture to be obtained? Yes.
24. Beyond that you have the evidence of Inspector Miller? Yes.
25. According to the report of Mr. Miller the selection is 202 acres, and within 10s. there was the full value of the required improvements on it? Yes.
26. Then the question resolves itself into a question of residence? Yes.
27. Mr. Miller says that in his opinion the man came there occasionally and worked? Yes.
28. Then Mr. Miller believes that he spent some time there? Yes.
29. But he says further on that the selector lived with his father;—that is the contention of the Department? I cannot give that evidence. We do not say where the man lives; the Department have to be satisfied that he lives on the selection.
30. But that appears to be the opinion of the Inspector? Yes, it is a supposition on his part.
31. In dealing with Mr. Miller's evidence you will see that on page 8 the Board speak of Mulhearn, the butcher, as being a reliable witness? Yes.
32. If you look into Mulhearn's evidence, page 7, you will see that when asked whether the boy lived at his father's he says, "I was there dozens of times at night, and never saw the selector there?" Yes.
33. From Mulhearn's evidence, he being acknowledged by the Board to be a reliable witness, it appears that the boy did not live with his father? That is asking me for an opinion as to this man's evidence. I am very doubtful as to his evidence.
34. But the Board were not? They might not be.
35. We will put it this way—If Mulhearn be a reliable witness, there can be but little doubt that the boy did not live with his father as shown by the evidence? It appears from the evidence of Mulhearn that he has admitted that although he was at his father's house dozens of times at night he did not find the selector there.
36. And it is reasonable to suppose that if the selector was there he would have seen him? It is.
37. It is reasonable to suppose that if Mulhearn was at the father's place continually, and the boy was living there, he would have seen him? Yes.
38. Then the inference drawn by Mr. Miller, the Inspector, is contradicted by the evidence of Mulhearn, who is regarded by the Board as a reliable witness? Yes.
39. If you look at page 4 of the evidence of Miller you will see that he says, "I saw him coming from the direction of his father's place with iron"—the boy was not on the ground on that occasion, but was going towards it with the iron, and the Inspector does not seem to have doubted that he was taking the iron to his own place? They are allowed to go off their place for iron.
40. If you look further at Miller's evidence you will see that the hut did not appear to have been abandoned? Yes.
41. So he is under the impression that the man was there sometimes? Anybody could be there but it does not follow that he was living there.
42. If any one is there you cannot prove whether he is residing or not? It is reasonable to suppose so, but it is not evidence.
43. Mr. Miller says, "I am pretty sure that I saw no bed in the hut," but he is not quite sure about that? No.
44. Mr. Miller says, "I did not take a note of what I actually saw there—I did not see selector on the first occasion, and I do not remember seeing anyone at the slip-rails—it is possible, but I do not remember?" Yes; that is his evidence.
45. The date of the inquiry was the 9th August, 1887? Yes.
46. The inspection was made on the 4th August, 1885, two years before? Yes.
47. The Inspector then trusted to his memory for about two years? Yes.
48. He said that he took no notes of what he saw in the hut—is it not imperative for him to do so? It is not. He has his "remarks."
49. He says I did not take a note of what I actually saw there? That was in the hut.
50. But it is of vital importance what the contents of the hut were? Sometimes.
51. In a case of residence it is most certainly? Yes; but he has given evidence as to residence.
52. *Mr. McFarlane.*] Do they not usually take notes? They usually do.
53. *Chairman.*] According to the evidence the Inspector was there twice. On one occasion he saw the man coming home with iron for his house; and on the second occasion Benn says he saw him at the slip-rails; and the Inspector says "It is possible, but I do not remember?" Yes.
54. It was possible that the boy was there on the two occasions? Yes; it is quite possible.
55. The Inspector says, "It is possible that he was working on the land and I did not see him?" Yes.
56. And he says, "In my report I stated I believed selector lived with his father, but it was merely a conjecture"—he was not quite sure? No.
57. You will see on the plan a line running back from Deep Creek 67 chains long, and then, by the appearance of the plan, there must be a 2-mile frontage to Shannon Brook, and you will see Apple, Mahogany, and Gum Flats, and from that do you think it is possible that a person might go through such country as that and a man be on it without being seen? Yes, I do.
58. That no person could tell half-a-mile away where the man was? No.
59. You think, then, that if a person went to the land, unless he took special trouble to find the man, it is quite possible the man might have been there without his seeing him? Yes.
60. I will now refer to Taylor's evidence; he is a stockman employed on the station, and he, I presume, found Benn off his land? Not necessarily so; but the evidence showed that he did find him off the land.
61. What was Taylor's object in going there? To see whether the selector was residing there or not.
62. Was it not to get such evidence as to cause the forfeiture of the land? It was such evidence as would support the complaint laid by the station manager.
63. Taylor says he does not know where the selector resided;—he says that he has seen the selector on the land five or six times? He says, "In riding through the country I did see over the selection, and on one occasion I saw the selector erecting a sapling fence."

64.

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64. Mr. Taylor says that he had seen the selector there, and had seen him at work there? Yes. He says, "When I came he was there; I saw him erecting a sapling fence."
65. As far as we can gather from the diary, he did not make any note of it when he saw the man there, but only on the days when he did not see the man there? Those were the dates of his visits.
66. Still, he does not give the dates when he saw him there? No.
67. He kept a diary which he made up every week? I do not think he would have so many items to put down as a merchant would have.
68. In his examination by Mr. James, Taylor says, "The selector may have been in the hut." He says, "I never went into the hut except on one occasion. I did not ride all over the run on each occasion. I rode straight through it. The selector certainly may have been on the land. I made no particular search for him." He satisfied himself apparently that the selector was not on the land? Yes.
69. He goes on to say that there were considerable improvements on the land. He says, "I do not know that the selector did the work himself. I saw him erecting a sapling fence and a straddle for corn?" Yes.
70. From that evidence it seems possible that the selector was on the ground, that Taylor did not take special trouble to find out whether he was not, and that Taylor has seen him at work on the land? Yes.
71. Mr. Tandy in his evidence says, "I got instructions to go from my employer." He went in the interests of the station? Yes.
72. He says that he in 1885 saw two men on one occasion coming away from the fencing and one appeared to be a grown up man and the other a youth and looked like this selector? Yes.
73. Apparently he was not sufficiently interested in it to see whether the person really was the selector. The impression is that he saw the man there? I do not say that.
74. Another witness was Mr. Alexander Campbell, the overseer of the station. He says that he never saw the selector there but he may have been on the ground somewhere? Yes.
75. Mr. Campbell says in reply to a question by the Board that there were no tracks about the hut? Yes.
76. If you look at Fanning's evidence you will see that there was a bush track between the father's place and the hut? Yes; but Campbell says there were no tracks about the hut, but there may have been tracks through the selection. If the place is inhabited there will be bush tracks around it.
77. Fanning says, "The hut was a rude place with a bark roof and a sheet of bark leaning against the opening for a door; the selector's father resided 4 or 5 miles away, and there is a bush track between the two places." Another witness says that there were no tracks at all about the hut? He does not say anything about the tracks between the two places.
78. Do you not think that in view of that evidence it would have been better if the Board had taken steps to remove any doubt of that kind? Yes, I do.
79. There appears to be some conflict in the evidence given in the interests of the station? Yes, on details.
80. That is the evidence upon which the forfeiture is based? Together with the evidence given by the parties themselves.
81. The selector, Zachary Benn, gave evidence, and he says, "That he often used to go away." He says, "That he used to take his dinner with him when he was away from the hut, but he used to have his supper and breakfast in the hut." He was working, I presume, and used to go for his food and washing a couple of times a week? Yes.
82. That might explain the bush track to which the owner of the station referred? Yes.
83. And if the man said that he used that bush track twice a week that would bear out the other statement? Yes.
84. He says in his evidence that he saw Mr. Miller once at the slip-rails; that was when Mr. Miller was there; he saw the selector, and he saw him once when he was fetching iron; that is when Miller says that he did see him? Yes.
85. This man evidently shut up his house and left it in the mornings and came back when he had done his work—a reasonable proceeding in the bush? It is possible.
86. It is perfectly plain from the evidence that this is his contention? He said, "I was never away from the selection except now and again."
87. He says, "I have made no other place my home?" Yes, that is what he says.
88. Does it not seem a reasonable mode of procedure that a man should take his breakfast and go on to his work during the day-time? Yes.
89. And is it not possible that persons could ride through the selection without finding the selector unless they cooeyed? Yes.
90. Would it not be easy enough to prove where he did live? I cannot give an opinion on that; I have no local knowledge.
91. It would be a matter of ordinary comment where the man lived, would it not? Yes.
92. The attempt to prove that he lived with his father absolutely broke down? I cannot say.
93. It appears so from the evidence? I cannot say that.
94. Is it possible that he lives with his father? The supposition is thrown out that he did live with his father; but the Department, in dealing with the case, do not take into consideration where he lives if he did not live on the selection.
95. Is it not reasonable to suppose that they could prove where he does live if he does not live on the selection; if he swears that he has not another home, you cannot combat that? No.
96. Mr. James Burns, of Shannon Brook, swore that the selector lived on the selection; he said, "To the best of my knowledge it has been his *bonâ fide* home?" Yes; I see that. Is he supposed to be a man of greater integrity than those who have been through the land and never found the selector?
97. Mr. James Mathers, the next person who was examined, says, "I will swear that he spent most of his time at the hut;" his opinion is that the selector lived there too? Yes.
98. Mr. John O'Connell also says that when he was there Benn slept at the hut all the time? Yes.
99. Phillip O'Connor says that Zachary Benn was living on the selection at the time; he says, "I slept with him one night." The essence of O'Connor's evidence is that the selector resided on the land? Yes, so for as he knew, that was whilst working close to the selection.
100. We will take Mulhearn's evidence which is considered by the Board to be good evidence? They expressed the opinion that he was believable.

101.

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101. Mulhearn went there in November and found Zachary Benn there? Yes.
102. And he saw there tools and cooking utensils, and the hut appeared to be a single man's residence? Yes.
103. He went two months after Christmas—he cooeyed and the selector came up with an axe from the paddock? Yes.
104. Supposing he had not cooeyed, would he not come to the conclusion that Zachary Benn was not there? No doubt.
105. Might not Benn have appeared when the station hands went if they had cooeyed? Yes; it is possible.
106. Another witness is T. J. Carlill, and he is acknowledged by the Board to be a reliable witness? Yes.
107. He says that he passed the selection dozens of times, and that he saw the selector three times? Yes.
108. On one occasion he was cutting poles, and on another occasion he was working about the place, and on the third occasion he came off the selection to see me? Yes.
109. This man passing a dozen times saw him three times, and he is looked upon as a reliable witness? Yes.
110. Mr. Fanning says that by obtaining the forfeiture of the conditional purchase they would get rid of a very undesirable neighbour, and the land would revert to the run? That is not correct.
111. That was his impression? Yes; but that is not the law.
112. But did not a great many people think it was at the time? Yes.
113. They set to work to get the land forfeited believing that it would revert to the run? Yes.
114. We find then that the case stands this way that there is some evidence given against the selector by the Inspector, that there is evidence given against him by the manager of the station, by the part owner of the station, Mr. Fanning, by Mr. Taylor, by Mr. Tandy, and Mr. Campbell—that is the evidence on which the forfeiture took place? Yes, combined with the evidence given by the selector and his witnesses.
115. Against that we have the evidence of Zachary Benn, and the evidence of Burns, Mathers, O'Connor, Mulhearn, and Carlill—the last two being reported by the Board to be reliable witnesses, and the essence of all their evidence is that Benn did reside on his selection? Yes, they found him there.
116. The essence of it is that they believed it? Yes.
117. Still, with this evidence against them, given by the station hands and the Inspector, the selection was forfeited? Yes, but the Board have the great advantage of seeing the witnesses.
118. I will show how the Board used the great advantage that they had. The Board said in their summary of the evidence, "Mr. Fanning visited Benn's hut but once, but he was not there; no tracks, no sign of recent occupation." Fanning says in his evidence that there was a beaten track between the hut and his father's residence? He said there were no tracks, but there was one track.
119. Is it not contradictory? Yes.
120. Mr. Taylor's evidence is put as if Mr. Taylor had actually stated that the man was never there. It is, "A. C. Taylor, stockman, living 2 miles from Benn's conditional purchase, swore that it was his business, before Benn took up the land, and after, to pass through it on an average once a week for six years; went by instructions when the selection was made to see if Benn was residing. Went seventy times to see if he was there at all times of the day between January, 1885, and 25th July, 1887. * * * Saw the selector five or six times on the land and spoke to him." Taylor said "I always went in the day-time—at all hours," but I presume that he never went there at night? Yes.
121. And the selector says that when he had done his breakfast he used to go out to work, so that Taylor chose a time to go when in all probability the selector would be away. Would it not have been better for him to have gone at night? Yes, it would have either strengthened or weakened the evidence.
122. Would it not have been very much more satisfactory if he had gone at the night-time? Yes.
123. In fact the mode of living on selections is that they are away at day-time at work? Yes.
124. Would it not have been well for the Board to have endeavoured to have elicited some information on that point? Yes.
125. In the summary it says that he never saw the selector, but he saw a man fencing? Yes.
126. But Campbell says in his evidence that the selector may have been the man whom he saw on the ground? Yes.
127. Do you think that is a fair summary by the Board under the circumstances, when the witness Campbell says that the selector may have been on the land, and the Board summarise it to the effect that he never saw the selector? Yes, I think it is perfectly right.
128. Do you think it is a just summary? Yes, because although the selector may have been there Campbell may not have seen him.
129. He says he saw men fencing, but he does not think that Zachary Benn was one of them? From that I infer that he knew Benn.
130. And he is not very sure whether he was on the ground or not? He may have been on the ground although the witness did not see him.
131. Campbell does not swear whether he was there or not? No, certainly not.
132. But the inference from the summary of the Board is that he never was there, is that fair? I think it is. He says that he did not see the man, but he does not say that he was not on the ground.
133. He may have been there? Yes.
134. And it is possible that he was there at the time Taylor was there, without Taylor seeing him? Yes.
135. The improvements apparently were substantial? Yes, fairly substantial.
136. Taylor says, there were considerable improvements upon the land? Yes; I am taking the improvements valued by the Inspector.
137. If you look at page 13 of the papers you will see there a declaration by J. M'Dougall to the effect that he found the selector on the land when he went there? Yes; but these are declarations for the Minister after the inquiry has been held.
138. Had the Board been aware of the selector being able to give this evidence might there have been a different finding? Yes; probably.
139. You will see that J. B. M'Dougall found the selector on the land? But these are all *ex parte* statements, and these people may not bear cross-examination.
140. We are taking it for what it is worth. I can bring evidence to prove that some of them are intelligent men, and knew what they were doing in making their declarations? The reason why I take exception to the

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the consideration of these declarations is that if they are made by men of weight, they would justify a reinquiry

141. You think that if the statements were from men of weight a reinquiry would be justified? Yes; it would show that the inquiry was not properly gone into—not through any neglect on the part of the Board, but on the part of the selector in not bringing all the evidence that he could.

142. You think that if all the evidence had been brought before, there might have been a different decision? There might have been.

143. Mr. Mee found him on the selection when he went there? Yes.

144. You will see that Mr. John Studders, a farmer of Shannon Brook, says that the selector was making the land his home? Yes.

145. Mr. Sylvester Shanley says that the house on the selection had the appearance of being continually occupied, and that when he saw it it was locked up—the man, evidently, being out working? Yes.

146. He said that the general appearance of the place showed that it was the house of a *bonâ fide* selector? Yes.

147. Mr. John Ryan also says that he has seen Benn about his land? Yes.

148. Mr. Petersson says that he has been there on several occasions, and has seen the selector on the land, and he says, "I am satisfied that the selector made it his home?" Yes.

149. In view of that evidence does it not appear to you that the finding of the Board was a little hasty? No, because the Board had no other evidence before them.

150. Do you think that the summary was judicially drawn up? I must refrain from criticising the Board.

151. Do you think that in view of what I have pointed out—the apparent contradictions—that it would not have been better if they had relieved the case of any doubt in view of the complications that I have shown,—would it not have been better if they had made the case a little more explicit? Yes, the evidence might have been taken in more detail.

152. In fact, that it appears from the evidence that there is considerable doubt about the case? Well, these declarations strengthen the case of the selector.

153. Leaving the declarations out for the time, do not you think there is some doubt on the evidence before you? It is difficult to answer that question. He was evidently a man who did not reside continuously, as he was away for weeks.

154. Any man who wanted to find him found him. A cooey would bring him, and did, when Mulhearn visited the place? Yes, in one instance.

155. But those who did not want to find him did not cooey? No; I should say that the squatter's people went to see whether he was on the selection or not. I have no doubt that they did not care whether they found him or not.

156. Allow me to put it this way. You are known to follow a certain line of business; suppose that I was appointed to discover whether you lived at your place of residence, and knowing that you left at 8 o'clock to go to your office and did not return till 6 o'clock at night, if I went seventy or 700 times during the day I should not find you at home? No.

157. Would it be justifiable to swear that it was not your home because you were not found there during the middle of the day? Certainly not; but the cases are not parallel. The selector is within certain prescribed limits.

158. And may he not have been within those prescribed limits? Yes.

159. Was there any attempt to prove that he was not on his land;—has not every witness here, when pressed, said that he was not sure that Benn was not on his land? Any man must give such evidence unless he has gone over every foot of the land.

160. If he wanted to swear definitely whether the man was on the land or not, could a man not have found out whether he was on the land? I do not know. One witness says that he could see all over it, but the plan shows Ti-tree scrub and swamp.

161. Any person who wanted to know whether a man was on that 200 acres could have satisfied himself? Yes.

162. In no instance have they taken the necessary trouble to swear that? No; they have not sworn it.

163. If a man swore that a selector was there, and they could not swear that he was not, should not that view be taken? They did not prove that he lived continuously there.

164. It was obligatory on them after lodging a complaint to prove that the man was not on his ground? Yes; but he did not fulfil the conditions of residence.

165. When they came to give evidence they were not prepared to swear that he was not on the land? The evidence goes to show that he was not at the hut or within a reasonable distance of it.

166. How could he make a living if he was sitting in the hut all day? That is not possible.

167. *Mr. Nicoll.*] Judging from the evidence there is no doubt that you put it down as being unreliable as far as the station employees are concerned? I cannot express an opinion upon the evidence given.

168. Take the evidence all through—if it was your own case would you not reject it? I cannot give an opinion on that; only the Minister can do it.

169. *Mr. Stevenson.*] One witness said, "I will not swear that there were no cooking utensils";—is that not contradictory to the Inspector's report? He merely says he will not swear.

170. Is that not contradictory? I would not say that it was. He did not find that the selector had any of those utensils.

171. Is it not a fact that the evidence is unsatisfactory? I cannot say whether it is or not.

172. Mr. Fanning in his evidence says, "Mr. Donald Campbell is not in the employ of the station now; he is not here to-day; he told me he was afraid to come";—do you not think that very strange evidence for the manager of the station to give? Why should Mr. Campbell be afraid to come? I do not know.

173. Judging from Mr. Fanning's evidence, does it not appear that Mr. Campbell was not a very willing witness in this case? I cannot say at all.

174. Mr. A. G. Taylor, one of the station hands, swore that the improvements were considerable? Yes.

175. He does not know whether the selector did them himself, but that he saw him working there? Yes.

176. Did Alexander Campbell say that he could not say but what the selector slept on the land at night? He could not swear whether the selector slept there or not.

177. Mr. Mulhearn's evidence contradicts the report and evidence of the Inspector in reference to the cooking utensils? Yes, but the dates are different. The Inspector visited the place on the 10th August, 1885, and Mulhearn went there in November, 1885, for the first time. 178.

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178. He said he would not swear that there were no cooking utensils, yet in his report he says that there were not? No; on account of the lapse of time I presume.
179. *Chairman.*] Should he not be able to swear exactly? He should swear to what he sees.
180. Do you consider Mr. Miller's evidence is reliable,—do you consider it satisfactory? No; it is not satisfactory.
181. *Mr. Stevenson.*] Was there never anything said as to the way in which the Chairman of the Board discharged his duties? I am not prepared to give any evidence about him.
182. Is Mr. Blackman still occupying the position that he occupied as Chairman of the Land Board? No.
183. Has he been dismissed from the Service? No.
184. Has he resigned? No.
185. Is he in the employ of the Department? No; I think he is superannuated.
186. *Chairman.*] Was there any inquiry into Mr. Blackman's management of the district? The Board of Inquiry appointed last year by the Government inquired into the working of all the Boards.
187. Do you know whether they found affairs under Mr. Blackman's supervision eminently satisfactory? I cannot say.
188. If they inquired into his work, and subsequently he ceased to do that work, is not there an obvious inference? He is a man of advanced age.
189. He is not 60, so that cannot be the reason why he is gone? I think he is near 60.
190. After the Land Board Inquiry was Mr. Blackman superseded? Another Chairman was sent to Grafton, but he is only an acting chairman.
191. *Mr. McFarlane.*] With the exception of the Inspector those who gave evidence against the selector were directly interested in the forfeiture of the selection? The lessee was interested, and the other witnesses being his employees would naturally be indirectly interested.
192. Do you think that their evidence would be reliable? If they are men of honor it should be.
193. Do you think it would be open to some degree of suspicion? I do not think so. I presume there are honest men in the employ of the squatters as there are in the employ of the selectors.
194. Yes, but in the law courts where a witness is personally interested, his evidence has not so much weight as it would be if he were not interested? Certainly not.
195. The evidence given in support of the selection proving that he had resided? I cannot follow you when you say the evidence proving it.
196. Then we will say the evidence supporting it—there is no evidence to show that either of the selectors' witnesses was interested in any way in the selection? It has been stated one was a butcher and another was a hawker—they might have some interest in keeping him on the selection.
197. There is nothing to show that the witnesses were directly or indirectly interested in the selection? No; not as employer or employees.
198. On the other hand it is admitted that it would have been to the interest of the lessee of the run if the selection had been forfeited? Yes.
199. When you have evidence from persons directly interested on one hand, and evidence from persons who are not at all interested on the other, which would you be prepared to believe? The disinterested evidence would have the greater weight.
200. *Mr. Stevenson.*] Do you think that if the statements made in the declaration had been given in evidence on behalf of the selector it would have made a difference in the decision? They say that selectors very often are so careless that they do not bring forward all the evidence that they can obtain. But if the decision is against them they bring forward statutory declarations, and all kinds of evidence.

Mr. John Perry, M.P., called in, sworn, and examined:—

Mr. J. Perry, M.P. 26 July, 1889.

201. *Chairman.*] Do you know Zachary Benn? I know him to be a reputable man. I do not believe he would perjure himself.
202. Do you know Mulhearn? Yes.
203. Is he known to be a reputable man? Yes.
204. You do not think he would perjure himself? No.
205. Do you know Carlill? Yes, I know him well. I think he is a straightforward man. I do not think he would perjure himself.
206. Do you think J. B. M'Dougall would willingly perjure himself? I am certain that he would not.
207. Are you under the impression that Mr. W. E. Mee would willingly perjure himself? I am certain he would not.
208. Do you think Mr. Sylvester Shanley is a man who would willingly make a false statement? I cannot say that I know him personally, but I have heard of him—he bears a good name in the district.
209. His reputation is that of an honest straightforward man? Yes.

TUESDAY, 30 *JULY*, 1889.

Present:—

MR. EWING, | MR. STEVENSON,
MR. LEES.

THOMAS THOMSON EWING, ESQ., IN THE CHAIR.

Mr. Patrick Hogan, M.P., called in, sworn, and examined:—

Mr. P. Hogan, M.P. 30 July, 1889.

210. *Chairman.*] You are well acquainted with the Richmond District and with its inhabitants? Yes.
211. Do you know Martin Mulhearn, a butcher at Casino? I do.
212. Is he man of good reputation? He is.
213. You do not think he is a sort of man who would perjure himself? I am confident that he would not.
214. Do you know Mr. Carlill? I know him by repute.
215. Do you think that he is a man who would willingly perjure himself? Certainly not.
216. Have you had any business transactions with him? I have not.
217. But you know him to be a man of good repute? There is scarcely a man in the district that I do not know something about. I know every family in the Richmond electorate. 218.

Mr. P. Hogan, M.P.
30 July, 1889.

218. Do you know James Burns, another witness, who gave evidence? I have some knowledge of him similar to my knowledge of the gentleman to whom you last referred.
219. What is the public repute of James Burns? It is unquestionably good.
220. *Chairman.*] You do not think that he would perjure himself? I do not think he would.
221. Do you know J. Mathers? I do.
222. How does he stand? Something similar to the others.
223. Has he a good character? I never heard anything advanced against him.
224. Do you know John O'Connell, of Coraki? Yes; he is a gentleman of good character.
225. Had he been a man of bad character would you have known it? Yes.
226. Have you heard of J. B. M'Dougall, of Casino? Yes.
227. Do you think that he would willingly perjure himself? I should not think so.
228. He is an honest man? Yes; of as good standing as any one in the district.
229. There is Mr. Mee, auctioneer, Casino—do you think he is a man who would purjure himself? I do not.
230. Do you know Mr. Sylvester Shanley? Yes.
231. Is he a man of good repute? Yes; unquestionably.
232. He is not a man who would be willing to perjure himself? He would be the last man in the district that I should even suspect of such a thing.
233. We are holding an inquiry in reference to Mr. Zachary Benn's conditional purchase at Casino—do you know the Benn family? I do. I have known them for a number of years.
234. Are they a respectable family? There is not a more respectable family in New South Wales, nor a family of better colonists.
235. Do you know how the public regard this case? Numbers of the local inhabitants have spoken to me about it. They think that Benn has been unjustly treated with reference to the forfeiture of his land. I have had a good deal to do with the case myself; as I took steps to get undone what was a manifest wrong in the forfeiture of the young man's selection.
236. Do you know Zachary Benn's father? Yes.
237. What is your opinion of him? I do not know a better man in the Colony.
238. You think he would not tell a lie? I am sure he would not.
239. Are the Benn's good colonists? I do not know better colonists in the country. Benn told me that he had twelve or thirteen sons, and he wanted to get them settled on the land.

Sydney: Charles Potter, Government Printer.—1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

REPORT FROM THE SELECT COMMITTEE

ON

SELECTIONS BY JOHN HARRISON, OF LISMORE;

TOGETHER WITH THE

PROCEEDINGS OF THE COMMITTEE.

ORDERED BY THE LEGISLATIVE ASSEMBLY TO BE PRINTED,

23 *July*, 1889.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1889.

[3*d*.] 489—

1889.

EXTRACTS FROM THE VOTES AND PROCEEDINGS OF THE LEGISLATIVE ASSEMBLY.

VOTES No. 62. FRIDAY, 19 JULY, 1889.

5. SELECTIONS BY JOHN HARRISON, OF LISMORE:—Mr. Ewing moved, pursuant to Notice,—
(1.) That a Select Committee be appointed, with power to send for persons and papers, to inquire into and report upon the selections made by John Harrison, in Lismore district, declared forfeited.
(2.) That such Committee consist of Mr. Brunker, Mr. McFarlane, Mr. Stevenson, Mr. Frank Farnell, Mr. Garland, Mr. Lees, Mr. Perry, Mr. McCourt, and the Mover.
(3.) That the Report from the Select Committee of Session 1888–9 be referred to such Committee.
Question put and passed.

VOTES No. 63. TUESDAY, 23 JULY, 1889.

6. SELECTIONS BY JOHN HARRISON, OF LISMORE:—Mr. Ewing, as Chairman, brought up the Report from, and laid upon the Table the Minutes of Proceedings of, the Select Committee for whose consideration and report this subject was referred on 19th July, 1889.
Ordered to be printed.

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1889.

SELECTIONS BY JOHN HARRISON, OF LISMORE.

REPORT.

THE SELECT COMMITTEE of the Legislative Assembly, appointed on the 19th July, 1889,—"*with power to send for persons and papers, to inquire into and report upon the selections made by John Harrison, in Lismore district, declared forfeited,*" and to whom was referred on the same day "*the Report from the Select Committee of Session* 1888–9 *in reference to the said case,*"—have agreed to the following Report:—

Your Committee having carefully considered the Report referred to them, find as follows:—

That John Harrison acquired the following conditional purchases in the parish of Bungabbee, county of Rouse and district of Lismore, viz.:—74/2,138, 77/11, 81/92, 81/107, 81/128, 81/297, and 81/319, of 40 acres each; also 81/440 of 125¾ acres, and 82/136 of 234¼ acres.

That his conditional purchases Nos. 81/107, 81/128, 81/319, and 81/440 were recommended for forfeiture by Mr. Secretary Garrett, which action would also forfeit No. 82/136 on account of separation.

That, on examination of the papers and the evidence, your Committee is of opinion that the conditional purchases of John Harrison should not have been declared forfeited, and they recommend his case to the favourable consideration of your Honorable House.

THOS. EWING,
Chairman.

No. 2 *Committee Room,*
Sydney, 23rd July, 1889.

PROCEEDINGS OF THE COMMITTEE.

TUESDAY, 23 *JULY*, 1889.

MEMBERS PRESENT :—

Mr. Ewing, | Mr. Perry,
Mr. Stevenson.

Mr. Ewing called to the Chair.

Entry from Votes and Proceedings appointing the Committee, and referring the Report from Select Committee of Session 1888–9, *read* by the Clerk.

Printed copies of the Report referred, before the Committee.

Committee deliberated.

Motion made (*Mr. Stevenson*), and question,—"That the Report from the former Committee, and dated 16th January, 1889, be the Report of this Committee,"—put and passed.

Chairman to report to the House.

Sydney : Charles Potter, Government Printer.—1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CROWN LANDS BILL.

(PETITION FROM JAMES McLAURIN, CHAIRMAN OF MEETING HELD AT GERMANTON.)

Received by the Legislative Assembly, 14 *June*, 1889.

The Honorable the Members of the Legislative Assembly in Parliament assembled.

The Petition of the Pastoral Lessees in the Hume Electorate, Eastern Division,—

RESPECTFULLY SHOWETH:—

That the Minister for Lands for the time being, in accordance with section 78, subsection 4, of the Crown Lands Act of 1884, notified in the *Gazette*, and to lessees that the five years' extension provided for in that clause should not be given to pastoral leaseholders in the Eastern Division, while leaseholders in the Central have five years, and those in the Western ten years longer than the Eastern.

That no provision is made in the Amending Land Act now before your Honorable House for an extension of pastoral leases in the Eastern Division, leaseholders thereby suffering an injustice which is not intended to those in the other divisions.

That the land in the Eastern is inferior in quality to that in the Central Division, and your Petitioners respectfully pray your Honorable House to make provision in the Amending Bill now occupying your attention for a renewal of the pastoral leases in the Eastern Division equal to those given to holders in the Central Division.

And your Petitioners, as in duty bound, will ever pray, &c., &c.

Signed on behalf of a public meeting held at Germanton this day,—

JAMES McLAURIN,
Chairman.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CROWN LANDS BILL.

(PETITION FROM RESIDENTS OF TOWN AND DISTRICT OF ALBURY IN OPPOSITION TO EXTENSION OF PASTORAL LEASES IN CENTRAL DIVISION.)

Received by the Legislative Assembly, 16 *July*, 1889.

To the Honorable the Speaker and Members of the Legislative Assembly of New South Wales, in Parliament assembled.

This Memorial of residents of the town and district of Albury in public meeting assembled,—

RESPECTFULLY SHOWETH:—

That your Memorialists have heard with surprise and alarm that it is proposed to grant an extension of pastoral leases in the Central Division.

That whilst anxious to render justice to all classes of the community, your Memorialists feel bound to protest against so serious an alteration of the Land Law.

That there are thousands of persons waiting to get on the lands of the Colony, and that if the proposed amendment be carried they will be debarred from settling on the land for eleven years.

That before the passing of the 1884 Land Act the lessees expressed their willingness to pay an increased rent in consideration of their receiving security of tenure, and that almost immediately afterwards they commenced an agitation for compensation for improvements.

That, in your Memorialists' opinion, the principle of compensation for improvements, though right in the abstract, should not be adopted in this instance, because the rental paid by lessees in the Central Division being much less than the true value they have been compensated already, and it would be impolitic and unjust to the rest of the community to allow any further concession.

That your Memorialists are quite satisfied with the mode of dealing with improvements proposed in the original Draft Bill.

That it would not be wise to make so radical a change in an important principle of the measure without first giving the country an opportunity of expressing an opinion on the question.

Your Memorialists therefore respectfully pray that, taking the foregoing facts into consideration, and having regard to the extreme demand for land for purposes of settlement, your Honorable House will be pleased to restore to the Bill the original clause in lieu of the amendment now proposed.

And your Memorialists, as in duty bound, will ever pray, &c.

Signed by direction and on behalf of a public meeting held at Council Chambers, Albury, this 15th July, 1889.

G. ARTHUR THOMPSON,
Mayor of Albury.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

INSTALMENTS DUE BY CONDITIONAL PURCHASERS.

(PETITION FROM CERTAIN FREE SELECTORS OF INVERELL.)

Received by the Legislative Assembly, 28 *February*, 1889.

To the Honorable the Minister for Lands, Sydney.

The Petition of the undersigned free selectors of the district of Inverell,—

RESPECTFULLY SHOWETH:—

1. That your Petitioners are *bona-fide* selectors in this district.

2. That in consequence of the protracted and disastrous drought with which this district has been visited, your Petitioners have been unable to get any returns whatever for the labor and capital expended on their lands, the whole crops of the district having entirely failed, and most of your Petitioners' stock having died.

3. That in consequence of the foregoing facts your Petitioners are reduced to a state of actual poverty, and are quite unable to pay the annual instalments and interest on their respective selections falling due in March next.

Your Petitioners therefore respectfully pray that the foregoing facts, and the great hardships under which your Petitioners are labouring, may be taken into your most favourable consideration, and that you will cause a Bill to be at once introduced into Parliament for the purpose of either remitting or postponing the payment of the said instalments and interest.

[*Here follow* 235 *signatures.*]

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

INSTALMENTS DUE BY CONDITIONAL PURCHASERS.

(PETITION FROM ALEXANDER RODGERS, CHAIRMAN OF MEETING HELD AT ATTUNGA.)

Ordered by the Legislative Assembly to be printed, 11 *April*, 1889.

To the Honorable the Speaker and Members of the Legislative Assembly of New South Wales, in Parliament assembled.

The humble Petition of the Farmers and Land-owners in and around Attunga, near Tamworth, in the Colony of New South Wales,—

RESPECTFULLY SHOWETH :—

1. That your Petitioners are Farmers in the district of Tamworth, and are holders of conditional purchases on which one year's interest is now due. Your Petitioners would beg to state to your Honorable House that the year 1888 gave the smallest rainfall of any year within the memory of the oldest inhabitant of this district.

2. In many cases your Petitioners have not had any wheat crops, and only a few of them had very light crops, hence your Petitioners have had no income from their land during the past year.

3. Your Petitioners desire that assistance should be given to the distressed farmers, and humbly pray that a quantity of wheat be granted to the people of this district needing the same.

4. That your Petitioners are unable to pay the interest now due on their land, and would humbly ask your Honorable House to relieve them from such payment during the present year in such manner as your Honorable House may see fit to arrange.

Your Petitioners humbly pray that your Honorable House will take their Petition into your favourable consideration.

And your Petitioners, as in duty bound, will ever pray.

ALEX. RODGERS,
Chairman of meeting held at Attunga, on the 20th day of March, A.D. 1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

THE LAND LAW.

PETITION FROM CERTAIN CROWN LESSEES, CONDITIONAL PURCHASERS, MERCHANTS, AND OTHERS RECOMMENDING ALTERATIONS IN LAND ACT.)

Received by the Legislative Assembly, 17 *April*, 1889.

To the Honorable the Speaker and Members of the Legislative Assembly of New South Wales, in Parliament Assembled.

The humble Petition of the undersigned Crown lessees, conditional purchasers, merchants, and others interested in the question of land legislation for the Colony of New South Wales,—

RESPECTFULLY SHOWETH:—

1. That your Petitioners are all greatly affected by, and interested in, the question of land legislation for the said Colony.

2. That your Petitioners beg respectfully to protest against the provisions of the Land Act of 1884, which place absolute power of ultimately determining the rental of all Crown lands in the hands of the Minister for Lands.

3. That the right of appeal should be allowed in all cases of appraised rentals, and such appeals should be heard before a Court entirely independent of political or departmental influence.

4. That the rental of all lands should be fixed by the Board in its discretion, and the minimum rent fixed by the Act should be abolished.

5. That in all cases of improvements approved of by the Local Board, and which tend to the better development of the land, compensation for the then value shall be paid by the incoming to the outgoing holder, provided such improvements are of a permanent nature, and such compensation shall not exceed 2s. 6d. per acre on all acreage to be in proportion to the area of the holding.

6. That provision should be made whereby adjoining holders may enclose two or more holdings with one ring fence, and in such cases improvements to the required amount, other than dwelling houses, be substituted for the internal fencing.

Your Petitioners therefore humbly pray that your Honorable House will favourably consider the matters in the foregoing Petition, and make such amendments in the Land Act as will give the relief which your Petitioners seek.

And your Petitioners will ever pray, &c.

[*Here follow* 265 *signatures.*]

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CROWN LANDS AMENDMENT AND SUPPLEMENTARY BILL.

(MESSAGE No. 13.)

Ordered by the Legislative Assembly to be printed, 10 *April*, 1889.

CARRINGTON,
Governor.

Message No. 13.

In accordance with the provisions contained in the 54th section of the Constitution Act, the Governor recommends, for the consideration of the Legislative Assembly, the expediency of making provision to meet the requisite expenses in connection with a Bill to amend the Land Act of 1884, and to make provision in other respects for the management and disposal of the public lands, and for other purposes.

Government House,
Sydney, 4th April, 1889.

1889.

NEW SOUTH WALES.

CROWN LANDS ACT OF 1884.

(NOTIFICATION OF AMENDMENT OF NO. 11 OF THE TIMBER, STATE FOREST, AND QUARRY REGULATIONS.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

AMENDMENT OF REGULATION No. 11, UNDER THE TIMBER, STATE FOREST, AND QUARRY REGULATIONS OF 18TH AUGUST, 1885.

Department of Lands, Sydney, 8th March, 1889.

HIS Excellency the Governor, with the advice of the Executive Council, has been pleased to approve of the following amendment in the Timber, State Forest, and Quarry Regulations of the 18th August, 1885, viz. :—The substitution of the word "Lands" for "Mines" in Regulation No. 11.

[Ml. 89–2,065]

WILLIAM JOHN LYNE.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(ALTERATIONS OF DESIGNS OF CITIES, TOWNS, AND VILLAGES, UNDER THE 107TH SECTION OF THE ACT, 48 VIC. NO. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Alterations of Designs of Cities, Towns, and Villages, under the 107th section of the Act 48 Victoria No. 18.

Town or Village.	*Government Gazette* in which alteration is notified.
Gunnedah (Town)	19 January, 1889, page 578.
Bathurst (City)	9 February, 1889, page 1165.
Colinton (Village)	,, ,,
Rylstone (Village and Suburban Lands)	,, ,,
Booroorban (Suburban Lands)	16 ,, page 1317.
Heathcote (Suburban Lands)	,, ,,
Moonbi (Town and Suburban Lands)	2 March, 1889, page 1747.
Huon (Village and Suburban Lands)	23 ,, page 2300.
Balranald (Town)	30 ,, page 2469.
Rockley (Town)	,, ,,

1889.

NEW SOUTH WALES.

CROWN LANDS.

ALTERATIONS OF DESIGNS OF CITIES, TOWNS, AND VILLAGES, UNDER THE ACT, 48 VIC. NO. 18.

Presented to Parliament, pursuant to Act, 48 Vic. No. 18.

ABSTRACT of Alterations of Designs of Cities, Towns, and Villages, under the 107th section of the Act, 48 Victoria No. 18.

Town or Village.	*Government Gazette* in which alteration is notified.
Maude (Suburban Lands)	18 April, 1889, page 3060.
Currabubula (Town)	4 May, 1889, page 3310.

1889.

NEW. SOUTH WALES.

CROWN LANDS.

(ALTERATIONS OF DESIGNS OF CITIES, TOWNS, AND VILLAGES, UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Alterations of Designs of Cities, Towns, and Villages, under the 107th section of the Act 48 Victoria No. 18.

Town or Village.	*Government Gazette* in which alteration is notified.
Walbundry (Village)	1 June, 1889, page 3881.

[3d.] 331—

1889.

NEW SOUTH WALES.

CROWN LANDS.

(ALTERATIONS OF DESIGNS OF CITIES, TOWNS, AND VILLAGES, UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act, 48 Vic. No. 18.

ABSTRACT of Alterations of Designs of Cities, Towns, and Villages, under the 107th section of the Act 48 Victoria No. 18.

Town or Village.	*Government Gazette* in which alteration is notified.
Musclebrook (Town and Suburbs)	22 June, 1889, page 4404.
Tamworth (Town)	29 June, 1889, page 4512.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(ALTERATIONS OF DESIGNS OF CITIES, TOWNS, AND VILLAGES, UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act, 48 Vic. No. 18.

ABSTRACT of Alterations of Designs of Cities, Towns, and Villages, under the 107th section of the Act, 48 Victoria No. 18.

Town or Village.	*Government Gazette* in which alteration is notified.
Parkes (Town)	13 July, 1889, page 4840.
Wollar (Village)	20 July, 1889, page 4987.
Murrumburrah (Village and Suburbs)	27 July, 1889, page 5156.
Hay (Town)	27 July, 1889, page 5157.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(ALTERATIONS OF DESIGNS OF CITIES, TOWNS, AND VILLAGES, UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Alterations of Designs of Cities, Towns, and Villages, under the 107th section of the Act 48 Victoria No. 18.

Town or Village.	*Government Gazette* in which alteration is notified.
Oberon (Village).....	10 August, 1889, page 5422.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(ALTERATIONS OF DESIGNS OF CITIES, TOWNS, AND VILLAGES, UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Alterations of Designs of Cities, Towns, and Villages, under the 107th section of the Act 48 Victoria No. 18.

Town or Village.	*Government Gazette* in which alteration is notified.
Wellington (Town)	14 September, 1889, page 6454.

[3*d*.] 674—

1889.

NEW SOUTH WALES.

CROWN LANDS.

(AUTHORIZED TO BE DEDICATED TO PUBLIC PURPOSES, UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Crown Lands authorized to be dedicated to Public Purposes, in accordance with the 104th section of the Act 48 Victoria No. 18.

Place.	County.	Portion.	Allotment.	Section.	Locality.	Area.	To what purpose dedicated.	No. of Papers.	Catalogue No. of Plan
						a. r. p.		Misc.	
Barbingal	Bland	29	.....	.....	Parish of Barbingal	2 0 0	Public School Site	88-11115	B. 1991-1946
Deepwater	Gough	....	.....	Part of 13	Village of Deepwater	2 0 21	Public School Site	88-12347	D. 7-1824.
Hollybrook	Roxburgh	126	.....	.....	Parish of Jesse	2 0 0	Public School Site	88-12317	R. 2180-1496.
Newcastle	Northumberland	....	.....	.....	City of Newcastle	1 0 5	Public Recreation	88-15053	Ms. 69 Md.
Newcastle	Northumberland	....	.....	.....	City of Newcastle	0 1 39	Public Recreation	88-15053	N. 67-2071.
Newcastle	Northumberland	....	.....	.....	City of Newcastle	1 2 21	Public Recreation	88-15053	Ms. 96 Md.
Newcastle	Northumberland	....	.....	.....	City of Newcastle	3 0 35	Public Recreation	88-15053	Ms. 96 Md.
Ponto	Lincoln	....	.....	.....	Village of Ponto	12 1 38	General Cemetary	88-8282	Ms. 26 D. O.
Thornhurst	Murray	156	.....	.....	Parish of Majura	2 0 0	Public School Site	88-12751	M. 4075-1956.
Turkey Creek	Hardinge	13	.....	.....	Parish of Honeysuckle	2 0 0	Public School Site	88-15073	H. 2331-1762.
Whites Point	Beresford	8	.....	.....	Parish of Rivers	2 0 0	Public School Site	88-13649	B. 2613-1765.
Willyama	Yancowinna	....	.....	.....	Suburbs of Willyama	22 0 0	Site for Hospital	88-15479	Y. 198-2186.
Wollombi	Northumberland	....	.....	Part of 17	Town of Wollombi	3 3 0	Public Recreation	88-16192	W. 40-996.
Bourke	Cowper	....	.....	.....	Parish of Bourke	3 3 17	Public Park	89-123	C. 348-1822.
Chiswick (Five Dock Bay).	Cumberland	....	.....	.....	Parish of Concord	0 0 20	Wharfage	88-16144	C. 507-2030.
Deep Lead	Ashburnham	50	.....	.....	Parish of Currajong	2 0 0	Public School Site	88-9786	A. 4440-1770.
Euabalong	Blaxland	....	1, 2, 3, 4, 5	1	Village of Euabalong	2 2 0	Public School Site	88-14411	E. 2-2129 Roll.
Goulburn	Argyle	....	.....	.....	City of Goulburn	4 2 12	Extension to Hospital Site.	88-16214	G. 96 & 97-834.
Mount Costigan.	Georgiana	....	1	11	Village of Mt. Costigan.	2 0 0	Public School Site	88-14873	Mt. Costigan 1.
Murga	Ashburnham	51	.....	.....	Parish of Nangar	2 0 0	Public School Site	88-12305	A. 4962-1770.
Murrumburrah	Harden	....	.....	5	Town of Murrumburrah	8 0 0	Show Ground for the use of the Murrumburrah Pastoral Agricultural and Industrial Association.	88-15578	M. 1-1657.
Narrandera	Cooper	....	.....	Part of 64	Town of Narrandera	2 3 8	Extension to Hospital Site.	88-16799	N. 16-1712 R.
Tarlo Gap	Argyle	116	.....	.....	Parish of Narrangarril	2 0 0	Public School Site	88-15252	A. 2260-2121.
Thubergal Lake.	Beresford	76	.....	.....	Parish of Dangelong	2 0 0	Public School Site	88-15253	B. 2617-1765.
Bathurst	Bathurst	....	8	104	City of Bathurst	4 0 13	Site for Gasworks	88-9436	B. 160-824.
Bathurst	Bathurst	....	.....	.....	City of Bathurst	2 2 0	Public Recreation	88-9436	B. 156-824.
Bingara	Murchison	....	.....	33	Town of Bingara	7 1 2	Site for Hospital	89-3191	B. 28-1470.
Collarindabri	Finch	....	3	5	Town of Collarindabri	0 1 0	Site for School of Arts	89-4404	C. 6-1971.
Curban	Ewenmar	39	.....	.....	Parish of Buramilong	2 0 0	Public School Site	88-16524	E. 1133-1890.
Euriowie	Farnell	....	.....	.....	Town of Euriowie	2 0 0	Public School Site	88-8090	Euriowe 2.
Germanton	Goulburn	207	.....	.....	Parish of Germanton	5 0 0	Addition to Show Ground for the use of the Germanton Pastoral and Agricultural Society.	89-3634	G. 2697-1475.
Musclebrook	Durham	19	.....	.....	Town of Musclebrook	3 3 25	Site for Cattle Sale Yards (Addition to).	89-430	D. 2873-2083.
Temora	Bland	....	.....	.....	Town of Temora	0 0 19	Public School Site (Extension to).	88-14882	T. 5-2244 R.
Tharwa	Cowley	....	.....	.....	Parish of Tharwa	5 0 38	General Cemetary	88-16532	Ms. 88 Ca.
UpperChichester River.	Gloucester	....	.....	.....	Parish of Tillegra	13 0 0	General Cemetary	89-3153	Ms. 121 Md.
Yanko Upper	Urana	168	.....	.....	Parish of Colombo	2 0 0	Public School Site	89-427	U. 2348-1881.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(AUTHORIZED TO BE DEDICATED TO PUBLIC PURPOSES, UNDER THE ACT, 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act, 48 Vic. No. 18.

ABSTRACT of Crown Lands authorized to be dedicated to Public Purposes, in accordance with the 104th section of the Act, 48 Victoria No. 18.

Place.	County.	Portion.	Allotment.	Section.	Locality.	Area.	To what purpose dedicated.	No. of Papers.	Catalogue No. of Plan
						a. r. p.		Misc.	
Boambolo	Murray.....	246	.....	.....	Parish of Boambolo	2 0 0	Public School Site	89-5670	M. 4344-1956
Broula	Forbes	108	.....	.....	do Broula	2 0 0	do	88-14872	F. 2558-1787
Bullawa Creek..	Nandewar	29	.....	.....	do Bullawa.....	2 0 0	do	15246	N. 974-1774
Clive	Clive.....	....	1	7	Village of Clive	2 0 28	do	89- 1964	C 1. 2475 R.
Coolamon	Bourke.....	....	.....	.....	Parish of Kindra	17 3 6	General Cemetery.....	4720	Ms. 76 Wga.
Deep Creek	Richmond	100	.....	.....	do Wooroowoolgan	2 0 0	Public School Site	422	R. 1169-1744
Green Hill.....	Dudley.....	147	.....	.....	do Yarravel	2 0 0	do	3969	D. 1151-1505
Hall's Creek	Darling	67	.....	.....	do Fleming	2 0 0	do	2754	D. 1571-1808
Hawarden	Darling	130	.....	.....	do Dowe	2 0 0	do	47	D. 1648-1808
Helensburg	Cumberland ..	136	.....	.....	do Heathcote....	2 0 0	do	397	C. 1175-2030
Kadina	Kennedy	28	.....	.....	do Kadina	2 0 0	do	102	K. 482-2004
Ten-mile Ridges	Kennedy	18	.....	.....	do Burrill	2 0 0	do	103	K. 481-2004
Wattleville	Bathurst	272	.....	.....	do Neville	2 0 0	do	2516	B. 3215-2009
Wellington	Wellington	....	3	55	Town of Wellington ..	1 0 33	Site for Gas-works	5228	W. 54-1281
Yellow Water Hole	Cadell	51	.....	.....	Parish of Bama	2 0 0	Public School Site	1340	C. 549-1817

1889.

NEW SOUTH WALES.

CROWN LANDS.

(AUTHORIZED TO BE DEDICATED TO PUBLIC PURPOSES UNDER THE ACT, 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act, 48 Vic. No. 18.

ABSTRACT of Crown Lands authorized to be dedicated to Public Purposes, in accordance with the 104th section of the Act, 48 Victoria No. 18.

Place.	County.	Portion.	Allotment.	Section.	Locality.	Area.	To what purpose dedicated.	No. of Papers.	Cat No. of Plan.
						a. r. p.		Misc.	
Awaba	Northumberland.	....	.....	....	Parish of Coorumbung.	2 0 0	Public School Site	88-16805	Ms. 141 Md.
Ellerslie	Wynyard	146	.....	....	Parish of Ellerslie.....	2 0 0	Public School Site	88-11238	W. 3406-2119 Wga.
Gunnedah	Pottinger....	....	6, 7, 8, 9	55	Town of Gunnedah	4 0 0	Hospital Site. (Extension to)	89-1870	G 17-1619 Roll.
Michie's Plains..	Ashburnham	76	.....	....	Parish of Bocobidgle ..	2 0 0	Public School Site	89-2585	A. 4507-1770.
Nambucca.. ...	Raleigh	....	2	4	Village of Nambucca ..	0 1 0	School of Arts Site	89-2802	N. 5,2194.
Rous	Rous.....	....	1 to 7 incl.	....	Parish of Tuckombil ..	9 1 19	General Cemetery.....	89-3662	Ms 89. Gfn.
Singleton	Northumberland.	....	.....	....	Parish of Whittingham	28 0 29	General Cemetery.....	89-6154	Ms. 56 Md.
Tubbul	Bland	134	.....	....	Parish of Tubbul	2 0 0	Public School Site	89-1690	B. 2415 1946.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(AUTHORIZED TO BE DEDICATED TO PUBLIC PURPOSES UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Crown Lands authorized to be dedicated to Public Purposes, in accordance with the 104th section of the Act 48 Victoria No. 18.

Place.	County.	Portion.	Allotment	Section.	Locality.	Area. a	r.	p	To what purpose dedicated.	No. of Papers.	Cat No. of Plan.
Bimbi	Bland				Parish of Bimbi	10	0	0	General Cemetery	Misc 89-5008	Ms. 48 Fs.
Booligal	Nicholson				Parish of Yandumblin	8	1	8	General Cemetery	89-5004	C 345-1984
Buccarumbi	Gresham	49			Parish of Buccarumbi	2	0	0	Public School Site	89-3241	G. 247-1782
Buggil	Leichhardt	62			Parish of Tahrone	2	0	0	Public School Site	89-4503	L. 1679-1902
Bulli	Camden				Parish of Wonona	8	0	3	General Cemetery	89-5354	Ms. 138 Sy.
Bungarby	Wellesley	155			Parish of Bungarby	2	0	0	Public School Site	89-2587	W. 3882-1584
Calafat	Wynyard	245			Parish of Calafat	2	0	0	Public School Site	89-4349	W. 3421-2119
Dondingalong	Dudley	33			Parish of Wittabun	2	0	0	Public School Site	89-624	D. 1150-1505.
East Maitland	Northumberland		16	40	Town of East Maitland	1	1	21¾	Public Recreation	89-2946	M 90-790.
East Maitland	Northumberland		14	26	Town of East Maitland	2	3	23	Public Recreation	89-2946	M. 91-790.
East Maitland	Northumberland		14	40	Town of East Maitland	3	0	22¾	Public Recreation	89-2946	M. 90-790
Lavadia	Clarence	100			Parish of Maryvale	2	0	0	Public School Site	89-1569	C 1571-1577.
Mandolong	Northumberland				Parish of Mandolong	13	0	18	General Cemetery	89-2864	Ms. 202 Sy.
Nowley	Jamison	26			Parish of Yarranbar	2	0	0	Public School Site	89-1979	J. 988-1968.
Parramatta	Cumberland				Parish of Field of Mars	122	2	27	Hospital for the Insane	89-5781	Ms. 200 Sy.
Silverton	Yancowinna		15	10	Town of Silverton	0	0	30	Town Hall Site	89-6081	S. 16-2298.
Stony Batter	Auckland	226			Parish of Yuglamah	2	0	0	Public School Site	89-1113	A. 2404-2098.
Tomerong	St. Vincent				Parish of Wandrawandian	9	2	0	General Cemetery	89-71	Ms. 88 Sy
Woodfield	Murray	169			Parish of Goorooyarroo	2	0	0	Public School Site	89-3246	M. 4118-1956.
Yango Creek	Northumberland	88			Parish of Blaxland	2	0	0	Public School Site	89-5284	N. 1687-2111.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(AUTHORIZED TO BE DEDICATED TO PUBLIC PURPOSES, UNDER THE ACT, 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act, 48 Vic. No. 18.

ABSTRACT of Crown Lands authorized to be dedicated to Public Purposes, in accordance with the 104th section of the Act, 48 Victoria No. 18.

Place.	County.	Portion.	Allotment.	Section.	Locality.	Area.	To what purpose dedicated.	No. of Papers.	Catalogue No. of Plan.
						a. r. p.		Ms.	
Burbong	Murray.....	....	.....	.....	Village of Burbong	6 2 35	General Cemetery	88-16622	Burbong 1
Do	do	....	.....	Part of 11	do	1 0 0	Public School Site.....	16622	Burbong 1
Cobar	Robinson	....	.....	13	Town of Cobar	6 3 6	Extension to Hospital Site.	89- 8274	C. 6-2133
Drake	Drake	....	.....	.....	Parish of West Fairfield	0 2 21	Site for School of Arts..	6096	D. 617-1743
Maclean	Clarence	....	.....	.....	Town of Maclean	7 2 0	Public Recreation	7735	M. 12-1840
Do	do	....	.....	.....	do	9 1 0	do	7735	M. 12-1840
Tongbong	Phillip	96	.....	.....	Parish of Tongbong...	2 0 0	Public School Site.....	5874	P. 1593-2125
Tumut	Wynyard.....	....	.....	.....	Parish of Tumut	0 1 21	Extension to General Cemetery.	6576	Ms. 82

1889.

NEW SOUTH WALES.

CROWN LANDS.

(AUTHORIZED TO BE DEDICATED TO PUBLIC PURPOSES, UNDER THE ACT, 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act, 48 Vic. No. 18.

ABSTRACT of Crown Lands authorized to be dedicated to Public Purposes, in accordance with the 104th section of the Act, 48 Victoria No. 18.

Place.	County.	Portion.	Allotment	Section.	Locality.	Area.	To what purpose dedicated.	No. of Papers.	Catalogue No. of Plan.
						a. r. p.			
Clifton	Cumberland .	....	.....	.....	Parish of Southend	4 1 18	General Cemetery	Misc. 89-9,753	Ms. 175 Sy.
Glenbrook	Cook	....	.....	.....	Parish of Strathdon	111 0 0	Public Recreation	89-7,196	Ms. 188 Sy.
Do	do	....	.....	.....	do	77 3 0	Public Recreation	89-7,196	Ms. 190 Sy.
Raglan	Roxburgh	....	11, 12, 13, and 14.	3	Village of Raglan	1 3 12½	Public School Site.....	89-7,225	R. 13-1,595
Shellharbour ..	Camden	....	.....	.....	Town of Shellharbour ..	30 0 0	Public Recreation	89-7,924	
Tamworth	Inglis	....	.....	.....	Town of Tamworth	8 1 0	Public Recreation	89-8,618	Ms. 85 Th.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(AUTHORIZED) TO BE DEDICATED TO PUBLIC PURPOSES UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Crown Lands authorized to be dedicated to Public Purposes, in accordance with the 104th section of the Act 48 Victoria No. 18.

Place.	County.	Portion.	Allotment.	Section.	Locality.	Area.	To what purpose dedicated.	No. of Papers.	Cat. No. of Plan.
						a. r. p.			
Boorowa	Harden	...	.....	42	Town of Boorowa..	18 1 10	Show-ground for the use of the Boorowa Pastoral, Agricultural, and Horticultural Association.	89–10445	B. 15–1461
Captain's Flat	Murray	...	.....	...	Parish of Ballallaba	5 1 27	General cemetery...	89- 1988	Ms. 91 Ca.
Eurobodalla..	Dampier ...	171	.. ...	...	Parish of Eurobodalla.	0 2 5	Public school site—addition to.	89- 5988	D. 2193–1618
Forbes	Ashburnham	...	.....	...	Parish of Forbes ...	10 0 29¼	General cemetery—addition to.	89–10291	Ms. 16 Fs.
Louth	Yanda	...	.....	...	Parish of Yandagulla	10 2 0	General cemetery...	89- 8795	Ms. 146 Be.
Ringwood ...	Camden.....	11	.....	...	Parish of Meryla ...	2 0 0	Public school site...	89- 5987	C. 2003–2041
Stony Pinch..	Murray	44	.....	...	Parish of Yanununbeyan.	2 0 0	Public school site ..	89- 8782	M. 4161–1956
Warialda.....	Burnett.....	...	.....	...	Parish of Warialda..	134 3 39	Public recreation ...	89- 7917	B. 1–2334

1889.

NEW SOUTH WALES.

CROWN LANDS.

(AUTHORIZED TO BE DEDICATED TO PUBLIC PURPOSES UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Crown Lands authorized to be dedicated to Public Purposes, in accordance with the 104th section of the Act 48 Victoria No. 18.

Place.	County.	Portion	Allotment	Section	Locality.	Area.	To what purpose dedicated.	No. of Papers	Cat No. of Plan.
						a. r p		Misc	
Broken Hill (N) (Willyama)	Yancowinna .	38	..	..	Parish of Picton ..	3 0 0	Public School Site	89-11,887	Y. 328-2,186
Canterbury	Cumberland			.	Parish of Petersham	0 1 18	Site for Public Baths .	89-4,819	Par of Ptsm
Eaglehawk	Yancowinna	9	. .....	.	Parish of Cathcart	4 0 0	Public School Site	89-10,172	Y. 307-2,186
Gobbagumbahn.	Bourke	100	.....	.	Parish of Warren .	2 0 0	Public School Site	89-7,198	B 1,958-1,806
Gooseberry Ild...	Camden		.		Parish of Wollongong	15 0 0	Public Recreation	89-8,142	Ms 235 Sy
Hooka Island	Camden		.	.	Parish of Wollongong	5 1 0	Public Recreation	89-8,142	Ms 235 Sy.
Molarben	Phillip	152	.		Parish of Moolarben .	2 0 0	Public School Site	89-12,631	P. 1,597-2,125
Temora . . .	Bland ..	.	.	.	Town of Temora ..	0 1 0	Site for School of Arts	89-10,725	
Tomerong . .	St. Vincent	.. .	...	..	Parish of Wandrawandian.	10 0 0	General Cemetery ...	89-11,864	Ms. 255 Sy

1888.

NEW SOUTH WALES.

CROWN LANDS.

(PROPOSED DEDICATION OF CERTAIN LANDS, UNDER THE ACT 48 VICTORIA No. 18, SEC. 105.)

Presented to Parliament pursuant to Act 18 Vic. No. 18.

Department of Lands,
Sydney, 9th April, 1889.

PROPOSED RESUMPTION OF SITE FOR MARKETS AND SITE FOR MARKET-PLACE OR SQUARE AT EAST MAITLAND.

It is hereby notified for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to resume the site for markets, area 6 acres 2 roods 27¾ perches, and the site for market-place or square, area 3 acres 2 roods 2 perches, in the town of East Maitland hereunder described, with a view to portions thereof being set apart for public recreation and water supply.

[Ms. 89-2,946] JAMES N. BRUNKER.

Description.

Site for Markets.

6 acres 2 roods 27¾ perches. County of Northumberland, parish of Maitland, town of East Maitland, being part of section 40: Commencing at the intersection of the south-west side of Newcastle-street with the south-eastern side of Victoria-street; and bounded thence on the north-west by part of the south-eastern side of the last-mentioned street bearing south 44 degrees 22 minutes west 14 chains 12½ links; on the south-west by part of the north-eastern side of Rous-street bearing south 44 degrees 46 minutes east 4 chains 73 links; on the south-east by a lane 20 feet wide bearing north 44 degrees 20 minutes east 14 chains 14½ links; and on the north-east by the south-west side of Newcastle-street aforesaid, bearing north 45 degrees west 4 chains 70½ links, to the point of commencement.

Site for Market-place or Square.

3 acres 2 roods 2 perches. County of Northumberland, parish of Maitland, town of East Maitland, being part of section 26: Commencing at the intersection of the north-west side of High-street with the north-east side of Lindesay-street; and bounded thence on the south-west by part of the north-east side of the last-mentioned street bearing north 45 degrees west 7 chains 4½ links; on the north-west by the south-eastern boundaries of allotments 4 and 5 bearing north 44 degrees 59 minutes east 4 chains 99½ links; on the north-east by the south-west boundaries of allotments 7, 8, 9, 10, 11, and 12, bearing south 45 degrees east 7 chains 4½ links; and on the south-east by part of the north-west side of High-street aforesaid, bearing south 45 degrees west 4 chains 99½ links, to the point of commencement.

Department of Lands,
Sydney, 9th April, 1889.

PROPOSED RESUMPTION OF SHOW GROUND AT TAMWORTH, AND DEDICATION FOR THE SAME PURPOSE IN LIEU.

It is hereby notified for public information, that, in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the land at Tamworth, area 3 acres, being part of section 43, dedicated on the 14th November, 1879, for Show Ground, and hereunder described, with a view to the dedication in lieu thereof of allotments 11 to 14 of section 44, town of Tamworth, area 1 acre 3 roods 20 perches, also hereunder described, as an addition to Show Ground for the use of the Liverpool Plains Pastoral, Agricultural, and Horticultural Association.

[Ms. 89-3,303] JAMES N. BRUNKER.

Descriptions.

Show Ground Proposed to be Resumed.

County of Inglis, parish of Tamworth, town of Tamworth, 3 acres, part of section 43: Commencing at the western corner of the section; and bounded thence on the north-west by White-street north-easterly 10 chains; on the north-east by Upper-street south-easterly at right angles to White-street 3 chains; on the south-east by a line south-westerly parallel with White-street 10 chains to Carthage-street; and on the south-west by that street north-westerly 3 chains, to the point of commencement,—as shown on plan catalogued T. 41-1,393.

Show Ground Proposed to be Dedicated.

County of Inglis, parish of Tamworth, town of Tamworth, 1 acre 3 roods 20 perches, being allotments 11, 12, 13, and 14 of section 44, town of Tamworth: Commencing at the most eastern corner of allotment 15 of section 44, W. H. Russ' 1 rood 35 perches; and bounded thence on the north-east by part of Upper-street being a line bearing south 48 degrees east 4 chains to White-street; on the south-east by part of White-street, being a line bearing south 42 degrees west 4 chains 70 links to a lane 30 links wide; on the south-west by part of that lane, being a line bearing north 48 degrees west 4 chains to the southern corner of allotment 15 first mentioned; and thence by the south-east side of that allotment bearing north 42 degrees east 4 chains 70 links, to the point of commencement,—as shown on plan catalogued T. 39-1,393 Roll.

Department of Lands,
Sydney, 9th April, 1889.

PROPOSED RESUMPTION OF GENERAL CEMETERY AT WILLYAMA.

IT is hereby notified, for public information, that, in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the General Cemetery at Willyama, area 12 acres 2 roods 28 perches, dedicated on the 3rd August, 1888, and hereunder described, it being intended to dedicate another site in lieu thereof.

[Ms. 88-16,209] JAMES N. BRUNKER.

DESCRIPTION.

County of Yancowinna, parish of Picton, containing an area of 12 acres 2 roods 28 perches: Commencing on the north-east side of a road 1 chain 50 links wide, at a point bearing north 41 degrees 39 minutes west 4 chains 50 links from the western corner of suburban portion 202, town of Willyama; and bounded thence on part of the south-east by a line bearing north 48 degrees 21 minutes east 6 chains to the eastern corner of allotment 7 of 2 acres 1 rood 24 perches, measured for a General Burial Ground; bounded thence on the north-east by a line bearing north 41 degrees 39 minutes west 8 chains 79 links to a point on the southern side of a road 1 chain wide; thence on the north-west by a line bearing south 69 degrees 36 minutes west 8 chains 5 links; thence on part of the south-west by a line bearing south 41 degrees 39 minutes east 1 chain 70½ links to the northern corner of allotment 2 of 3 roods, measured as a burial ground for the Independents; bounded thence by a line forming the north-west boundaries of allotment 2, just mentioned, and allotment 1 of 1 rood, site for Jews' Burial Ground, in all 5 chains; on the remainder of the south-west by a line bearing south 41 degrees 39 minutes east 10 chains to the southern corner of allotment 5 of 2 acres, set apart as a burial ground for the Roman Catholic Denomination; and thence on the remainder of the south-east by a line bearing north 48 degrees 21 minutes east 6 chains 50 links, to the point of commencement,—shown on plan catalogued Willyama 5, District Survey Office, Bourke.

The above is in lieu of the notice in the Government Gazette of the 5th March, 1889.

Department of Lands,
Sydney, 9th April, 1889.

PROPOSED RESUMPTION OF PUBLIC SCHOOL SITE AT RALEIGH EAST, AND DEDICATION FOR THE SAME PURPOSE IN LIEU THEREOF.

IT is hereby notified, for public information, that, in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the Public School Site at Raleigh East, area 2 acres, viz.:—Portion 53, in the parish of North Bellingen, county of Raleigh, dedicated on the 11th July, 1884, and hereunder described, with a view to the dedication of 1 acre in the village of Repton, also hereunder described, as a site for a Public School in lieu thereof.

[Ms. 89-1,461] JAMES N. BRUNKER.

DESCRIPTIONS.

Public School Site proposed to be Resumed.

County of Raleigh, parish of North Bellingen, 2 acres, at Raleigh East, on the Bellinger River. Portion 53: Commencing on the southern side of a road 1 chain wide, at a point bearing south 49 degrees 1 minute east and distant 1 chain 52½ links from the south-western corner of portion 114 of 41 acres, on the left bank of the Bellinger River; and bounded thence on the north by that road dividing it from part of that portion bearing east 4 chains and 82½ links; on the east by a line bearing south 4 chains and 44 links; on the south by a line bearing west 4 chains and 20 links; and on the west by a line bearing north 8 degrees west 4 chains and 48½ links, to the point of commencement. Plan P. 1,153-1,978.

Public School Site proposed to be Dedicated.

County of Raleigh, parish of North Bellingen, village of Repton, area 1 acre: Commencing at the intersection of the eastern side of River-street with the southern side of Caper-street, being also the north-western corner of an allotment 1 of 1 rood; and bounded thence on the west by the eastern side of River-street first mentioned, being a line bearing south and distant 4 chains to the south-western corner of allotment 4 of 1 rood; thence on the south by the south boundary line of that allotment bearing east 2 chains 50 links to the western side of a lane 31 links wide; thence on the east by the western side of that line bearing north 4 chains to the southern side of Caper-street above mentioned; and thence by that side of that street bearing west 2 chains 50 links, to the point of commencement.

The above is in lieu of the notice in the Government Gazette of the 5th March, 1889.

Department of Lands,
Sydney, 9th April, 1889.

PROPOSED RESUMPTION OF PERMANENT COMMON AT TUENA.

IT is hereby notified for public information, that, in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the permanent common at Tuena, dedicated on the 3rd May, 1878, and hereunder described, it being intended to reserve another common in lieu thereof.

[Ms. 89-1,456] JAMES N. BRUNKER.

DESCRIPTION.

County of Georgiana, parish of Yarraman, being the area dedicated 3rd May, 1878, as containing about 640 acres, but by measurement found to contain 382 acres: Commencing on Tuena Creek, at the south-east corner of John G. Richardson's 787 acres; and bounded thence on part of the north by part of the south boundary of that portion bearing westerly 12 chains 86 links to the north-east corner of portion 15 of 30 acres; thence on part of the west by the east boundary of that portion bearing south 20 chains to its south-east corner; again on the north by the south boundary of that portion bearing west 14 chains 95 links to east boundary of John M'Kenzie's portion 14 of 31 acres; again on the west by part of that east boundary bearing south 9 chains 2 links; again on the north by part of the south boundary of that portion bearing west 11 chains 87 links to a point due north from the north-west corner of the Tuena village reserve; thence on the remainder of the west by a line south 53 chains 72 links to that north-west corner; thence on the south by the north boundary of the village reserve aforesaid bearing east 60 chains 97 links to Tuena Creek; and thence on the east by that creek downwards, to the point of commencement.

The above is in lieu of the notice in the Government Gazette of the 5th March, 1889.

Department of Lands,
Sydney, 9th April, 1889.

PROPOSED RESUMPTION OF RACECOURSE AT MOAMA AND RE-DEDICATION OF PART THEREOF FOR THE SAME PURPOSE, AND THE REMAINDER FOR PUBLIC RECREATION.

IT is hereby notified, for public information, that, in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the racecourse at Moama, area 120 acres, dedicated on the 6th December, 1867, and hereunder described, with a view to the re-dedication of 12 acres as a racecourse and the remainder, 108 acres, for public recreation.

[Ms. 89-2,000] JAMES N. BRUNKER.

DESCRIPTIONS.

Racecourse proposed to be Resumed.

CENTRAL DIVISION.

LAND DISTRICT OF DENILIQUIN.

Within the resumed area of Moira Holding No. 619, notified 31st July, 1885.

County of Cadell, parishes of Moama and Tataila, at Moama, 120 acres: Commencing on the northern side of a road 1 chain and 50 links wide, at a point distant 1 chain west and 1 chain 50 links north from the north-western corner of portion 40 of 4 acres 3 roods 14 perches, in the parish of Moama; and bounded thence on the south by that road and a line, in all bearing west 26 chains and 31 links, and thence by a road 1 chain 50 links wide west 37 degrees 6 minutes north 12 chains and 76 links to a road 1 chain wide; on the west by that road dividing it from part of portion 19 of 61 acres, in the parish of Tataila, bearing north 26 chains and 28 links; on the north by a line bearing east 36 chains and 49 links to a road 1 chain wide; and on the east by that road bearing south 33 chains and 98 links, to the point of commencement. Plan C. 72-1,817.

Racecourse proposed to be Dedicated.

Within the resumed area of Moira Holding No. 619, notified 31st July, 1885.

County of Cadell, parish of Tataila, containing an area of 12 acres. The Crown Lands within the following boundaries: Commencing on the east side of a road 1 chain wide separating the land herein described from portion 19 of 61 acres, at a post marked broad-arrow over JCR, distant 10 chains 32 links south from the south-west corner of portion 74 of 20 acres; and bounded thence by lines bearing south 16 chains 96 links, south 53 degrees 20 minutes east 4 chains 27 links, north 17 degrees 27 minutes 20 seconds east 13 chains 70 links, north 13 degrees 11 minutes east 4 chains 42 links, north 2 chains 13 links, and west 8 chains 54 links, to point of commencement,—as shown on plan catalogued Miscellaneous 23 in the District Surveyor's Office, Hay.

Proposed Dedication for Public Recreation.

Within the resumed area of Moira Holding No. 619, notified 31st July, 1885.

County of Cadell, parishes of Moama and Tataila, containing an area of 108 acres. The Crown Lands within the following boundaries: Commencing on the south side of a road 1 chain wide at a fence post distant 1 chain from the south-west corner of portion 74 of 20 acres, parish of Tataila; and bounded thence by lines bearing east 36 chains 49 links, south 33 chains 98 links, west 26 chains 31 links, north 52 degrees 54 minutes west 8 chains 48 links, north 17 degrees 27 minutes 20 seconds east 13 chains 70 links, north 13 degrees 11 minutes east 4 chains 42 links, north 2 chains 13 links, west 8 chains 54 links, and north 9 chains 32 links, to the point of commencement,—as shown on plan catalogued C. 72–1,817.

The above is in lieu of the notice in the Government Gazette of the 5th March, 1889.

Department of Lands,
Sydney, 9th April, 1889.

PROPOSED RESUMPTION OF PUBLIC SCHOOL SITE AT GERMAN HILL.

It is hereby notified, for public information, that, in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the Public School site at German Hill, area 2 acres, viz.:—Portion 207, in the parish of Barton, county of Ashburnham, dedicated on the 24th October, 1882, and hereunder described, the land being no longer required for the purpose for which it was dedicated.

[Ms. 89–1,997] JAMES N. BRUNKER.

Description.

2 acres. County of Ashburnham, parish of Barton, portion 207: Commencing on the north-western side of a road 1 chain 25 links wide, at the eastern corner of portion 159 of 2 roods; and bounded thence on the south-east by that road bearing north 72 degrees 30 minutes east 3 chains and 33½ links; on the north-east by a line dividing it from portion 5–VII bearing north 17 degrees 30 minutes west 6 chains; on the north-west by a line dividing it from part of that portion bearing south 72 degrees 30 minutes west 3 chains and 33½ links; and on the south-west by the north-eastern boundary of portion 160 of 1 acre and the north-eastern boundary of portion 159 aforesaid, in all bearing south 17 degrees 30 minutes east 6 chains, to the point of commencement.

Plan P. 662–1,978.

The above is in lieu of the notice in the Government Gazette of the 5th March, 1889.

Department of Lands,
Sydney, 9th April, 1889.

PROPOSED RESUMPTION OF PART OF WALCHA PERMANENT COMMON.

It is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of that part of the permanent common at Walcha, area 21 acres, hereunder described, it being intended to include that area in a travelling stock reserve.

[Ms. 89–2,001] JAMES N. BRUNKER.

Description.

EASTERN DIVISION.

Land District of Walcha.

County of Vernon, parish of Walcha, 21 acres: Commencing at a point bearing 1 chain east from the north-east corner of portion 413, E. B. Boulton's 40 acres 3 roods; and bounded thence on the north by a line east 4 chains; thence on the east by a line south 52 chains and 59 links to the north boundary of portion No. 118; thence on the south by part of the north boundary of that portion and a line bearing west in all 4 chains; and thence on the west by a line north 52 chains and 59 links, to the point of commencement,—shown on plan catalogued Ms. 121 AE.

The above is in lieu of the notice in the Government Gazette of the 5th March, 1889.

Sydney: Charles Potter, Government Printer.—1889.

[3d.]

1889.

NEW SOUTH WALES.

CROWN LANDS.

(PROPOSED DEDICATION OF CERTAIN LANDS, UNDER THE ACT 48 VICTORIA No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

Department of Lands,
Sydney, 7th May, 1889.

PROPOSED RESUMPTION OF HOSPITAL SITE AT WILLYAMA AND RE-DEDICATION AS A SITE FOR GAOL.

It is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the Hospital Site at Willyama, area 18 acres 2 roods 17 perches, viz., section No. 4, dedicated on the 2nd December, 1887, and hereunder described, with a view to the re-dedication of that area as a site for Gaol.

[Ms. 89-5,237] JAMES N. BRUNKER.

DESCRIPTION.

County of Yancowinna, parish of Picton, town of Willyama, area 18 acres 2 roods 17 perches: Commencing at the intersection of the south-eastern side of Mica-street with the south-western side of Gossan-street; thence bounded by that side of Gossan-street bearing south 41 degrees 39 minutes east 12 chains 12 links to the north-western side of Cobalt-street; thence by that side of that street bearing south 48 degrees 21 minutes west 12 chains 83 4/10 links to the north-east side of Galena-street; thence by that side of that street bearing north 64 degrees 15 minutes west 13 chains 12⅔ links to the aforementioned south-east side of Mica-street; and thence by that side of that street bearing north 48 degrees 21 minutes east 17 chains 87 9/10 links, to the point of commencement,—being section 4, town of Willyama, as shown on plan catalogued W. 1-2,492.

Department of Lands,
Sydney, 7th May, 1889.

PROPOSED RESUMPTION OF CHURCH OF ENGLAND BOARDING-SCHOOL SITE AT COOMA, AND RE-DEDICATION FOR SHOW GROUND.

It is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the Church of England Boarding-school Site at Cooma, containing formerly 12 acres 3 roods, viz., portion 37, and now containing 12 acres and 22 perches, being portions 37 and 139 in the parish of Cooma, county of Beresford, dedicated on 16th July, 1863, and hereunder described, with a view to the re-dedication of the land in question as a site for Show Ground for the use of the Cooma Pastoral, Agricultural, and Ploughing Association.

[Ms. 89-4,755] JAMES N. BRUNKER.

DESCRIPTION.

County of Beresford, parish of Cooma, at Cooma, 12 acres and 22 perches, portions 37 and 139: Commencing at the intersection of the western side of Cromwell-street with the southern side of Boundary-street, being the north-east corner of portion 37; and bounded thence on the north by part of the southern side of Boundary-street, being a line forming the northern boundary of portion 37 and of portion 139, bearing north 89 degrees 49 minutes 30 seconds west 16 chains 5 links to the right bank of Cooma Back Creek; thence on the west by that bank of that creek upwards to the north-west corner of portion 38, being also the south-west corner of portion 139 aforesaid; thence on the south by the northern boundary of portion 38, forming the southern boundary of portion 139 and of portion 37, being a line bearing south 89 degrees 42 minutes east 18 chains 98·3 links to the western side of Cromwell-street aforesaid; and thence on the east by part of the western side of that street, being a line forming the eastern boundary of portion 37 bearing north 23 minutes 30 seconds west 7 chains 11·8 links, to the point of commencement.

[Plans C. 8-1,332; B. 2,603-1,765]

Department of Lands,
Sydney, 7th May, 1889.

PROPOSED RESUMPTION OF HOSPITAL SITE AT NEWCASTLE, AND DEDICATION FOR THE SAME PURPOSE IN LIEU THEREOF.

It is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the Hospital Site at Newcastle, area 1 acre 2 roods 10 perches, dedicated on the 5th May, 1865, and hereunder described, with a view to the dedication of an area of 2 acres and 34 perches in the locality mentioned, also hereunder described, as a site for Hospital, in lieu thereof.

[Ms. 89-4,756] JAMES N. BRUNKER.

DESCRIPTIONS.

Hospital Site proposed to be resumed.

County of Northumberland, parish of Newcastle, City of Newcastle, 1 acre 2 roods 10 perches: Commencing at a point where the southern side of Hospital-lane meets the eastern side of Pacific-street; and bounded thence on the north by Hospital-lane easterly at right angles to Pacific-street 3 chains 40 links; on the east by a line southerly parallel with Pacific-street 2 chains 65 links; on the south-east by the reserve for public recreation along the sea shore south-westerly to Pacific-street; and on the west by that street northerly 6 chains 50 links, to the point of commencement.

[Plan N. 103-844]

Hospital Site proposed to be dedicated.

County of Northumberland, parish of Newcastle, City of Newcastle, 2 acres 0 roods 34 perches: Commencing at a point where the north-eastern side of Beach-street meets the south-eastern side of Pacific-street; and bounded thence on the north-west by the south-eastern side of the last-mentioned street bearing north 7 degrees 43 minutes east 5 chains 18½ links; on the north-east by a south-western side of Hospital-lane bearing south 83 degrees 32 minutes east 4 chains 60½ links; on the south-east by north-western sides of Telford and Beach Streets bearing respectively south 5 degrees 57 minutes west 3 chains 27½ links and south 56 degrees 40 minutes west 3 chains 7 links to the south-eastern extremity of the north-eastern side of Beach-street aforesaid; and on the south-west by that side of that street bearing north 82 degrees 17 minutes west 2 chains 39½ links, to the point of commencement.

[Plan Ms. 97 Md.]

1889.

NEW SOUTH WALES.

CROWN LANDS.

(PROPOSED DEDICATION OF CERTAIN LANDS, UNDER THE ACT 48 VICTORIA No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

Department of Lands,
Sydney, 2nd July, 1889.

PROPOSED RESUMPTION OF PUBLIC SCHOOL SITE AT TURILL, AND DEDICATION FOR THE SAME PURPOSE IN LIEU THEREOF.

It is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the Public School site at Turill, area 2 acres, viz., portion 77, in the parish of Turill, county of Bligh, dedicated on the 18th January, 1884, and hereunder described, with a view to the dedication of portion 136 of 2 acres, in the same locality, also hereunder described, as a site for Public School in lieu thereof.

[Ms. 89-8,370] JAMES N. BRUNKER.

DESCRIPTIONS.

Public School Site proposed to be Resumed.

County of Bligh, parish of Turill, at Turill, 2 acres, portion 77: Commencing on the northern side of a road 1 chain wide at the most southerly south-western corner of portion 80 of 20 acres; and bounded thence on the south by that road dividing it from part of portion VII–XXIII of 40 acres bearing west 4 chains; on the west by a line bearing north 5 chains; on the north by a southern boundary of portion 80 aforesaid bearing east 4 chains; and on the east by a western boundary of that portion bearing south 5 chains, to the point of commencement,—plan P. 977-1,978.

Public School Site proposed to Dedicated.

County of Bligh, parish of Turill, 2 acres, portion 136: Commencing at the south-west corner of portion 123 of 2 acres; and bounded thence on the north by the south boundary of that portion and a south boundary of portion 124 of 8 acres bearing east 9 chains 84 links; on the east by a west boundary of portion 124 bearing south 2 chains 14½ links; on the south by a north boundary of portion 124 bearing west 8 chains 82½ links; and on the south-west by the north-eastern side of a road 1 chain wide from the Mudgee and Cassilis road to Uarby bearing north 25 degrees 20 minutes west 2 chains 37½ links, to the point of commencement,—plan B. 2,186-1,570.

The above is in lieu of the notice in the Government Gazette of the 25th May, 1888.

Department of Lands,
Sydney, 2nd July, 1889.

PROPOSED RESUMPTION OF PART OF MOREE PERMANENT COMMON.

It is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of that part of the Moree Permanent Common within the boundaries of measured portion 230 of 33 acres 3 roods 10 perches, in the parish of Moree, county of Courallie, with a view to the inclusion of that area in a reserve for police purposes,—plan C. 1,385-1,880.

[Ms. 89-7,533] JAMES N. BRUNKER.

Department of Lands,
Sydney, 2nd July, 1889.

PROPOSED RESUMPTION OF RACECOURSE AND RECREATION RESERVE AT BOURKE AND RE-DEDICATION FOR RACECOURSE.

It is hereby notified, for public information, that, in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the land at Bourke, area 120 acres, viz., portion 34, in the parish of Bourke, county of Cowper, dedicated on the 4th February, 1876, for racecourse and public recreation, and hereunder described, with a view to the rededication of the land in question for racecourse only.

[Ms. 89-7,537] JAMES N. BRUNKER.

DESCRIPTION.

County of Cowper, parish of Bourke, area 120 acres, portion 34: Commencing at a point bearing south 33 degrees 25 minutes west and distant 10 chains 51 links from the south-eastern corner of portion 26 of 23 acres 1 rood 38 perches; and bounded thence on the north by a line bearing west 30 chains; on the west by a line bearing south 40 chains; on the south by a line bearing east 30 chains; and on the east by a line bearing north 40 chains, to the point of commencement,—plan C. 25-1,822.

Department of Lands,
Sydney, 2nd July, 1889.

PROPOSED RESUMPTION OF CHURCH OF ENGLAND CHURCH AND PARSONAGE SITES AT GOOBANG, AND DEDICATION FOR CHURCH OF ENGLAND CHURCH PURPOSES AT PARKES IN LIEU THEREOF.

It is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the Church of England Church and Parsonage Sites at Goobang, area 1 acre 2 roods, viz., allotments 1, 2, and 10 of section 8, dedicated on the 8th January, 1875, and hereunder described, with a view to the dedication of allotment 1 of section 13, town of Parkes, for Church of England Church purposes in lieu thereof.

[Ms. 89-6,866] JAMES N. BRUNKER.

Church of England Church and Parsonage Sites proposed to be Resumed.

County of Ashburnham, parish of Parkes, town of Goobang, allotments 1, 2, and 10 of section 8, containing 1 acre 2 roods: Commencing at the north-eastern corner of the section 8; and bounded thence on the east by Forbes-street southerly 2 chains; on the south by the northern boundary line of allotment 9 westerly at right angles to Forbes-street 2 chains 50

links to a lane; on the west by that lane northerly, parallel with Forbes-street, 2 chains; and on the north by Pioneer-street easterly 2 chains 50 links, to the point of commencement. Again, commencing at the north-western corner of section 8; and bounded thence on the west by Maclean-street southerly 4 chains; on the south by the northern boundary line of allotment 3 of same section easterly, at right angles to Maclean-street, 2 chains 50 links to a lane; on the east by that lane northerly, parallel with Maclean-street, 4 chains; and on the north by Pioneer-street westerly 2 chains 50 links, to the point of commencement,—plan C. 392–1,984.

Area proposed to be dedicated for Church of England Church purposes.

County of Ashburnham, parish of Currajong, town of Parkes. Allotment 1 of section 13, containing 2 roods: Commencing at the intersection of the north-eastern side of Hill-street with the south-eastern side of Bushman's-street being the north-west corner of allotment 1, section 13; and bounded thence by part of the south-eastern side of Bushman's-street aforesaid being a line bearing north 73 degrees 6 minutes east 2 chains 50 links to the south-western side of a lane 30 links wide; on the north-east by part of the south-western side of that lane bearing south 16 degrees 54 minutes east 2 chains to the northernmost corner of allotment 2, section 13; on the south-east by the north-western boundary of the aforesaid allotment bearing south 73 degrees 6 minutes west 2 chains 50 links to the north-eastern side of Hill-street aforesaid; and thence by part of that side of that street bearing north 16 degrees 54 minutes west 2 chains, to the point of commencement,—as shown on plan catalogued P. 1–2,139 Roll.

Department of Lands,
Sydney, 2nd July, 1889.

PROPOSED RESUMPTION OF PERMANENT COMMON AND RECREATION RESERVE AT WARIALDA.

It is hereby notified, for public information, that, in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the permanent common and the recreation reserve at Warialda, areas 700 acres and 105 acres, dedicated on the 19th May, 1868 and 13th January, 1882, respectively, and hereunder described, it being intended to set apart areas for temporary common and public recreation in lieu thereof.

[Ms. 89-7,917] JAMES N. BRUNKER.

DESCRIPTIONS.

CENTRAL DIVISION.

LAND DISTRICT OF WARIALDA.

Permanent Common proposed to be Resumed.

County of Burnett, parish of Warialda, area 700 acres: Commencing on the right bank of Warialda Creek, at a south-east corner of portion 10 of 100 acres; and bounded thence on part of the west by an east boundary of that portion bearing north 10 chains; on part of the south by part of the north boundary of that portion bearing west 43 chains; again on the west by a line bearing north 45 minutes east 86 chains; on the north by a line bearing south 89 degrees 15 minutes east 81 chains; on the east by a line bearing south 33 chains to the north side of High-street, village of Warialda; on the remainder of the south by part of that side of High-street and a line bearing west 11 chains 90 links, crossing Deep Creek to its right bank; thence by that creek downwards to its confluence with Warialda Creek aforesaid; and thence by that creek downwards, to the point of commencement,—shown on plan B. 42–1,951.

NOTE.—The above was dedicated for permanent commonage on 19th May, 1868.

Recreation Reserve proposed to be Resumed.

County of Burnett, parish of Warialda, area 105 acres. Commencing at a point bearing north 65 degrees 28 minutes west 75 chains 49 links from the north-west corner of section 8, town of Warialda; and bounded thence on the south-east by a line bearing south 68 degrees 15 minutes west 35 chains; thence on the south-west by a line bearing north 21 degrees 45 minutes west 30 chains; thence on the north-west by a line bearing north 68 degrees 15 minutes east 35 chains; and thence on the north-east by a line bearing south 21 degrees 45 minutes east 30 chains, to the point of commencement,—as shown on plan catalogued G. 48–1,834.

NOTE.—The above was dedicated for public recreation on 13th January, 1882.

Sydney Charles Potter, Government Printer —1889.

[3d.]

1889.

NEW SOUTH WALES.

CROWN LANDS.

("GAZETTE" NOTICE SETTING FORTH PROPOSED DEDICATION OF CERTAIN LAND, UNDER THE ACT, 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act, 48 Vic. No. 18.

Department of Lands, Sydney, 30 July, 1889.

PROPOSED RESUMPTION OF RECREATION RESERVE AT KEEPIT, WITH A VIEW TO RESERVATIONS FOR THE SAME PURPOSE IN LIEU THEREOF.

IT is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the land at Keepit, area 137¾ acres, dedicated on the 13th May, 1887, for public recreation, and hereunder described, with a view to the reservation of areas of 25½ acres and 4 acres in the locality mentioned, for the same purpose in lieu thereof.

[Ms. 89-9,347] JAMES N. BRUNKER.

Description.

EASTERN DIVISION.—LAND DISTRICT OF TAMWORTH.

Recreation Reserve—Proposed to be resumed.

County of Darling, parish of Keepit, 137 acres 3 roods: Commencing on the left bank of the Namoi River, at the south-western corner of portion 92 of 100 acres; and bounded thence on the north by the southern boundary of that portion bearing north 89 degrees 43 minutes east 61 chains 87 links; on the east by the western boundary of portion 186 of 135 acres, and the end of a road 1 chain wide, in all bearing south 17 minutes west 22 chains 77 links; on the south by part of the northern boundary of portion 147 of 60 acres, the end of a road 50 links wide, and the northern boundary of portion 51 of 50 acres, in all bearing west 51 chains 15 links; thence by part of the western boundary of the latter portion south 3 chains; and thence by part of the northern boundary of portion 50 of 50 acres west 15 chains 30 links; on the west by a line north 10 chains 62 links to the aforesaid river; and thence by that river upwards, to the point of commencement.

Exclusively of a road 1 chain wide passing through this land in a south-easterly direction, and of portions 100, 101, 159, and 160, situated within the boundaries of this land, the areas of which have been deducted from the total area.

The above is in lieu of the notice in the *Government Gazette* of the 24th August, 1888.

1889.

NEW SOUTH WALES.

CROWN LANDS.

("GAZETTE" NOTICES SETTING FORTH PROPOSED DEDICATION OF CERTAIN LANDS, UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

Department of Lands, Sydney, 27th August, 1889.

PROPOSED RESUMPTION OF PART OF NARRABRI PERMANENT COMMON.

IT is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of that part of the Narrabri Permanent Common, area 160 acres, hereunder described, with a view to part thereof being included in a travelling stock reserve of 144 acres and the remainder set apart for road purposes.

[Ms. 89-10,855] JAMES N. BRUNKER.

Description.

Part of the Permanent Common at Narrabri, dedicated 6th December, 1867. County of Nandewar, parish of Narrabri, area 160 acres, within the following boundaries: Commencing at the westernmost corner of the Permanent Common, as dedicated 6th December, 1867; and bounded thence by part of the north-west boundary of the common bearing north 54 degrees 48 minutes east 20 chains to the southernmost corner of portion 130 of 320 acres; thence on the north-east by a line bearing south 35 degrees 12 minutes east 80 chains to the south-east boundary of the common; thence by part of that south-east boundary bearing south 54 degrees 48 minutes west 20 chains to the southernmost corner of the common; and thence by the south-west boundary of the common bearing north 35 degrees 12 minutes west 80 chains, to the point of commencement.

Department of Lands, Sydney, 27th August, 1889.

PROPOSED RESUMPTION OF WATER RESERVE AT MELYRA SPRINGS.

IT is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the water reserve at Melyra Springs, county of Forbes, area 60 acres, dedicated on the 6th December, 1867, and hereunder described, the land having been included in camping reserve No. 8,569.

[Ms. 89-11,675] JAMES N. BRUNKER.

Description.

County of Forbes, parish of Melyra, situated 2½ miles from Grenfell, at the Melyra Springs, area 60 acres: Commencing at a point bearing north 10 degrees east and distant 185 chains and 25 links from the north-western corner of section No. 3 of the town of Grenfell, at the Emu Diggings; and bounded thence on the west by a line bearing north 25 chains; on the north by a line bearing east 24 chains; on the east by a line bearing south 25 chains; and on the south by a line bearing west 24 chains, to the point of commencement,—shown on plan catalogued L. 14-1,834.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(PROPOSED DEDICATION OF CERTAIN LANDS, UNDER THE ACT 48 VICTORIA No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18, sec. 105.

Department of Lands,
Sydney, 24th September, 1889.

PROPOSED RESUMPTION OF PUBLIC SCHOOL SITE AT ROWAN.

It is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the Public School Site at Rowan, area 2¼ acres, viz., portion No. 116, in the parish of Rowan, county of Wynyard, dedicated on the 1st June, 1880, and hereunder described,—the land being no longer required for the purpose for which it was dedicated.

[Ms. 89-12,514] JAMES N. BRUNKER.

DESCRIPTION.

County of Wynyard, parish of Rowan, 2 acres 1 rood, portion 116: Commencing at the intersection of the left bank of the Six-mile or Stringy Bark Creek with the eastern side of a road 2 chains wide from Albury to Wagga Wagga, at the south-west corner of portion 116; and bounded thence on the west by that side of that road, being a line bearing north 7 degrees 21 minutes east 5 chains 25 links to the most westerly corner of portion 115 of 15½ acres; thence on the north by a southern boundary of that portion, being a line bearing east 4 chains 82 links; thence on part of the east by a western boundary of the aforesaid portion, being a line bearing south 1 chain 11 links to the left bank of the creek aforesaid; and thence by that bank of that creek upwards, to the point of commencement,—shown on plan catalogued P. 512-1,978.

Department of Lands,
Sydney, 24th September, 1889.

PROPOSED RESUMPTION OF KIAMA AND SHELLHARBOUR PERMANENT COMMON.

It is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the Kiama and Shellharbour Permanent Common, area 795 acres, dedicated on the 6th December, 1867, and hereunder described, with a view to the reservation thereof in two areas for Temporary Commonage, to be placed under the temporary control of the Borough Councils of Kiama and Shellharbour respectively.

[Ms. 89-12,885] JAMES N. BRUNKER.

DESCRIPTION.

County of Camden, parish of Terragong, at Terragong Swamp, containing 795 acres: Bounded on the east, from E. Russell's 50 acres, by the Minnamurra Rivulet and J. Collis' 1,280 acres southerly; on the south by J. Collis' 1,280 acres aforesaid and by R. Miller's two portions of 50 acres each, T. Walker's 50 acres, J. Marks' 50 acres, and J. Morris' 250 acres westerly; on the west by a line forming the northerly prolongation of the boundary dividing J. Morris' 250 acres aforesaid and M. Campbell's 250 acres to J. Colley's 126 acres; on the north by that land, R. Owen's 127 acres, J. Collins' 114 acres, M. Farraher's two portions of 89 acres each, D. Farraher and J. Seymour's 27 acres 3 roods 20 perches, and E. Russell's 50 acres aforesaid easterly, to the Minnamurra Rivulet aforesaid.

Department of Lands,
Sydney, 24th September, 1889.

PROPOSED RESUMPTION OF PUBLIC SCHOOL SITE AT BREDBO, AND DEDICATION FOR THE SAME PURPOSE IN LIEU THEREOF.

It is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the Public School Site at Bredbo, area 2 acres, viz., portion 98, in the parish of Bransby, county of Beresford, dedicated on the 18th January, 1884, and hereunder described, with a view to the dedication of portion 118 of 1 acre 1 rood, in the same locality, as a site for Public School in lieu thereof.

[Ms. 89-12,081] JAMES N. BRUNKER.

DESCRIPTIONS.

Public School Site proposed to be resumed.

County of Beresford, parish of Bransby, area 2 acres, being portion 98,—shown on plan catalogued P. 1,001-1,978.

Public School Site proposed to be dedicated.

County of Beresford, parish of Bransby, containing an area of 1 acre 1 rood. The Crown Lands within the boundaries of measured portion 118,—as shown on plan catalogued Bredbo I.

Department of Lands,
Sydney, 24th September, 1889.

PROPOSED RESUMPTION OF SHOW GROUND AT WALGETT, AND DEDICATION FOR THE SAME PURPOSE IN LIEU THEREOF.

It is hereby notified, for public information, that in accordance with the provisions of the 105th section of the Crown Lands Act of 1884, it is proposed to revoke the dedication of the Show Ground at Walgett, area 10 acres and 6 perches, viz., portion 23, in the parish of Walgett, county of Baradine, dedicated on the 15th January, 1886, and hereunder described, with a view to the dedication of portion 75 of 20 acres and 30 perches, in the parish of Merritombea, as a site for Show Ground for the use of the Walgett Pastoral and Agricultural Association in lieu thereof.

[Ms. 89-12,515] JAMES N. BRUNKER.

DESCRIPTIONS.

CENTRAL DIVISION.

LAND DISTRICT OF WALGETT.

Show Ground proposed to be resumed.

County of Baradine, parish of Walgett, containing an area of 10 acres 0 roods 6 perches. The Crown Lands within the boundaries of suburban portion 23,—as shown on plan catalogued W. 8-1,702 Roll.

Show Ground proposed to be dedicated.

County of Baradine, parish of Merritombea, containing an area of 20 acres 0 roods 30 perches. The Crown Lands within the boundaries of measured portion 75,—as shown on plan catalogued B. 451-1,790.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(RESERVED FROM SALE UNTIL SURVEYED, FOR THE PRESERVATION OF WATER SUPPLY OR OTHER PUBLIC PURPOSES, UNDER THE ACT 48 VICTORIA No. 18.)

Presented to Parliament pursuant to Act 48 Vic. No. 18.

ABSTRACT of Crown Lands reserved from sale until surveyed, for the preservation of Water Supply or other public purposes, in accordance with the 101st, 103rd, 109th, and 112th sections of the Act 48 Victoria No. 18.

No. of Papers.	No. of Reserve.	Section.	County.	Parish.	Area. a.	r.	p.	*Government Gazette* in which the description is published.	Folio.
Ms. 88-13844	8281	109	Bourke	Lupton	499	2	0	19 Jan., 1889	573
15367	8282	101	Sandon	Metz	1	2	16	,, ,,	,,
14209	8257	,,	Bland	Bimbi	1	1	2	,, ,,	574
,,	8263	109	do	do	17	0	0	,, ,,	575
13840	8280	,,	Cooper	Coonpaira, &c.	10,200	0	0	,, ,,	,,
14458	8275	101	Wynyard	Batlow	42	3	0	,, ,,	,,
14209	8258	,,	Bland	Bimbi	3	2	8	,, ,,	,,
,,	8259	,,	do	do	3	2	36	,, ,,	,,
,,	8256	,,	do	do	11	0	0	,, ,,	,,
15072	8276	,,	Inglis	Scott	37	0	0	,, ,,	,,
Occ. 88- 9238	8278	,,	Kilfera	Juanbung	1,330	0	0	,, ,,	576
Ms. 88-14209	8260	,,	Bland	Bimbi	84	0	0	,, ,,	,,
15926	8274	,,	Hume	Morven	10	0	0	,, ,,	,,
15171	8265	,,	Richmond	Wooroowoolgan	8	0	0	,, ,,	,,
14209	8261	,,	Bland	Bimbi	4	0	18½	,, ,,	,,
13151	8272	,,	Urana	Colombo	18	0	0	,, ,,	,,
13377	8279	,,	Yancowinna	Umberumberka	31	0	16	,, ,,	,,
89- 41	8418	,,	Lincoln	Bungiebomar	923	0	0	,, ,,	,,
88-15758	8277	,,	do	Warrie	1	2	0	,, ,,	577
14209	8262	,,	Bland	Bribaree	518	0	0	,, ,,	,,
C.S. 88-1223 dep.	8572	,,	Auckland	Wallagoot	120	0	0	23 ,, ,,	665
Ms. 88-16277	8432	,,	Rous	Wollumbin	1	0	0	25 ,, ,,	726
,,	8433	,,	do	Murwillumbah	3	0	0	,, ,,	,,
,,	8434	,,	do	do	5	1	9	,, ,,	,,
,,	8435	,,	do	do	6	2	0	,, ,,	,,
,,	8426	,,	do	do	0	3	0	,, ,,	,,
,,	8427	,,	do	Wollumbin	1	1	10	,, ,,	,,
,,	8428	,,	do	do	2	0	0	,, ,,	,,
,,	8429	,,	do	Murwillumbah	2	0	0	,, ,,	,,
486	8271	103	Baradine	Meit	100	0	0	,, ,,	725
16277	8430	101	Rous	Murwillumbah	4	0	0	,, ,,	726
Aln. 88-6444	8500	,,	Denison	Tocumwal	1	0	0	,, ,,	,,
Ms. 88-14727	8457	,,	Townsend	Puckawidgee	968	0	0	,, ,,	727
,,	8458	,,	do	do	43	0	0	,, ,,	,,
,,	8459	,,	do	do	320	0	0	,, ,,	,,
,,	8460	,,	Boyd	Banandra	252	0	0	,, ,,	,,
,,	8461	,,	do	Howell	297	0	0	,, ,,	,,
,,	8462	,,	Mitchell	Birrego	625	0	0	,, ,,	,,
,,	8463	,,	do	Corobimilla	123	2	0	,, ,,	,,
,,	8464	,,	do	do	91	2	0	,, ,,	,,
,,	8465	,,	do	Faithfull	750	0	0	,, ,,	,,
,,	8466	,,	do	do	520	0	0	,, ,,	,,
,,	8467	,,	do	do	100	0	0	,, ,,	,,
,,	8468	,,	do	Mimosa	236	3	0	,, ,,	,,
,,	8469	,,	do	do	320	0	0	,, ,,	,,
,,	8470	,,	do	do	88	0	0	,, ,,	,,
,,	8471	,,	do	Wood	1,156	0	0	,, ,,	,,
,,	8472	,,	do	do	845	0	0	,, ,,	,,
,,	8473	,,	do	do	255	2	0	,, ,,	728
,,	8474	,,	Mitchell, &c.	Birrego, &c.	4,090	0	0	,, ,,	,,
,,	8475	,,	Urana	Boree Creek	116	0	0	,, ,,	,,
,,	8476	,,	do	do	640	0	0	,, ,,	,,
,,	8477	,,	do	do	86	1	0	,, ,,	,,
,,	8478	,,	do	do	320	0	0	,, ,,	,,
,,	8479	,,	do	do	92	2	0	,, ,,	,,
,,	8480	,,	do	Brookong North	1,360	0	0	,, ,,	,,
,,	8481	,,	do	Lake	120	0	0	,, ,,	,,
,,	8482	,,	do	do	189	2	0	,, ,,	,,

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Ms. 88-14727	8483	101	Urana	Lake	233 0 0	25 Jan., 1889	728
,,	8484	,,	do	do	244 2 0	,, ,,	,,
,,	8485	,,	do	Piney Ridge	100 0 0	,, ,,	,,
,,	8486	,,	do	Urana	123 1 0	,, ,,	,,
,,	8487	,,	do	Widgiewa	100 0 0	,, ,,	,,
,,	8488	,,	do	Yanko South	1,651 0 0	,, ,,	,,
,,	8489	,,	do	do	181 0 0	,, ,,	,,
,,	8490	,,	Mitchell	Arajoel	70 0 0	,, ,,	,,
,,	8491	,,	do	do	15 0 19	,, ,,	,,
,,	8492	,,	do	do	89 3 0	,, ,,	,,
,,	8493	,,	do	Berry Jerry	645 1 0	,, ,,	,,
,,	8494	,,	do	Bullenbung	1,093 3 0	,, ,,	,,
,,	8495	,,	do	Mundowy	29 0 0	,, ,,	72
,,	8496	,,	do	Osborne	95 0 0	,, ,,	,,
,,	8497	,,	do	Uranquintry	40 0 0	,, ,,	,,
,,	8498	,,	do	Yarragundry	380 0 0	,, ,,	,,
,,	8499	,,	do	do	129 0 0	,, ,,	,,
16277	8425	,,	Rous	Wollumbin	12 0 0	,, ,,	,,
,,	8431	,,	do	Murwillumbah	0 3 0	,, ,,	,,
,,	8424	,,	do	Wollumbin	2 2 0	,, ,,	,,
15719	8515	,,	Camden	Cowridjah, &c.	10,700 0 0	,, ,,	,,
16277	8438	,,	Rous	Murwillumbah	2 0 0	,, ,,	730
,,	8439	,,	do	do	3 2 0	,, ,,	,,
,,	8436	,,	do	Wollumbin	1 2 0	,, ,,	,,
,,	8437	,,	do	Murwillumbah	4 0 0	,, ,,	,,
89- 104	8513	,,	Ashburnham	Parkes	20 0 0	,, ,,	,,
Leases 88- 7236	8456	,,	Bathurst	Billimari	640 0 0	,, ,,	,,
Ms. 88-12432	8248	,,	Buccleuch	Yarrangobilly	1 1 0	2 Feb., ,,	921
,,	8249	,,	do	do	0 2 0	,, ,,	,,
,,	8250	,,	do	do	0 2 0	,, ,,	,,
89- 120	8600	,,	Bathurst	Cowra	2 0 0	,, ,,	,,
88-12432	8251	,,	Buccleuch	Yarrangobilly	0 3 0	,, ,,	,,
,,	8252	,,	do	do	4 0 0	,, ,,	922
,,	8253	,,	do	do	2 0 0	,, ,,	,,
,,	8254	,,	do	do	2 3 0	,, ,,	,,
89- 882	8609	,,	Gough	Inverell	80 3 0	,, ,,	,,
Aln. 89- 601	8659	,,	Dudley	Clybucca	120 0 0	6 ,, ,,	1009
Ms. 89- 898	8654	,,	Forbes	Boyd	640 0 0	,, ,,	,,
1333	8624	,,	Rous	Byron	80 0 0	,, ,,	,,
88-15788	8317	,,	Selwyn	Welaregang	3 3 12	9 ,, ,,	1150
14516	8516	,,	Sandon	Uralla	0 1 10	,, ,,	,,
,,	8517	,,	do	do	0 2 17	,, ,,	,,
15290	8445	,,	Roxburgh	Kelso	10 1 8	,, ,,	,,
15874	8421	,,	Clarence	Taloumbi	1 0 0	,, ,,	,,
15288	8505	,,	Clyde	Brewarrina	0 2 13	,, ,,	,,
,,	8506	,,	do	do	3 0 36	,, ,,	,,
12442	8547	,,	Yancowinna	Picton	12 0 33	,, ,,	,,
,,	8548	,,	do	do	14 1 29	,, ,,	,,
,,	8549	,,	do	do	14 1 33	,, ,,	,,
,,	8550	,,	do	do	147 1 0	,, ,,	,,
12835	8562	,,	do	do	15 3 38	,, ,,	1151
15716	8455	,,	Wynyard	South Gundagai	1,350 0 0	,, ,,	,,
16143	8541	,,	Oxley	Tabratong	380 0 0	,, ,,	,,
14210	8570	,,	Forbes	Melyra	120 0 0	,, ,,	,,
Leases 88- 8308	8560	,,	Waljeers	Lowan, &c.	250 0 0	,, ,,	,,
Ms. 88-15290	8446	,,	Roxburgh	Kelso	1 2 32	,, ,,	1152
,,	8451	,,	do	do	1 2 32	,, ,,	,,
,,	8452	,,	do	do	4 3 27	,, ,,	,,
16027	8564	,,	Murray	Fairy Meadow	300 0 0	,, ,,	,,
,,	8565	,,	do	Merrigan	400 0 0	,, ,,	,,
,,	8566	,,	do	do	860 0 0	,, ,,	,,
,,	8567	,,	do	Warri	3,800 0 0	,, ,,	,,
16045	8323	,,	Bligh	Bowman	2 2 0	,, ,,	1153
15806	8322	,,	Durham	Doon	50 0 0	,, ,,	,,
16046	8423	,,	Hunter	Gullongulong	10 2 0	,, ,,	,,
16663	8543	,,	Kennedy	Genaren	140 0 0	,, ,,	,,
16598	8542	,,	Bligh	Tomimbil	2,300 0 0	,, ,,	,,
15700	8454	,,	Goulburn	Murray	110 0 0	,, ,,	1154
89- 1500	8530	,,	Sandon	Uralla	1 1 23	,, ,,	,,
88-15221	8440	,,	Harden	Eubindal	112 0 0	,, ,,	,,
15531	8309	,,	St. Vincent	Corang	280 0 0	,, ,,	,,
15913	8294	,,	Drake	West Fairfield	1 2 14	,, ,,	,,
,,	8295	,,	do	do	2 3 5	,, ,,	,,
,,	8296	,,	do	do	3 0 28	,, ,,	,,
Forests 88- 6313	8558	,,	Auckland	Wyndham	101 0 0	,, ,,	,,
Ms. 89- 140	8571	,,	Cook	Blackheath	48 3 0	,, ,,	,,
88-16622	8568	,,	Murray	Carwoola	2 3 0	,, ,,	,,
16605	8557	,,	Clive	Bluffland, &c.	480 0 0	,, ,,	,,
10985	8297	,,	Ewenmar	Umangla	1,200 0 0	,, ,,	,,
15543	8310	,,	Pottinger	Baan Baa	392 0 0	,, ,,	1155
16710	8544	,,	Northumberland	Allandale	30 0 0	,, ,,	,,
,,	8551	,,	do	do	35 0 0	,, ,,	,,
,,	8552	,,	do	do	177 0 0	,, ,,	,,
,,	8553	,,	do	do	196 0 0	,, ,,	,,
15185	8308	109	Couallie	Mungie Bundie	90 0 0	,, ,,	,,
15717	8518	,,	Gunderbooka	Mungunyah, &c.	33,500 0 0	,, ,,	,,
15788	8314	101	Selwyn	Welaregang	2 1 21	,, ,,	1156
,,	8315	,,	do	do	5 1 8	,, ,,	,,
15290	8442	,,	Roxburgh	Kelso	2 0 0	,, ,,	,,

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					a. r. p.		
Ms. 88-15290	8443	101	Roxburgh	Kelso	2 1 16	9 Feb., 1889	1156
,,	8444	,,	do	do	4 2 30	,, ,,	,,
15874	8419	,,	Clarence	Taloumbi	2 0 13	,, ,,	,,
,,	8420	,,	do	do	3 0 28	,, ,,	,,
15288	8504	,,	Clyde	Brewarrina	0 2 0	,, ,,	,,
9108	8539	,,	Dowling	Gurangully	470 0 0	,, ,,	,,
14452	8555	109	Goulburn	Jerra Jerra	200 0 0	,, ,,	1157
15757	8584	,,	Narromine	Gundong	320 0 0	,, ,,	,,
,,	8585	,,	do	do	388 3 0	,, ,,	,,
15186	8507	,,	Mouramba	Wills	640 0 0	,, ,,	,,
16778	8588	,,	Evelyn	Wirratcha	626 0 0	,, ,,	,,
,,	8589	,,	do	do	640 0 0	,, ,,	,,
15290	8441	101	Roxburgh	Kelso	4 3 10	,, ,,	,,
15179	8501	,,	Vernon	Walcha	21 2 0	,, ,,	,,
16849	8546	,,	Raleigh	Ketelghay	960 0 0	,, ,,	,,
,,	8554	,,	do	Medlow, &c.	4,000 0 0	,, ,,	,,
15546	8320	,,	Wellesley	Gunningrach	40 0 0	,, ,,	1158
,,	8321	,,	do	Wangellic	40 0 0	,, ,,	,,
,,	8319	,,	do	Boco	40 0 0	,, ,,	,,
15288	8502	,,	Clyde	Brewarrina	3 2 0	,, ,,	,,
,,	8503	,,	do	do	9 0 0	,, ,,	,,
15290	8453	,,	Roxburgh	Kelso	8 0 0	,, ,,	,,
14210	8569	,,	Forbes	Melyra	640 0 0	,, ,,	,,
14469	8556	,,	Rous	Lismore	0 3 29¼	,, ,,	,,
Forests 88- 6313	8559	112	Auckland	Wyndham	2,030 0 0	,, ,,	1159
Ms. 88-16719	8575	101	Macquarie	Harrington	5 0 0	,, ,,	,,
16848	8545	,,	Raleigh	Denison	430 0 0	,, ,,	,,
87-14138	8306	,,	Cumberland	St. George	1 1 0	,, ,,	,,
88-13750	8522	,,	Yancowinna	Picton	10 0 0	,, ,,	,,
15788	8313	,,	Selwyn	Welaregang	1 1 12	,, ,,	1160
,,	8312	,,	do	do	1 0 2	,, ,,	,,
15697	8311	,,	Wellesley	Bombala	36 0 17	,, ,,	,,
16047	8540	,,	Hunter	Bulga	17 0 0	,, ,,	,,
15788	8316	,,	Selwyn	Welaregang	1 2 29	,, ,,	,,
15368	8318	,,	Sandon	Metz	10 0 0	,, ,,	,,
12835	8563	,,	Yancowinna	Picton	4 3 12	,, ,,	,,
16271	8574	,,	Wynyard	Mundarlo	130 0 0	,, ,,	1161
Occ. 88-10886	8561	,,	Bathurst	Galbraith	800 0 0	,, ,,	,,
Ms. 88-15874	8422	,,	Clarence	Taloumbi	0 0 18	,, ,,	,,
16719	8576	,,	Macquarie	Harrington	10 0 0	,, ,,	,,
15959	8520	,,	Roxburgh	Crudine	90 0 0	,, ,,	,,
13927	8307	,,	Rous	Byron	40 0 0	,, ,,	1162
15069	8531	,,	King	Blakney	80 0 0	,, ,,	,,
89- 1578	8519	,,	Franklin	Wyadra, &c.	1,920 0 0	,, ,,	,,
1373	8668	,,	Roxburgh	Mead, &c.	6,500 0 0	13 ,, ,,	1243
,,	8669	,,	do	Airly, &c.	620 0 0	,, ,,	,,
,,	8670	,,	do	Hearne	60 0 0	,, ,,	1244
,,	8672	,,	do	Wells, &c.	2,880 0 0	,, ,,	,,
,,	8671	,,	Phillip	Derale	360 0 0	,, ,,	,,
1775	8684	,,	Wellington	Larras Lake	70 0 0	,, ,,	,,
1902	8685	,,	Hume	Buraja	100 3 0	,, ,,	,,
88-15175	8621	109	Drake	Tabulam	640 0 0	16 ,, ,,	1313
,,	8618	,,	Richmond	Wyon	640 0 0	,, ,,	,,
,,	8617	,,	do	Wooroowoolgan	270 0 0	,, ,,	,,
,,	8619	,,	do	Hogarth	640 0 0	,, ,,	,,
,,	8620	,,	Drake	Pikapene	640 0 0	,, ,,	,,
16172	8601	,,	Dudley	Clybucca	70 0 0	,, ,,	,,
Forests 87- 247	8612	101	Brisbane	Denman	600 0 0	,, ,,	1314
,,	8613	,,	do	do	625 0 0	,, ,,	,,
,,	8614	,,	do	do	630 0 0	,, ,,	,,
,,	8615	,,	do	do	640 0 0	,, ,,	,,
88- 6761	8611	,,	do	Alma	80 2 0	,, ,,	,,
Aln. 87- 5786	8610	,,	Oxley	The Plains	160 0 0	,, ,,	,,
Ms. 87- 9921	8598	,,	Yancowinna	Umberumberka	40 0 0	,, ,,	,,
88- 8431	7114	,,	Phillip	Rumker	40 0 0	,, ,,	,,
15175	8616	109	Richmond, &c.	Coombell, &c.	4,200 0 0	,, ,,	1315
16200	8622	,,	Narran	Wilby, &c.	3,528 0 0	,, ,,	,,
89- 47	8605	101	Darling	Dowe	8 0 0	,, ,,	,,
88-16723	8603	,,	Monteagle	Dananbilla	8 0 0	,, ,,	,,
16722	8607	,,	Bland	Tubbul	8 0 0	,, ,,	,,
16532	8623	,,	Cowley	Tharwa	3 2 34	,, ,,	,,
15220	8573	103	Argyle	Rhyana, &c.	2,390 0 0	23 ,, ,,	1486
16233	8577	,,	Wynyard	Umbango	45 0 0	,, ,,	,,
,,	8578	,,	do	Keajura	140 0 0	,, ,,	,,
,,	8579	,,	do	Umbango	190 0 0	,, ,,	,,
,,	8580	,,	do	Kilgowla	230 0 0	,, ,,	,,
,,	8581	,,	do	Keajura	260 0 0	,, ,,	,,
,,	8582	,,	do	Kilgowla	430 0 0	,, ,,	,,
,,	8583	,,	do	Umbango	1,450 0 0	,, ,,	,,
89- 396	8629	101	Murchison	King	220 0 0	,, ,,	1491
,,	8630	,,	do	do	640 0 0	,, ,,	,,
,, 369	8653	,,	Cook, &c.	Cox, &c.	272 0 0	,, ,,	,,
88-16589	8626	,,	Yancowinna	Robe	3,240 0 0	,, ,,	,,
,, 16531	8640	,,	Murray	Ballallaba	3 2 10	,, ,,	,,
13905	8656	,,	Gough	Anderson	1 0 0	,, ,,	,,
16839	8638	,,	Roxburgh	Castleton	100 0 0	,, ,,	1492
89- 1011	8655	,,	Dowling	Gurangully	164 3 24	,, ,,	,,
88-15750	8646	109	Wynyard	Mate	82 0 0	,, ,,	,,
,,	8647	,,	do	Umbango	212 0 0	,, ,,	,,

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Ms. 88-15750	8648	109	Wynyard	Umbango	220 0 0	23 Feb., 1889	1492
,,	8649	,,	do	Mate	1,000 0 0	,, ,,	,,
87- 6943	3904	109 & 101	Arrawatta	Holdfast	640 0 0	,, ,,	,,
89- 1080	8690	101	Georgiana	Garrynian	600 0 0	,, ,,	1493
,,	8691	,,	do	Isabella	410 0 0	,, ,,	,,
,,	8692	,,	do	Werong, &c.	10,500 0 0	,, ,,	,,
,,	8693	,,	Westmoreland	Banshea, &c.	8,400 0 0	,, ,,	,,
,,	8686	,,	Camden	Warragamba, &c.	7,700 0 0	,, ,,	,,
,,	8687	,,	do	do do	11,700 0 0	,, ,,	,,
,,	8688	,,	Westmoreland	Murrin	3,600 0 0	,, ,,	1494
,,	8689	,,	do	Speedwell, &c.	21,000 0 0	,, ,,	,,
663	8631	,,	Cumberland	Manly Cove	5 1 5	,, ,,	,,
88-16731	8642	,,	Jamison	Yarranbar	35 0 0	,, ,,	,,
89- 271	8628	,,	Cunningham	Condoublin	15 0 0	,, ,,	,,
270	8652	,,	do	Murda	40 0 0	,, ,,	,,
80	8627	,,	Brisbane	Lincoln	22 1 0	,, ,,	,,
88-15869	8651	,,	Kennedy	Strahorn	60 0 0	,, ,,	1495
15750	8650	109	Wynyard	Murraguldrie	500 0 0	,, ,,	,,
89- 1445	8529	101	Brisbane	Murrurundi	61 0 0	,, ,,	,,
1118	8694	,,	Cooper	Narrandera	3 0 0	,, ,,	,,
,,	8695	,,	do	do	84 0 0	,, ,,	,,
,,	8696	,,	do	do	0 2 0	,, ,,	,,
,,	8697	,,	do	do	2 0 0	,, ,,	,,
,,	8698	,,	do	do	33 0 0	,, ,,	,,
891	8637	,,	Canbelego	Coreen	160 0 0	,, ,,	1496
490	8625	103	Bland, &c	Bundaworrah, &c.	21,500 0 0	2 Mar., 1889	1738
88-15282	8634	,,	Townsend	Mundiwa	270 0 0	,, ,,	1739
,,	8365	,,	do	Thulabin	279 3 0	,, ,,	,,
,,	8636	,,	Urana	Jerilderie South	320 0 0	,, ,,	,,
15369	8663	101	Auckland	Eden	0 1 29	,, ,,	1743
89- 1579	8712	,,	Clyde	Brewarrina	23,750 0 0	,, ,,	,,
Aln. 89- 131	8683	,,	Hawes	Uriamukki	25 0 0	,, ,,	,,
Forests 88- 6882	8681	112	Murray	Mulloon, &c.	9,400 0 0	,, ,,	1744
Ms. 88-15919	8664	,,	Cunningham	Cookeys Plains, &c.	11,520 0 0	,, ,,	,,
89- 667	8665	101	Northumberland	Newcastle	0 0 1¾	,, ,,	,,
1111	8680	,,	Murray	Amungula	20 0 0	,, ,,	,,
88-16468	8674	,,	Rous	Tuckarimba	8 3 0	,, ,,	,,
,,	8875	,,	do	do	5 2 0	,, ,,	1745
Aln. 89- 131	8682	,,	Hawes	Conatwong	104 3 0	,, ,,	,,
Ms. 88-15369	8661	,,	Auckland	Eden	0 1 29	,, ,,	,,
,,	8662	,,	do	do	0 2 26	,, ,,	,,
89- 965	8676	,,	Cooper	Pulletop	150 0 0	,, ,,	,,
1006	8677	109	Hawes	Uriamukki	330 0 0	,, ,,	,,
87-11011	8673	101	Stapylton	Canoby	140 0 0	,, ,,	,,
89- 1006	8678	109	Hawes	Gino	320 0 0	,, ,,	1746
88-16712	8666	101	Mossgiel	Ivanhoe	20 0 0	,, ,,	,,
15282	8632	,,	Townsend	Willeroo	224 0 0	,, ,,	,,
,,	8633	,,	do	Mundiwa	270 0 0	,, ,,	,,
89- 1058	8679	,,	Murray	Yanununbeyan	130 0 0	,, ,,	,,
2734	8803	,,	Rous	Pimlico	90 0 0	5 ,, ,,	1765
849	8701	,,	Cooper	Bairalong	122 0 0	9 ,, ,,	1913
1083	8699	,,	Urana	Hebden, &c.	133 0 0	,, ,,	,,
1113	8704	,,	Auckland	Yuglamah	8 0 0	,, ,,	,,
624	8702	,,	Dudley	Wittitrin	11 0 10	,, ,,	,,
1082	8706	,,	Ashburnham	Powbidgle	8 0 0	,, ,,	,,
3068	8821	,,	Rous	Terranora	30 0 0	13 ,, ,,	1986
1751	8720	,,	Darling	Manila	9 0 26	16 ,, ,,	2117
542	8722	,,	Drake	West Fairfield	6 0 0	,, ,,	,,
623	8718	,,	Kennedy	Bulbodney	640 0 0	,, ,,	,,
542	8721	,,	Drake	West Fairfield	12 3 0	,, ,,	,,
1332	8737	,,	Clarence	Nanegai	2 2 0	,, ,,	,,
1150	8725	,,	Clarke, &c.	Hall, &c	4,000 0 0	,, ,,	2118
,,	8735	,,	do	Seeley, &c.	580 0 0	,, ,,	,,
1229	8741	,,	Gough	Inverell	2 0 0	,, ,,	,,
88-15184	8724	109	Courallie	Gordon, &c.	2,420 0 0	,, ,,	,,
89- 1332	8738	101	Clarence	Nanegai	5 1 0	,, ,,	,,
88-16698	8727	109	Flinders	Nangerybone	640 0 0	,, ,,	2119
14806	8730	,,	Waljeers	Tom's Lake	640 0 0	,, ,,	,,
,,	8731	,,	do	do	640 0 0	,, ,,	,,
89- 1334	8742	101	Richmond	Hogarth	60 0 0	,, ,,	,,
1616	8744	,,	Bligh	Rouse	40 0 0	,, ,,	,,
318	8726	,,	Murchison	Munro	640 0 0	,, ,,	,,
C.S. 88-36888 dep.	8717	,,	Nandewar	Willain	40 0 0	,, ,,	,,
Ms. 89- 2688	8795	,,	Rous	Berwick	100 0 0	,, ,,	,,
1608	8743	,,	do	Billimudgel	28 0 0	,, ,,	,,
2698	8796	,,	Macquarie	Stewart	40 0 0	,, ,,	,,
1332	8739	,,	Clarence	Nanegai	2 0 0	,, ,,	2120
623	8719	,,	Kennedy, &c.	Cunningham, &c.	10,900 0 0	,, ,,	,,
2699	8797	112	Gloucester	Beryan	161 2 0	,, ,,	,,
79	8740	101	Georgiana	Mulgunnia	760 0 0	,, ,,	,,
88-15184	8723	109	Courallie	Burranbah	600 0 0	,, ,,	2121
89- 3315	8860	101	Gloucester	Stowell	40 0 0	20 ,, ,,	2219
3554	8849	,,	St. Vincent	Termeil	10 0 0	,, ,,	,,
222	8790	,,	Bathurst	Bathurst	18 0 0	23 ,, ,,	2294
88-15545	8757	,,	Auckland	Eden	0 1 7	,, ,,	,,
,,	8758	,,	do	do	0 1 24	,, ,,	,,
,,	8759	,,	do	do	0 2 0	,, ,,	,,
,,	8760	,,	do	do	0 3 32	,, ,,	,,

No. of Papers.	No. of Reserve.	Section.	County.	Parish.	Area.	*Government Gazette* in which the description is published.	Folio.
					a. r. p.		
Ms. 88–15545	8761	101	Auckland	Eden	0 3 35	23 Mar., 1889	2294
,,	8762	,,	do	do	1 0 0	,, ,,	,,
,,	8763	,,	do	do	1 0 0	,, ,,	,,
,,	8764	,,	do	do	1 0 0	,, ,,	,,
,,	8765	,,	do	do	2 0 0	,, ,,	,,
,,	8771	,,	do	do	1 2 0	,, ,,	,,
16062	8792	109	Mouramba, &c.	Roset, &c.	9,900 0 0	,, ,,	2295
89– 1324	8777	,,	Irrara	Mukudjeroo	9,660 0 0	,, ,,	,,
88–16530	8787	,,	do	Willyeroo, &c.	62,000 0 0	,, ,,	,,
16528	8746	,,	Livingstone, &c.	Curranyale, &c.	8,370 0 0	,, ,,	,,
89– 1326	8778	,,	Tongowoko, &c.	Hermitage, &c.	15½ sq. m.	,, ,,	,,
1748	8779	,,	Yancowinna, &c.	Maharatta, &c.	81 sq. m.	,, ,,	,,
					a. r. p.		
88–16699	8748	,,	Kennedy	Ossory	285 0 0	,, ,,	2296
,,	8749	,,	do	do	420 0 0	,, ,,	,,
15545	8754	101	Auckland	Eden	1 2 0	,, ,,	,,
,,	8766	,,	do	do	0 3 1	,, ,,	,,
,,	8767	,,	do	do	1 0 0	,, ,,	,,
,,	8768	,,	do	do	8 2 7	,, ,,	,,
,,	8769	,,	do	do	9 2 29	,, ,,	,,
,,	8770	,,	do	do	18 0 0	,, ,,	,,
16699	8747	,,	Kennedy	Ossory	30 0 0	,, ,,	,,
89– 1677	8785	,,	Murray	Goorooyarroo	8 0 0	,, ,,	2297
1201	8774	,,	Bathurst	Worcester	1,640 0 0	,, ,,	,,
88– 6695	8791	,,	Macquarie	Cowangra, &c.	565 0 0	,, ,,	,,
89– 1208	8750	,,	Goulburn	Germanton	2 1 0	,, ,,	,,
105	8773	,,	Buckland	Temi	350 0 0	,, ,,	,,
96	8772	,,	St. Vincent	Croobyar	5 0 0	,, ,,	2298
599	8793	,,	Bourke	Kinilibar	920 0 0	,, ,,	,,
1570	8781	,,	Phillip	Wilbertree	39 0 0	,, ,,	,,
1152	8794	,,	Brisbane	Wingen	588 0 0	,, ,,	,,
1573	8752	,,	Rous	Jiggi, &c.	160 0 0	,, ,,	,,
1421	8775	,,	Bathurst	Clinton	220 0 0	,, ,,	,,
1198	8776	112	Macquarie	Redbank	122 0 0	,, ,,	,,
88–15545	8755	101	Auckland	Eden	0 1 16	,, ,,	2299
,,	8756	,,	do	do	0 2 0	,, ,,	,,
89– 1337	8751	,,	Finch	Collarindabri	2 2 24	,, ,,	,,
3891	8885	,,	Clarke	Suley	450 0 0	27 ,, ,,	2363
95	8144	,,	Tongowoko	Hermitage	4,600 0 0	30 ,, ,,	2466
88–16017	8808	109	Hume	Bulgandry	480 0 0	,, ,,	,,
,,	8809	,,	do	do	480 0 0	,, ,,	,,
,,	8810	,,	do	Mahonga	200 0 0	,, ,,	,,
,,	8811	,,	do	do	350 0 0	,, ,,	,,
89– 1189	8804	,,	Yancowinna	Mount Gipps	400 0 0	,, ,,	,,
1614	8816	101	Rous	Tuckombil	2 0 11	,, ,,	2467
1603	8806	,,	Tongowoko	Hermitage	180 0 0	,, ,,	,,
626	8783	,,	Gresham	Buccarumbi	2 2 0	,, ,,	,,
4028	8898	,,	Dampier	Wyanbene	108 0 0	6 April, 1889	2682

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1889.

NEW SOUTH WALES.

CROWN LANDS.

(RESERVED FROM SALE UNTIL SURVEYED FOR THE PRESERVATION OF WATER SUPPLY OR OTHER PUBLIC PURPOSES.)

Presented to Parliament pursuant to Act, 48 Vic. No. 18.

ABSTRACT of Crown Lands reserved from sale until surveyed for the preservation of Water Supply or other public purposes, in accordance with the 101st, 109th, and 112th sections of the Act, 48 Victoria No. 18.

No. of Papers.	No. of Reserve.	Section.	County.	Parish.	Area.	*Government Gazette* in which the description is published.	Folio.
Ms. 89- 2572	8916	101	Sandon	Sobraon, &c.	85 sq. m.	10 April, 1889	2751
C.S. 88-24370 dep.	8912	,,	Ashburnham	Eugowra	a. r. p. 40 0 0	,, ,,	,,
24371 dep.	8913	,,	do	Wise	40 0 0	,, ,,	,,
Aln. 89- 1514	8900	,,	Goulburn	Jerra Jerra	154 2 0	,, ,,	2752
For. 89- 905	8873	112	Bathurst	Milburn	40 0 0	13 ,, ,,	2849
88- 7014	8827	,,	Auckland	Gnupa	3,650 0 0	,, ,,	,,
89- 1084	8874	,,	Mitchell	Pulletop	1,350 0 0	,, ,,	,,
Ms. 89- 1924	8851	101	Macquarie	Macquarie	520 0 0	,, ,,	2850
2270	8852	,,	Gloucester	Sutton, &c	900 0 0	,, ,,	,,
2319	8853	,,	Gregory	Quabothoo	17,500 0 0	,, ,,	,,
88-15861	8867	,,	Dowling	Gumbagunda	400 0 0	,, ,,	,,
,,	8868	,,	do	do	460 0 0	,, ,,	,,
,,	8869	,,	do	do	410 0 0	,, ,,	2851
,,	8870	,,	do	do	470 0 0	,, ,,	,,
89- 1535	8844	109	White	Manum, &c.	607 0 0	,, ,,	,,
1372	8824	101	Urana	Urana	42 0 0	,, ,,	,,
88-12738	8832	,,	Manara	Gunaramby	63 3 0	,, ,,	,,
,,	8833	,,	do	do	579 1 0	,, ,,	,,
89- 1661	8825	,,	Georgiana	Bigga	240 0 0	,, ,,	,,
2504	8865	,,	Fitzroy	Bagawa	25 0 0	,, ,,	2852
2081	8876	,,	Macquarie	Taree	1 1 20	,, ,,	,,
,,	8877	,,	do	do	12 2 0	,, ,,	,,
2626	8854	,,	do	Walibree	30 0 0	,, ,,	,,
2849	8872	,,	Murray	Boambolo	10 0 0	,, ,,	,,
2373	7430	109	Kennedy	Gobindery, &c.	9,000 0 0	,, ,,	,,
2376	8871	101	Clarence	Lawrence	100 0 0	,, ,,	,,
2373	7431	109	Kennedy	Fitzroy	640 0 0	,, ,,	2853
,,	7432	,,	do	Babathnil	350 0 0	,, ,,	,,
1562	8836	101	Cowper	Bye, &c	910 0 0	,, ,,	,,
1947	8861	,,	Rous	Cudgen	4 1 13	,, ,,	,,
,,	8862	,,	do	do	10 2 0	,, ,,	,,
,,	8863	,,	do	do	21 0 19	,, ,,	,,
,,	8864	,,	do	do	33 0 0	,, ,,	,,
2200	8840	,,	Cunningham	Wollongong, &c.	58 0 0	,, ,,	,,
2687	8842	,,	Forbes	Maudry	20 0 0	,, ,,	,,
393	8828	,,	Gloucester	Eldon	5 2 0	,, ,,	2854
1255	8830	,,	Yancowinna	Bray	4 3 0	,, ,,	,,
2445	8829	,,	Urana	North Gunambil	320 0 0	,, ,,	,,
1789	3429	,,	Northumberland	Spencer	20 0 0	,, ,,	,,
Ls. 88- 7566	8858	,,	Courallie	Talmoi	153 0 0	,, ,,	,,
Aln. 89- 131	8826	,,	Hawes	Conatwong	468 3 0	,, ,,	,,
Ms. 89- 1372	8823	,,	Urana	Urana	2 0 0	,, ,,	2855
2237	8857	,,	Camden	Bundanoon	75 0 0	,, ,,	,,
2064	8856	,,	do	Wingello	49 0 0	,, ,,	,,
88-15283	8855	,,	Cooper	Bringan, &c.	370 0 0	,, ,,	,,
89- 1335	8883	,,	Murchison	Gum Flat	1 0 0	,, ,,	,,
954	8838	,,	Wynyard	Calafat	10 0 0	,, ,,	,,
88-16800	8878	,,	Denison	Tocumwal	435 0 0	,, ,,	2856
89- 2672	8890	,,	Macquarie	Oxley	190 0 0	18 ,, ,,	3058
,,	8891	,,	do	do	225 0 0	,, ,,	,,
2628	8888	,,	Gloucester	Bootoowa	30 0 0	,, ,,	,,
2775	8893	109	Monteagle	Kikiamah	30 0 0	,, ,,	,,
For. 89- 1254	8895	101	Brisbane	Wingen	220 0 0	,, ,,	3059
Ms. 89- 2629	8889	,,	Gloucester	Tinonee	1,900 0 0	,, ,,	,,
3010	8894	,,	Durham	Dungog	65 0 0	,, ,,	,,
88-13262	8886	,,	Clarence	Great Marlow	125 0 0	,, ,,	,,
89- 2751	8892	,,	Camden	Bundanoon	37 2 0	,, ,,	,,
3053	8902	109	Buller, &c	Girard, &c	1,800 0 0	27 ,, ,,	3170

No. of Papers.	No of Reserve.	Section.	County.	Parish.	Area	*Government Gazette* in which the description is published.	Folio.
					a. r. p.		
Ms. 89- 4509	8814	101	Blaxland	Mount Hope	150 0 0	27 April, 1889	3170
,,	8815	,,	do	do	540 0 0	,, ,,	,,
2154	8169	,, & 109	Canbelego	Willeroon	1,600 0 0	,, ,,	3171
,,	8170	,,	do	do	1,600 0 0	,, ,,	,,
88-10447	8905	101	Bland	Bumbi	14 0 0	,, ,,	,,
89- 1528	8896	,,	King	Bramah	800 0 0	,, ,,	,,
4338	8903	,,	Cunningham	Bimbella	160 0 0	,, ,,	,,
1899	8897	,,	Raleigh	Denison	350 0 0	,, ,,	,,
2490	8901	,,	Ashburnham	Carrawabbity	50 0 0	,, ,,	,,
For. 89- 355	8904	112	Cunningham	Tinda, &c	800 0 0	,, ,,	3172
Ms. 89- 4444	8978	101	Northumberland	Cessnock	7,820 0 0	1 May, 1889	3231
5221	9005	,,	Clarence	Dundoo	375 0 0	,, ,,	,,
5267	8979	,,	Burnett	Hadleigh	490 0 0	,, ,,	3232
C.S. 89-10693 dep.	8977	,,	Dudley	Yarrabandini	48 0 0	,, ,,	,,
Ms. 89- 3312	8922	,,	Auckland	Yuglamah	24 2 0	4 ,, ,,	3305
3812	8943	,,	Argyle	Bau Bau	2 2 0	,, ,,	,,
For. 89- 1665	8945	,,	Durham	Russell	2,450 0 0	,, ,,	3306
Ms. 89- 3874	8927	,,	Hardinge	Bundarra	4 2 15	,, ,,	,,
2728	8932	,,	Monteagle	Young	20 2 10	,, ,,	,,
3308	8937	109	Kilfera	Yelkeer	640 0 0	,, ,,	,,
,,	8938	,,	do	do	640 0 0	,, ,,	,,
88-15037	8919	,,	Finch	Borah	200 0 0	,, ,,	,,
89- 4015	7733	,,	Hardinge	Stony Batter	65 0 0	,, ,,	3307
Aln. 89- 1115	8946	101	Cumberland	Cornelia	50 0 0	,, ,,	,,
Ms. 89- 5264	8934	,,	Buckland	Currabubula	740 0 0	,, ,,	,,
3585	8924	,,	Courallie	Moree	68 0 0	,, ,,	,,
5264	8933	,,	Buckland	Currabubula	5 3 10	,, ,,	,,
3919	8920	,,	Clarence	Yamba	10 0 0	,, ,,	3308
3698	8926	,,	Sandon	Metz	0 1 0	,, ,,	,,
3879	8967	,,	Northumberland	Newcastle	0 0 30	,, ,,	,,
3919	8921	,,	Clarence	Yamba	9 1 0	,, ,,	,,
3318	8923	,,	Gordon	Ponto	7 2 0	,, ,,	,,
2256	8917	,,	Hume	Creighton	2 0 0	,, ,,	,,
88- 3123	8925	,,	Leichhardt	Gilwarny	224 0 0	,, ,,	,,
89- 4250	8944	,,	Camden	Illaroo	32 0 0	,, ,,	,,
4108	8928	112	Clive	Booloo, &c.	1,100 0 0	,, ,,	3309

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1889.

NEW SOUTH WALES.

CROWN LANDS.

(RESERVED FROM SALE UNTIL SURVEYED FOR THE PRESERVATION OF WATER SUPPLY OR OTHER PUBLIC PURPOSES.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Crown Lands reserved from sale until surveyed for the preservation of Water Supply or other public purposes, in accordance with the 101st, 103rd, 109th, and 112th sections of the Act 48 Victoria No. 18.

No. of Papers.	No. of Reserve.	Section.	County.	Parish.	Area. a. r. p.	*Government Gazette* in which the description is published.	Folio.
C.S. 89-10152 dep.	9036	101	Camden	Wallaya	896 0 0	8 May, 1889	3429
Ms. 89- 4778	9037	,,	Cumberland	Southend	1,840 0 0	,, ,,	,,
5256	8929	103	Jamison	Bobbiwaa	100 0 0	11 ,, ,,	3511
,,	8930	,,	do	Boorah	503 2 0	,, ,,	3512
2369	8968	109	Monteagle	Coba, &c.	420 0 0	,, ,,	3517
88-16803	6484	101	Gordon	Ganoo	1,580 0 0	,, ,,	,,
,,	6498	,,	do	do	460 0 0	,, ,,	,,
89- 2457	8931	,,	Bland	Bundawarrah	1 0 0	,, ,,	,,
Rds. 89- 6-3	8935	,,	Clarendon	Hurley, &c.	38 0 0	,, ,,	,,
Ms. 89- 4080	8950	,,	Gough	Fletcher, &c.	575 0 0	,, ,,	3518
4062	8951	,,	Northumberland	Spencer, &c.	670 0 0	,, ,,	,,
,,	8952	,,	do	St. Albans, &c.	2,580 0 0	,, ,,	,,
,,	8953	,,	do	do	200 0 0	,, ,,	,,
,,	8954	,,	do	Wallambone, &c	1,500 0 0	,, ,,	,,
,,	8955	,,	do	Lockyer, &c.	1,150 0 0	,, ,,	,,
,,	8956	,,	Cumberland	Frederick	890 0 0	,, ,,	,,
,,	8957	,,	do	do	90 0 0	,, ,,	3519
3938	8948	,,	Cunningham	Gunningbland	1,280 0 0	,, ,,	,,
3965	8949	109	Cooper	Megum, &c.	2,560 0 0	,, ,,	,,
1328	8947	,,	Werunda	Yoree, &c.	4,160 0 0	,, ,,	,,
2369	8969	101	Monteagle	Tyagong	289 3 0	,, ,,	,,
Occ. 89- 3164	8982	,,	Rous	Pemlico	22 2 0	18 ,, ,,	3633
Ms. 89- 4727	8981	,,	Dampier	Bermaguee	810 0 0	,, ,,	,,
4650	2799	,,	Durham	Auckland	393 0 0	,, ,,	,,
4569	8085	109	Ashburnham	Boree Nyrang, &c.	580 0 0	,, ,,	3634
4331	8049	,,	Gregory	Boonum	380 0 0	,, ,,	,,
C.S. 89-1354 dep.	8983	101	Bathurst	Somers	80 0 0	,, ,,	,,
Ms. 89-4573	8990	,,	Roxburgh	Bandamora	0 2 25¾	,, ,,	,,
4030	8985	,,	Bourke	Kindra	160 0 0	,, ,,	,,
4596	8991	,,	Clive	Bolivia	1 1 0	,, ,,	,,
,,	8992	,,	do	do	1 1 0	,, ,,	,,
249	8989	,,	Camden	Joadja	4,200 0 0	,, ,,	3635
1782	8994	,,	Drake	Tabulam	6 0 0	,, ,,	,,
,,	8995	,,	do	do	8 2 0	,, ,,	,,
,,	8996	,,	do	do	23 0 0	,, ,,	,,
5268	8984	,,	Bourke	Hooke, &c.	4,500 0 0	,, ,,	,,
4643	8980	,,	Menindie	Menindie	10 0 0	,, ,,	,,
5666	9045	,,	Gough	Inverell	100 0 0	,, ,,	3636
4578	8997	,,	Cadell	Bama	30 0 0	,, ,,	,,
,,	8998	,,	do	do	60 0 0	,, ,,	,,
1782	8993	,,	Drake	Tabulam	2 2 0	,, ,,	,,
4081	8970	,,	Clyde	Brewarrina	1 2 0	,, ,,	,,
3008	8971	,,	Gough	Highland Horn	80 0 0	,, ,,	,,
6339	7118	,,	Cumberland	North Colah	54 0 0	23 ,, ,,	3711
2686	9046	,,	Sandon	Metz	0 1 0	,, ,,	,,
,,	9047	,,	do	do	0 1 8	,, ,,	,,
,,	9048	,,	do	do	0 2 16	,, ,,	,,
,,	9049	,,	do	do	0 2 26	,, ,,	,,
,,	9050	,,	do	do	9 0 29	,, ,,	,,
88-11502	9025	,,	Durham	Rowan	1 1 8	,, ,,	,,
89- 1496	9013	,,	Inglis	Moonbi	1 2 0	,, ,,	,,
3384	9031	,,	Hardinge	Bundarra	11 2 30	,, ,,	,,
88-11502	9022	,,	Durham	Rowan	3 2 0	,, ,,	3713
,,	9023	,,	do	do	2 2 0	,, ,,	,,
,,	9021	,,	do	do	0 1 27½	,, ,,	,,
89 489	9017	,,	Cumberland	Field of Mars	25 3 5¼	,, ,,	,,
3819	9032	,,	Benarba	Boyanga, &c.	20,900 0 0	,, ,,	,,

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					a.	r.	p.				
89- 2686	9054	101	Sandon	Metz ...	6	2	36	23 May		1889	3713
1496	9010	,,	Inglis ...	Moonbi ...	0	3	0	,,	,,	,,	,,
,,	9006	,,	do ...	do ...	80	0	0	,,	,,	,,	3714
,,	9007	,,	do ...	do ...	9	3	0	,,	,,	,,	,,
,,	9009	,,	do ...	do ...	1	2	0	,,	,,	,,	,,
,,	9014	,,	do ...	do ...	12	1	0	,,	,,	,,	,,
,,	9008	,,	do ...	do ...	3	1	0	,,	,,	,,	,,
For. 88- 5772	9034	,,	Northumberland ...	Belford ...	1,180	0	0	,,	,,	,,	,,
Ms. 89- 4715	9016	,,	Sandon ...	Armidale ...	10	0	8	,,	,,	,,	3715
2686	9051	,,	do ...	Metz ...	0	2	32	,,	,,	,,	,,
,,	9052	,,	do ...	do ...	4	2	38	,,	,,	,,	,,
,,	9053	,,	do ...	do ...	5	2	28	,,	,,	,,	,,
5036	9027	,,	Bathurst ...	Milburn ...	29	0	0	,,	,,	,,	,,
5226	9033	,,	Monteagle ...	Brundah ...	10	0	0	,,	,,	,,	,,
4498	9018	,,	Vernon ...	Tia ...	4	3	0	,,	,,	,,	,,
88-11502	9026	,,	Durham ...	Rowan ...	2	0	0	,,	,,	,,	,,
89- 1496	9015	,,	Inglis ...	Moonbi ...	19	0	0	,,	,,	,,	,,
,,	9011	,,	do ...	do ...	1	2	0	,,	,,	,,	,,
88-11502	9024	,,	Durham ...	Rowan ...	10	2	20	,,	,,	,,	3716
89- 1496	9012	,,	Inglis ...	Moonbi ...	5	0	0	,,	,,	,,	,,
6581	9157	,,	Wellington ...	Nubrigyn ...	20	0	0	29	,,	,,	3819
6246	9156	,,	Gregory ...	Wallamgambone ...	300	0	0	,,	,,	,,	,,
6015	9155	112	Leichhardt ...	Geelnoy ...	1,050	0	0	,,	,,	,,	,,
2169	9041	101	Rous ...	Byron ...	110	0	0	1 June,		1889	3877
4637	8942	,,	Bligh ...	Booyamurna ...	167	0	0	,,	,,	,,	,,
6476	9158	,,	Drake ...	West Fairfield ...	1	0	0	,,	,,	,,	3879
,,	9162	,,	do ...	do do ...	40	0	0	,,	,,	,,	,,
,,	9159	,,	do ...	do do ...	11	0	0	,,	,,	,,	,,
,,	9160	,,	do ...	do do ...	11	0	0	,,	,,	,,	,,
2169	9038	,,	Rous ...	Byron ...	10	0	0	,,	,,	,,	3878
,,	9039	,,	do ...	Brunswick ...	70	3	0	,,	,,	,,	,,
,,	9040	,,	do ...	do ...	100	0	0	,,	,,	,,	,,
6476	9161	,,	Drake ...	West Fairfield ...	5	0	0	,,	,,	,,	,,
,,	9163	,,	do ...	do ...	0	2	0	,,	,,	,,	3879
,,	9164	,,	do ...	do ...	0	3	0	,,	,,	,,	,,
,,	9165	,,	do ...	do ...	0	3	0	,,	,,	,,	,,
,,	9166	,,	do ...	do ...	1	0	0	,,	,,	,,	,,
,,	9167	,,	do ...	do ...	1	0	0	,,	,,	,,	,,
,,	9168	,,	do ...	do ...	1	0	0	,,	,,	,,	,,
,,	9169	,,	do ...	do ...	1	2	0	,,	,,	,,	,,
,,	9170	,,	do ...	do ...	2	0	0	,,	,,	,,	,,
,,	9171	,,	do ...	do ...	2	2	0	,,	,,	,,	,,
,,	9172	,,	do ...	do ...	12	0	0	,,	,,	,,	,,
,,	9173	,,	do ...	do ...	12	0	0	,,	,,	,,	,,
4609	9043	,,	Ashburnham ...	Forbes ...	820	0	0	,,	,,	,,	,,
4450	8988	,,	Goulburn ...	Cumboroona ...	70	0	0	,,	,,	,,	3880
4449	9042	,,	Bland ...	Dudauman ...	78	0	0	,,	,,	,,	,,
4742	9035	112	Bourke ...	Ganmain, &c. ...	6,115	0	0	,,	,,	,,	,,
4609	9044	109	Ashburnham ...	Forbes, &c. ...	2,320	0	0	,,	,,	,,	,,
7136	9206	101	Cunningham, &c. ...	Murga, &c. ...	6,700	0	0	5	,,	,,	3947

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1889.

NEW SOUTH WALES.

CROWN LANDS.

(RESERVED FROM SALE UNTIL SURVEYED FOR THE PRESERVATION OF WATER SUPPLY OR OTHER PUBLIC PURPOSES.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Crown Lands reserved from sale until surveyed for the preservation of Water Supply or other public purposes, in accordance with the 101st, 103rd, 109th, and 112th sections of the Act 48 Victoria No. 18.

No. of Papers.	No. of Reserve.	Section.	County.	Parish.	Area.	*Government Gazette* in which the description is published.	Folio.
					a. r. p.		
Ms. 89- 3824	9063	101	Harden	Burra	163 0 0	8 June, 1889	4051
5500	9064	112	Westmoreland	Swatchfield	12 0 0	,, ,,	4052
6875	9119	,,	Murray	Ginninderra	480 0 0	,, ,,	,,
3275	9056	,,	Cumberland	Maroota	6,000 0 0	,, ,,	,,
3685	9057	,,	Flinders	Babinda, &c.	13,270 0 0	,, ,,	,,
4913	9092	101	Pottinger	Bogabri	4 0 38	,, ,,	,,
,,	9093	,,	do	do	35 2 24	,, ,,	,,
2788	6888	109	Oxley	Darouble	290 0 0	,, ,,	,,
88-14840	9066	,,	Cunningham, &c.	Turndle, &c.	9,000 0 0	,, ,,	4053
89- 3969	9069	101	Dudley	Yarravel	0 1 11	,, ,,	,,
5431	9073	,,	Macquarie	Cairncross	7 0 38	,, ,,	,,
1340	9071	,,	Cadell	Bama	18 0 0	,, ,,	,,
102	9077	,,	Kennedy	Kadina	10 0 0	,, ,,	,,
103	9079	,,	do	Burrill	10 0 0	,, ,,	,,
6873	9089	,,	Goulburn	Gerogery	2 2 0	,, ,,	,,
,,	9090	,,	do	do	8 0 0	,, ,,	4054
,,	9091	,,	do	do	8 2 0	,, ,,	,,
4204	9059	,,	Northumberland	Spencer	40 0 0	,, ,,	,,
,,	9060	,,	do	do	40 0 0	,, ,,	,,
,,	9062	,,	Cumberland	Frederick	60 0 0	,, ,,	,,
,,	9061	,,	Northumberland	Spencer	50 0 0	,, ,,	,,
6873	9088	,,	Goulburn	Gerogery	20 0 0	,, ,,	,,
6268	9104	,,	Blaxland	Mount Hope	120 0 0	,, ,,	,,
6266	9103	,,	do	do	80 0 0	,, ,,	,,
4913	9094	,,	Pottinger	Bogabri	0 2 0	,, ,,	,,
6873	9084	,,	Goulburn	Gerogery	1 2 0	,, ,,	4055
6276	9105	,,	Bathurst	Tintern	40 0 0	,, ,,	,,
4913	9095	,,	Pottinger	Bogabri	1 1 33	,, ,,	,,
3362	9067	,,	Yanda	Yandagulla	32 1 0	,, ,,	,,
6873	9087	,,	Goulburn	Gerogery	25 0 0	,, ,,	,,
,,	9086	,,	do	do	4 3 0	,, ,,	,,
,,	9085	,,	do	do	4 3 0	,, ,,	,,
5427	9058	,,	Gipps	Bogandillon	120 0 0	,, ,,	,,
88-14840	9065	,,	Cunningham	Corella	100 0 0	,, ,,	4056
89- 1928	9055	,,	Westmoreland	Muruin, &c.	2,700 0 0	,, ,,	,,
4913	9096	,,	Pottinger	Bogabri	300 0 0	,, ,,	,,
C.S. 89- 1353 dep.	9120	,,	Georgiana	Bombah	40 0 0	,, ,,	,,
Occ. 88-11977	9075	,,	Wakool	Yellymong	1 0 0	,, ,,	,,
Ms. 89- 6206	9123	,,	Clarke, &c.	Hall, &c.	76,000 0 0	,, ,,	,,
2750	9097	,,	Franklin	Bacda, &c.	1,649 0 0	,, ,,	4057
C.S. 89-2655 cor.	9285	,,	Monteagle	Tyagong	400 0 0	,, ,,	,,
Ms. 89- 7384	9252	,,	Rous	Ballina	40 0 0	12 ,, ,,	4132
4457	9136	112	Macquarie	John's River	970 0 0	,, ,,	,,
For. 89- 2132	9142	,,	Vernon	Tiara, &c.	1,815 0 0	15 ,, ,,	4213
Ms. 87-11461	9139	,,	Ewenmar	Gewah	1,280 0 0	,, ,,	,,
88-16545	9144	101	Harden	Murrimboola	6 2 37	,, ,,	,,
,,	9145	,,	do	do	6 1 6	,, ,,	4215
,,	9146	,,	do	do	6 3 4	,, ,,	,,
						,, ,,	,,

No of Papers.	No of Reserve	Section	County	Parish	Area	*Government Gazette* in which the description is published	Folio.
					a. r. p.		
88-16545	9147	101	Harden	Murrimboola	8 3 10	15 June, 1889	4216
,,	9148	,,	do	do	9 1 28	,, ,,	,,
,,	9149	,,	do	do	35 0 10	,, ,,	,,
89- 5385	9140	,,	Rous	Brunswick	0 1 0	,, ,,	,,
5960	9138	,,	Ashburnham	Forbes	150 0 0	,, ,,	,,
7122	9208	,,	Denham	Reynolds, &c.	19,000 0 0	,, ,,	,,
4110	9114	,,	King	Wallah	16 0 0	,, ,,	4217
2845	9111	,,	Gloucester	Bootoowa	25 0 0	,, ,,	,,
5957	9141	,,	Lincoln	Dapper	150 0 0	,, ,,	,,
88-12195	9135	,,	Monteagle	Illunie	2 0 0	,, ,,	,,
89- 4456	9126	,,	Bourke	Warren	8 0 0	,, ,,	,,
88-16545	9150	,,	Harden	Murrimboola	54 0 0	,, ,,	,,
89- 2494	9125	,,	Parry	Dungowan	280 0 0	,, ,,	,,
88-16545	9151	,,	Harden	Murrimboola	4 3 0	,, ,,	4218
Occ. 89- 3940	9130	,,	Townsend	Boyes	284 0 0	,, ,,	,,
Ms. 89- 4110	9113	,,	King	Wallah	40 0 0	,, ,,	,,
4718	9134	,,	Northumberland	Newcastle	1 0 0	,, ,,	,,
87- 5426	9137	,,	Gipps	Euglo South	32 0 0	,, ,,	,,
89- 608	9102	,,	Rous	Bexhill	6 0 0	,, ,,	,,
88-16545	9143	,,	Harden	Murrimboola	12 3 10	,, ,,	,,
89- 2848	9152	103	Cook	Strathdon	9 0 0	22 ,, ,,	4400
,,	9153	,,	do	do	9 0 0	,, ,,	,,
88-11502	9022	101	Durham	Rowan	3 2 0	,, ,,	4402
,,	9023	,,	do	do	2 2 0	,, ,,	,,
89- 5234	9204	,,	Cunningham	Melrose	1,100 0 0	,, ,,	,,
,,	9205	,,	do	do	4,150 0 0	,, ,,	,,
3221	9124	,,	Sandon	Exmouth	73 0 0	,, ,,	,,
88-11502	9021	,,	Durham	Rowan	0 1 27½	,, ,,	4403
,,	9024	,,	do	do	10 2 20	,, ,,	,,
,,	9025	,,	do	do	1 1 8	,, ,,	,,
,,	9026	,,	do	do	2 0 0	,, ,,	,,
89- 7525	9178	103	Hardinge	Balala	118 0 0	29 ,, ,,	4500
,,	9179	,,	do	Cameron	287 0 0	,, ,,	,,
,,	9180	,,	do	do	390 0 0	,, ,,	,,
,,	9181	,,	do	Chapman	90 0 0	,, ,,	,,
,,	9182	,,	do	do	109 0 0	,, ,,	,,
,,	9183	,,	do	do	147 0 0	,, ,,	,,
,,	9184	,,	do	do	359 0 0	,, ,,	,,
,,	9185	,,	do	do	450 0 0	,, ,,	,,
,,	9186	,,	do	do	1,500 0 0	,, ,,	,,
,,	9187	,,	do	Honeysuckle	555 0 0	,, ,,	,,
,,	9188	,,	do	do	1,737 0 0	,, ,,	,,
,,	9189	,,	do	do	2,350 0 0	,, ,,	4501
,,	9190	,,	do	Morse	169 0 0	,, ,,	,,
,,	9191	,,	do	Nuandle	238 0 0	,, ,,	,,
,,	9192	,,	do	do	426 2 0	,, ,,	,,
,,	9193	,,	Sandon	Devon	157 0 0	,, ,,	,,
,,	9194	,,	do	do	158 1 0	,, ,,	,,
,,	9195	,,	do	do	800 0 0	,, ,,	,,
,,	9196	,,	Gough	Clive	63 2 0	,, ,,	,,
,,	9197	,,	Hardinge	Chigwell	877 0 0	,, ,,	,,
,,	9198	,,	do	Darbysleigh	400 0 0	,, ,,	,,
,,	9199	,,	do	Mayo	634 0 0	,, ,,	4502
,,	9200	,,	do	Mayo, &c	1,400 0 0	,, ,,	,,
1718	9213	101	Wellington	Hargraves	35 0 0	,, ,,	,,
,,	9214	,,	do	do	640 0 0	,, ,,	,,
3148	9219	,,	Sandon	Uralla	4 3 29	,, ,,	,,
5169	9220	,,	do	do	35 1 0	,, ,,	,,
5403	9218	109	Wakool	Jimaringle	640 0 0	,, ,,	,,
5716	9223	,,	do	Benjee	1,920 0 0	,, ,,	4503
5067	7737	,,	Burnett	Bennett	48 0 0	,, ,,	,,
4641	9217	101	Evelyn	Oil	2 0 0	,, ,,	,,
5032	9246	,,	Murchison	King	220 0 0	,, ,,	,,
4645	9241	,,	Rous	Jiggi	140 0 0	,, ,,	,,
6176	9210	,,	Northumberland	Warkworth	104 0 0	,, ,,	,,
8157	9358	,,	Jamison	Queerbri	608 0 0	,, ,,	4504
6134	9353	,,	Gowen	Tooraweanah	60 0 0	,, ,,	,,
5494	9242	112	Northumberland	Dora	700 0 0	,, ,,	,,
For. 89- 1750	9248	,,	Dampier	Bergalia	2,800 0 0	,, ,,	,,
Ms. 89- 1198	9216	,,	Macquarie	Redbank	122 0 0	,, ,,	,,
1718	9215	101	Wellington	Hargraves, &c	3,635 0 0	,, ,,	,,
5692	9247	,,	Goulburn	Yarra Yarra	160 0 0	,, ,,	4505
6305	9224	,,	Georgiana	Rockley	1 1 28	,, ,,	,,
6092	9209	,,	Richmond	Darke	75 0 0	,, ,,	,,
6091	9244	,,	do	do	8 0 0	,, ,,	,,
5503	9243	,,	Gordon	Dilga, &c.	100 0 0	,, ,,	,,
5689	9222	,,	Brisbane	Nerobingabla	35 0 0	,, ,,	,,
5490	9249	,,	Buckland	Wallabadah	2 0 0	,, ,,	,,
,,	9250	,,	do	do	12 3 0	,, ,,	,,
C S. 89- 8249 dep	9207	,,	Bland	Memagong	640 0 0	,, ,,	,,
Ms 89- 4874	9245	,,	Macquarie	Kinchela	320 0 0	,, ,,	4506
C.S. 89-12257 dep	9212	,,	Buckland	Wallabadah	44 0 0	,, ,,	,,
Ms. 88 7057	6722	,,	Napier	Napier	640 0 0	,, ,,	,,
C.S 88- 2898 cor.	6723	,,	do	Allison	637 2 0	,, ,,	,,
Occ. 89- 6151	9201	,,	Clyde	Carinda	1 1 0	,, ,,	,,
Ms. 89- 6389	9211	,,	Bligh	Booyamurna	6 0 0	,, ,,	,,
7525	9177	,,	Sandon	Hannam	10 0 0	,, ,,	,,

Sydney: Charles Potter, Government Printer.—1889.

[3d.]

1889.

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Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Crown Lands reserved from sale until surveyed for the preservation of Water Supply or other public purposes, in accordance with the 101st, 103rd, 109th, and 112th sections of the Act 48 Victoria No. 18.

No. of Papers.	No. of Reserve.	Section.	County.	Parish.	Area.			*Government Gazette* in which the description is published.	Folio.
					a.	r.	p.		
Ms. 89- 6510	9240	103	Gloucester	Wollom	60	0	0	6 July, 1889.	4685
5613	9310	101	Westmoreland	Swatchfield	20	0	0	,, ,,	4690
6737	9312	,,	Fitzroy	Toothill	37	0	0	,, ,,	,,
7327	9303	,,	Wakool	Moulamein South	2	2	0	,, ,,	,,
,,	9304	,,	do	do	4	2	0	,, ,,	,,
2782	9308	,,	Cowper	Bourke	10	0	0	,, ,,	,,
7206	9313	109	Hume	Morven	475	0	0	,, ,,	4691
,,	9314	,,	do	Round Hill	550	0	0	,, ,,	,,
,,	9315	,,	do	Sherwin	580	0	0	,, ,,	,,
,,	9316	,,	do	Piney Range	610	0	0	,, ,,	,,
,,	9317	,,	do	Creighton	185	0	0	,, ,,	,,
4854	9294	,,	Sandon	Exmouth	450	0	0	,, ,,	,,
,,	9295	,,	do	Duval, &c.	584	0	0	,, ,,	,,
6401	9296	,,	Burnett, &c.	Burnett, &c.	530	0	0	,, ,,	,,
3317	9272	,,	Denison	Coreen West	295	0	0	,, ,,	,,
,,	9273	,,	do	Dry Forest	320	0	0	,, ,,	4692
,,	9274	,,	do	Wahgunyah	209	1	0	,, ,,	,,
,,	9275	,,	do	Denison	200	0	0	,, ,,	,,
,,	9276	,,	do	Bull Plains	160	0	0	,, ,,	,,
,,	9277	,,	do	Coreen West	329	2	0	,, ,,	,,
2241	9256	,,	Jamison	Gommel	320	0	0	,, ,,	,,
5959	9258	,,	Cowper	Banga	640	0	0	,, ,,	,,
,,	9259	,,	do	do	640	0	0	,, ,,	,,
,,	9260	,,	do	do	224	0	0	,, ,,	,,
3317	9271	101	Denison	Bull Plain	640	0	0	,, ,,	,,
7206	9319	,,	Hume	Thugga	300	0	0	,, ,,	4693
5959	9261	,,	Cowper	East Bourke	640	0	0	,, ,,	,,
,,	9262	,,	do	do	640	0	0	,, ,,	,,
,,	9263	,,	do	do	640	0	0	,, ,,	,,
,,	9264	,,	do	do	640	0	0	,, ,,	,,
,,	9265	,,	do	do	533	0	0	,, ,,	,,
,,	9266	,,	do	do	483	0	0	,, ,,	,,
,,	9267	,,	do	do	380	0	0	,, ,,	,,
3317	9278	109	Hume, &c.	Gordon, &c.	2,750	0	0	,, ,,	4694
5482	9320	,,	Wakool	Woorooma	67	0	0	,, ,,	,,
,,	9321	,,	do	Landale	283	0	0	,, ,,	,,
6758	9322	,,	Waradgery	Yimbaring	9,920	0	0	,, ,,	,,
1768	9324	,,	Evelyn	Milparinka	1,560	0	0	,, ,,	4695
7327	9300	101	Wakool	Moulamein South	4	0	0	,, ,,	,,
,,	9301	,,	do	do	4	2	0	,, ,,	,,
5584	9309	,,	Forbes	Binda	4	0	0	,, ,,	,,
6613	9311	,,	Camden	Bundanoon	120	0	0	,, ,,	,,
7327	9302	,,	Wakool	Moulamein South	4	2	0	,, ,,	,,
2782	9305	,,	Cowper	Bourke	1	1	11	,, ,,	,,
,,	9306	,,	do	do	1	2	0	,, ,,	,,
,,	9307	,,	do	do	5	1	0	,, ,,	,,
7327	9293	,,	Wakool	Moulamein	0	2	0	,, ,,	,,
7121	9323	,,	Gloucester	Wilmot	100	0	0	,, ,,	4696

No of Papers	No of Reserve	Section	County	Parish	Area r	a	p	Government Gazette in which the description is published			Folio
7206	9318	101	Hume	Piney Range ...	170	0	0	6 July,	1889		4696
7643	9325	112	Bligh	Warung	400	0	0	,,	,,		,,
3360	9225	101	Sandon	Arding	28	2	0	,,	,,		,,
8779	9437	,,	Georgiana	Mount Lawson	130	0	0	10	,,	,,	4747
5223	9286	103	Rous	Brunswick	272	0	0	13	,,	,,	4832
,,	9287	,,	do	Cudgen	186	0	0	,,	,,	,,	,,
,,	9288	,,	do	do	400	0	0	,,	,,	,,	,,
,,	9289	,,	do	do	510	0	0	,,	,,	,,	,,
,,	9290	,,	do	Mooball	370	0	0	,,	,,	,,	,,
,,	9291	,,	do	do	640	0	0	,,	,,	,,	,,
,,	9292	,,	do	do, &c	1,250	0	0	,,	,,	,,	,,
5322	9253	101	Gough	Clive	2,600	0	0	,,	,,	,,	4836
6668	9337	,,	Wellington	Forbes	94	0	0	,,	,,	,,	,,
6946	9335	,,	Argyle	Goulburn	0	3	3	,,	,,	,,	,,
7007	9330	,,	Wynyard	Lumut	250	0	0	,,	,,	,,	,,
5163	9331	109	Arrawatta, &c	Byron, &c	350	0	0	,,	,,	,,	4837
6843	9327	101	Argyle	Collector	1	2	0	,,	,,	,,	,,
3641	9347	109	Hume	Walla Walla	88	0	0	,,	,,	,,	4838
,,	9348	,,	do	do	470	0	0	,,	,,	,,	,,
,,	9349	,,	do	do	640	0	0	,,	,,	,,	,,
5163	9332	,,	Arrawatta	Bannockburn	280	0	0	,,	,,	,,	,,
,,	9333	,,	do	do	260	0	0	,,	,,	,,	,,
,,	9334	,,	Burnett	Burnett	60	0	0	,,	,,	,,	,,
7006	9329	,,	Wynyard	Batlow	140	1	0	,,	,,	,,	,,
2085	9338	101	Goulburn	Huon	10	0	0	,,	,	,,	,,
1605	9343	,,	Raleigh	Warrell	8	0	0	,,	,,	,,	4839
4188	9340	,,	Nicholson	South Marowrie	10	0	0	,,	,,	,,	,,
7006	9328	,,	Selwyn	Yellowin	275	0	0	,,	,,	,,	,,
9086	9478	,,	Gloucester	Kundibakh	24	0	0	17	,,	,,	4929
7133	9398	,,	St Vincent	Wandiawandian	16	0	0	,,	,,	,,	4930
9081	9479	,,	Murray	Warri	40	0	0	,,	,,	,,	,,
4638	9355	,,	Macquarie	Macquarie	0	0	18	20	,,	,,	4982
6382	9368	109	Bland	Yeo Yeo	160	0	0	,,	,,	,,	4984
4856	9367	,,	Gipps	Warroo	347	0	0	,,	,,	,,	,,
7530	9482	101	Georgiana	Yarraman	378	2	0	,,	,,	,,	,,
7531	9176	,,	Vernon	Walcha	58	0	0	,,	,,	,,	,,
7534	9480	,,	Northumberland	Maitland	10	0	0	,,	,,	,,	,,
5402	9369	,,	Wakool	Gerabbit	1,280	0	0	,,	,,	,,	,,
7534	9484	,,	Northumberland	Maitland	2	0	23¼	,,	,,	,,	4985
7556	9326	,,	Yancowinna	Robe, &c	3,240	0	0	,,	,,	,,	,,
7530	9481	,,	Georgiana	Yarraman	370	0	0	,,	,,	,,	,,
6258	9388	,,	Westmoreland	Switchfield	24	0	0	,,	,,	,,	,,
4720	9356	,,	Bourke	Kindra	9	0	33	,,	,,	,,	,,
7581	9128	,,	Raleigh	Newry	8	0	0	,,	,,	,,	,,
8121	9386	,,	Ashburnham	Eugowra	80	0	0	,,	,,	,,	4986
6743	9357	,,	Bligh	Moan	80	0	0	,,	,,	,,	,,
7405	9465	,,	Camden	Bulho	18	3	0	,,	,,	,,	,,
6438	9336	,,	Hardinge	Elderbury	22	0	0	,,	,,	,,	,,
8887	9477	103	Camden	Cowridjah	15	0	22	27	,,	,,	5144
9052	9370	101	Gloucester	Foster	1	2	16	,,	,,	,,	5149
8581	8792	109	Mouramba, &c	Roset, &c	9,900	0	0	,,	,,	,,	,,
9333	9399	101	Harden	Murrumboola	1	0	0	,,	,,	,,	,,
,,	9400	,,	do	do	2	3	0	,,	,,	,	,
1681	9439	,,	Bathurst	Bringelle	780	0	0	,,	,,	,,	5150
,,	9440	,	Georgiana	Beemarang	80	0	0	,,	,	,,	,,
,,	9441	,,	do	do	122	0	0	,,	,,	,	,
,,	9442	,,	do	Beemarang, &c	535	0	0	,,	,,	,,	,,
,,	9443	,,	do	Wallbrook	100	0	0	,,	,,	,,	,,
,,	9444	,,	Westmoreland	Vulcan	450	0	0	,,	,,	,,	,,
,,	9445	,,	do	do	330	0	0	,,	,,	,,	,,
,,	9446	,,	Bathurst	Three Brothers	1,560	0	0	,,	,,	,,	,,
,,	9447	,,	Georgiana	Walbrook	60	0	0	,,	,,	,,	,,
,,	9448	,	do	Carnawa, &c	1,300	0	0	,,	,,	,,	5151
,,	9449	,,	do	Gilmandyke	20,360	0	0	,,	,,	,,	,,
6387	9394	,,	Harden	Gooramma	18	3	0	,,	,		5152
9052	9371	,,	Gloucester	Forster	9	0	27	,,	,,	,,	,,
,,	9377	,,	do	do	2	1	36	,,	,,	,,	,,
,,	9378	,,	do	do	4	0	0	,,	,,	,,	,,
,,	9379	,,	do	do	19	2	37	,,	,,	,,	,,
,,	9372	,,	do	do	0	0	32	,,	,,	,	
,,	9373	,,	do	do	1	0	0	,,	,,	,,	,,
,,	9374	,,	do	do	1	2	0	,,	,	,,	,,
9333	9407	,,	Harden	Murrimboola	51	0	0	,,	,,	,,	,,
,,	9408	,,	do	do	52	0	0	,,	,,	,,	,,
,,	9403	,,	do	do	1	2	0	,,	,,	,,	5153
,,	9404	,,	do	do	3	1	0	,,	,,	,,	,,
,,	9405	,,	do	do	16	0	0	,,	,,	,,	,,
,,	9401	,,	do	do	2	0	0	,,	,,	,,	,,
,,	9402	,,	do	do	8	0	0	,,	,,	,,	,,
,,	9406	,,	do	do	44	0	0	,,	,,	,,	5154
9052	9380	,,	Gloucester	Forster	1	3	0	,,	,,	,,	,,
,,	9381	,	do	do	9	0	10	,,	,,	,,	,,
,,	9382	,,	do	do	220	0	0	,,	,,	,,	,,
,,	9383	,,	do	do	9	3	37	,	,	,,	,,
,,	9384	,,	do	do	17	0	23	,,	,,	,,	,,
,,	9385	,,	do	do	20	0	30	,,	,,	,,	,,
6571	9436	,,	Cooper	Dallas	5	0	0	,,	,,	,,	,,
,,	9512	,,	Buccleuch	Brungle	14	1	25	,,	,,	,,	,,
9052	9354	,,	Gloucester	Forster	13	2	12	,,	,,	,,	5155
6567	7530	109	Bland	Nairaburra	185	0	0	,,	,,	,,	,,
4186	9409	,,	Townsend	Dahwilly	301	1	0	,,	,,	,,	,,
7261	9411	101	Bligh	Bellaleppa	217	2	0	,,	,,	,,	,,
9052	9375	,,	Gloucester	Forster	2	2	0	,,	,,	,,	5153
,,	9376	,,	do	do	6	0	0	,,	,	,,	,,

Sydney Charles Potter, Government Printer —1889

[3d.]

1889.

NEW SOUTH WALES.

CROWN LANDS.

RESERVED FROM SALE, UNTIL SURVEYED, FOR THE PRESERVATION OF WATER SUPPLY, OR OTHER PUBLIC PURPOSES.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Crown Lands reserved from sale, until surveyed, for the preservation of Water Supply or other Public Purposes, in accordance with the 101st, 109th, and 112th sections of the Act 48 Victoria No. 18.

No. of Papers.	No. of Reserve.	Section.	County.	Parish.	Area.	*Government Gazette* in which the description is published.	Folio.
					a. r. p.		
Ms. 89- 3648	9567	101	Buckland	Currabubula	12 0 0	31 Aug., 1889	5982
10306	9559	,,	Brisbane	Wybong	280 0 0	,, ,,	,,
3648	9566	,,	Buckland	Currabubula	8 0 0	,, ,,	5983
,,	9568	,,	do	do	6 0 0	,, ,,	,,
10291	9594	,,	Ashburnham	Forbes	2 3 4	,, ,,	,,
,,	9595	,,	do	do	12 1 15	,, ,,	,,
,,	9596	,,	do	do	9 0 6	,, ,,	,,
88-16184	9575	,,	Sandon	Metz	11 3 0	,, ,,	,,
89- 7689	9557	,,	Rous	Byron	40 0 0	,, ,,	,,
4647	9563	,,	Cumberland	Wollongong	0 1 10	,, ,,	,,
,,	9564	,,	do	do	0 1 13	,, ,,	5984
8462	9562	,,	Camden	Burrawang	3,500 0 0	,, ,,	,,
7963	9572	,,	Auckland	Towamba	39 2 10	,, ,,	,,
8617	9578	,,	Gough	Glen Innes	1 2 0	,, ,,	,,
8150	9565	,,	Buckland	Quirindi	17 0 0	,, ,,	,,
9924	9558	,,	Hume	Gordon	3 2 0	,, ,,	,,
8547	9592	,,	Gloucester	Tuncurry	2 0 0	,, ,,	5985
6568	9686	,,	Mitchell	Sandy Creek	640 0 0	,, ,,	,,
10216	9579	,,	Hume	Walbundry	1,200 0 0	,, ,,	,,
8979	9593	112	Cunningham	Emu Plains, &c.	1,240 0 0	,, ,,	,,
11172	9635	101	Clarence	Coldstream	40 0 0	,, ,,	,,
10916	9648	,,	Cooper	Willimbong	2,560 0 0	,, ,,	,,
5671	9583	,,	Phillip	Wilbertree	18 0 30	,, ,,	5986
8120	9585	,,	Fitzroy	Ermington	4 3 7	,, ,,	,,
8462	9561	,,	Camden	Burrawang	430 0 0	,, ,,	,,
7963	9570	,,	Auckland	Towamba	3 0 30	,, ,,	,,
,,	9571	,,	do	do	3 3 30	,, ,,	,,
8211	9560	109	Urana	Thurrowa	475 0 0	,, ,,	,,
8518	9573	,,	Yancowinna	Umberumberka	63 0 0	,, ,,	,,
3648	9569	101	Buckland	Currabubula	0 2 0	,, ,,	5987
10820	9731	,,	Darling	Gulligal	200 0 0	4 Sept., ,,	6092
C.S. 89-4110 Cor.	9757	,,	Cook	Clwydd	430 0 0	,, ,,	,,
Ms. 89-12179	9730	,,	Bathurst	Three Brothers	320 0 0	,, ,,	,,
C.S. 89-3577 Cor.	9699	,,	Wakool	Werai, &c.	520 0 0	,, ,,	,,
Ms. 89-10917	9615	,,	Cumberland	Heathcote	6,500 0 0	7 ,, ,,	6185
3102	9613	,,	Gipps	Bolagamy	242 0 0	,, ,,	,,
7445	9582	112	Forbes	Wheoga	1,735 0 0	,, ,,	6188
,,	9581	101	do	Boyd, &c.	15,500 0 0	,, ,,	,,
11666	9580	,,	Phillip	Wyaldra	2,440 0 0	,, ,,	6189
8114	9621	109	Gunderbooka	Boyong	30 0 0	,, ,,	,,
,,	9622	,,	do	Aripilis	95 0 0	,, ,,	,,
,,	9623	,,	do	Nulty	95 0 0	,, ,,	,,
,,	9624	,,	do	do	200 0 0	,, ,,	,,
8656	9618	101	Oxley	Gunningbar	170 0 0	,, ,,	,,
8573	9610	,,	Leichhardt	Warrena	1,526 0 0	,, ,,	6190
7128	9619	,,	Buccleuch	West Goodradigbee	5 3 0	,, ,,	,,
10855	9532	,,	Nandewar	Narrabri	560 0 0	,, ,,	,,
8469	9614	,,	Dampier	Noorooma	65 0 0	,, ,,	,,
8548	9647	,,	Cook	Jamieson	15 2 0	,, ,,	,,
Aln. 89- 3061	9616	,,	Rous	Byron	100 0 0	,, ,,	6191
Ms. 89-12777	9839	,,	Cook	Meehan	97 0 0	10 ,, ,,	6243
12776	9838	,,	Camden	Wingello, &c.	300 0 0	,, ,,	,,
12781	9816	,,	Clarke	Aberfoyle	350 0 0	,, ,,	6244
,,	9817	,,	do	do &c.	6,000 0 0	,, ,,	,,
,,	9818	,,	do	Balblair	900 0 0	,, ,,	,,
,,	9819	,,	do	do	1,064 2 0	,, ,,	,,
,,	9820	,,	do &c.	do &c.	520 0 0	,, ,,	,,

No. of Papers.	No. of Reserve.	Section.	County.	Parish.	Area.	*Government Gazette* in which the description is published.	Folio.
					a. r. p.		
Ms. 89-12781	9821	101	Clarke	Doughboy, &c.	8,000 0 0	10 Sept., 1889	6244
,,	9822	,,	do	Gill	586 1 0	,, ,,	,,
,,	9823	,,	do	do	180 0 0	,, ,,	,,
,,	9824	,,	do	do	270 0 0	,, ,,	6245
,,	9825	,,	do	do &c.	3,500 0 0	,, ,,	,,
,,	9826	,,	do	Kangaroo	200 0 0	,, ,,	,,
,,	9827	,,	do	do &c.	2,500 0 0	,, ,,	,,
,,	9828	,,	do	Laguna	965 3 0	,, ,,	,,
,,	9829	,,	do	do	1,080 0 0	,, ,,	,,
,,	9830	,,	do	do	130 0 0	,, ,,	,,
,,	9831	,,	do	Lookout	4,500 0 0	,, ,,	,,
,,	9832	,,	do	Rigney	700 0 0	,, ,,	6246
,,	9833	,,	do	Ryanda	671 0 0	,, ,,	,,
,,	9834	,,	do	do	120 0 0	,, ,,	,,
,,	9835	,,	do	Tubbamurra	2,700 0 0	,, ,,	,,
,,	9836	,,	Fitzroy	Ernani, &c.	20,000 0 0	,, ,,	,,
,,	9837	,,	do	Bligh, &c.	38,000 0 0	,, ,,	,,
8650	9653	,,	Oxley	Carval	110 0 0	14 ,, ,,	6451
9923	8619	109	Richmond	Hogarth	640 0 0	,, ,,	,,
8216	9677	,,	Urana	Mairjimmy	328 1 0	,, ,,	,,
,,	9678	,,	do	do	427 3 25	,, ,,	,,
5109	9655	101	Gloucester	Stowell, &c.	18,500 0 0	,, ,,	,,
9643	9681	,,	Flinders	Mandella, &c.	4,300 0 0	,, ,,	6452
9862	9683	,,	Gregory	Bulgeraga	300 0 0	,, ,,	,,
9921	9654	,,	Bourke	Coolamon	2 0 0	,, ,,	,,
7585	9651	,,	Waradgery	Hay, South	135 0 0	,, ,,	,,
8094	9656	,,	Baradine	Merritombea	100 0 0	,, ,,	,,
8471	9657	,,	Cumberland	Marra Marra	50 0 0	,, ,,	,,
7942	9652	,,	Bathurst	Dunleary	0 2 14	,, ,,	,,
Aln. 88-7042	9658	112	Bland	Jingerangle	254 2 0	,, ,,	6453
Ms. 89-9923	9650	109	Drake	Pikapena, &c.	60 0 0	,, ,,	,,
4647	9563	101	Camden	Wollongong	0 1 10	,, ,,	,,
,,	9564	,,	do	do	0 1 13	,, ,,	,,
9858	9682	,,	Ularara	Wanaaring	2 3 0	,, ,,	,,
12814	9856	,,	Cook	Meehan	30 0 0	18 ,, ,,	6564
12494	9872	,,	Clarke, &c.	Hall, &c.	255 sq. miles.	,, ,,	6565
					a. r. p.		
11528	7435	109	Cunningham	Gendoono, &c.	4,000 0 0	21 ,, ,,	6634
,,	7436	,,	do	Mount Nobby, &c.	4,000 0 0	,, ,,	,,
,,	7437	,,	do	Mowabla, &c.	4,500 0 0	,, ,,	,,
9182	9706	,,	Dowling	Naradhun, &c.	18,600 0 0	,, ,,	,,
9185	9707	,,	Nicholson, &c.	Redbank, &c.	33,300 0 0	,, ,,	,,
7759	9708	,,	Jamison	Burrendong, &c.	3,100 0 0	,, ,,	6635
7794	9704	,,	do	Burren East	640 0 0	,, ,,	,,
7831	9691	101	Murray	Merrigan	172 0 0	,, ,,	,,
11007	9702	,,	Burnett, &c.	Mitchell, &c.	20 1 32	,, ,,	6636
9878	9721	,,	Drake	Timbarra	10 0 0	,, ,,	,,
,,	9722	,,	do	do	10 1 0	,, ,,	,,
,,	9723	,,	do	do	20 0 0	,, ,,	,,
8757	9713	,,	Buller	Maryland	4 2 0	,, ,,	,,
11779	9735	,,	Burnett	Balfour	23 0 0	,, ,,	,,
8904	9700	,,	Harden	Coolac	10 0 0	,, ,,	,,
8847	9705	,,	Northumberland	Maitland	0 3 16	,, ,,	,,
11456	9734	,,	Lincoln	Murrumbidgerie	2 0 0	,, ,,	,,
8757	9709	,,	Buller	Maryland	0 1 0	,, ,,	6637
,,	9711	,,	do	do	1 3 0	,, ,,	,,
,,	9712	,,	do	do	12 0 16	,, ,,	,,
10449	9738	112	Buccleuch	Brungle	60 0 0	,, ,,	,,
10431	9737	,,	Rous	Chillingham	420 0 0	,, ,,	,,
6262	9736	,,	Darling	Ironbark	7,500 0 0	,, ,,	,,
11080	9739	,,	Franklin	Kongong, &c.	960 0 0	,, ,,	,,
9878	9719	101	Drake	Timbarra	5 0 0	,, ,,	,,
,,	9720	,,	do	do	16 1 17	,, ,,	,,
10928	9727	,,	Auckland	Eden	2 1 0	,, ,,	,,
,,	9728	,,	do	do	3 1 0	,, ,,	,,
10502	9701	109	Yancowinna	Naradin	1 0 0	,, ,,	6638
10663	9725	,,	do	Albert	129 1 0	,, ,,	,,
,,	9726	,,	do	do	189 3 0	,, ,,	,,
10930	9729	101	Macquarie	Macquarie	2 2 0	,, ,,	,,
10430	9724	,,	do	Stewart	2 0 0	,, ,,	,,
9878	9716	,,	Drake	Timbarra	15 3 0	,, ,,	,,
11504	9703	,,	Rous	Whean Whean	10 0 0	,, ,,	,,
8757	9714	,,	Buller	Maryland	8 2 20	,, ,,	,,
,,	9715	,,	do	do	9 3 0	,, ,,	,,
9878	9717	,,	Drake	Timbarra	5 0 0	,, ,,	6639
,,	9718	,,	do	do	10 0 0	,, ,,	,,
9918	9732	,,	Harden	Bowning	7 0 0	,, ,,	,,
10630	9733	,,	Lincoln	Dubbo	30 0 0	,, ,,	,,
8757	9710	,,	Buller	Maryland	5 2 30	,, ,,	,,
9283	9697	,,	Harden	Cumbamurra	365 0 0	,, ,,	,,
12083	6363	,,	Bligh	Turill	20 0 0	,, ,,	6640
12082	9608	109	Burnett	Warialda	660 0 0	,, ,,	,,
,,	9609	101	do	do	668 0 0	,, ,,	,,
12080	9607	,,	Courallie	Moree	49 3 0	,, ,,	,,
12083	6364	,,	Bligh	Turill	10 0 0	,, ,,	,,

Sydney : Charles Potter, Government Printer.—1889.

[3*d*.]

1889.

NEW SOUTH WALES.

CROWN LANDS.

(RESERVED FROM SALE UNTIL SURVEYED FOR THE PRESERVATION OF WATER SUPPLY OR OTHER PUBLIC PURPOSES.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of Crown Lands reserved from sale until surveyed for the preservation of Water Supply or other public purposes, in accordance with the 101st, 109th, and 112th sections of the Act 48 Victoria No. 18.

No. of Papers.	No. of Reserve.	Section.	County.	Parish.	Area.	*Government Gazette* in which the description is published.	Folio.
					a. r. p.		
Ms. 89- 6759	9456	109	Waljeers	Yarto	275 0 0	3 Aug., 1889	5262
,,	9457	,,	do	Yarto and Kingswill	275 2 0	3 ,, ,,	,,
,,	9458	,,	do	do	364 2 0	3 ,, ,,	,,
,,	9459	,,	do	Yarto	365 0 0	3 ,, ,,	,,
8164	9553	,,	Hawes	Mukki	228 0 0	3 ,, ,,	,,
7090	9467	101	Vernon	Walcha	2 0 10	3 ,, ,,	5263
,,	9469	,,	do	do	10 0 0	3 ,, ,,	,,
,,	9468	,,	do	do	9 2 0	3 ,, ,,	,,
9343	9427	,,	St. Vincent	Buddawang	0 1 30	3 ,, ,,	,,
,,	9428	,,	do	do	0 3 0	3 ,, ,,	,,
,,	9429	,,	do	do	2 1 30	3 ,, ,,	,,
,,	9430	,,	do	do	5 2 18	3 ,, ,,	,,
,,	9431	,,	do	do	10 3 0	3 ,, ,,	,,
7032	9472	,,	Bland	Burrabigong	440 0 0	3 ,, ,,	,,
7096	9473	,,	Northumberland	Newcastle	0 1 10	3 ,, ,,	,,
9343	9422	,,	St. Vincent	Buddawang	0 1 30	3 ,, ,,	5264
,,	9423	,,	do	do	2 2 38	3 ,, ,,	,,
,,	9424	,,	do	do	2 3 20	3 ,, ,,	,,
,,	9432	,,	do	do	1 1 9	3 ,, ,,	,,
,,	9433	,,	do	do	1 1 13	3 ,, ,,	,,
,,	9434	,,	do	do	18 0 20	3 ,, ,,	,,
8854	9474	,,	Cumberland	Gordon	18 3 21	3 ,, ,,	,,
2996	9471	,,	Denison	Mulwala	4 1 10	3 ,, ,,	,,
7090	9470	,,	Vernon	Walcha	22 0 8	3 ,, ,,	,,
9343	9425	,,	St. Vincent	Buddawang	1 0 22½	3 ,, ,,	5265
,,	9426	,,	do	do	0 3 8	3 ,, ,,	,,
5319	9419	,,	Durham	Uffington	3 0 0	3 ,, ,,	,,
,,	9420	,,	do	do	10 1 0	3 ,, ,,	,,
,,	9421	,,	do	do	22 2 0	3 ,, ,,	,,
8959	8977	,,	Dudley	Yarrabandini	48 0 0	10 ,, ,,	5426
9226	9492	,,	Camden	Jallore	21,200 0 0	10 ,, ,,	5427
Occ. 89- 8869	9556	112	Murray	Goorooyarroo	882 0 0	10 ,, ,,	,,
Ms. 89- 7630	9485	101	Ashburnham	Forbes	8 2 25	10 ,, ,,	,,
9287	9496	,,	Westmoreland	Oberon	1 0 0	10 ,, ,,	,,
,,	9497	,,	do	do	5 1 9	10 ,, ,,	,,
,,	9498	,,	do	do	0 2 0	10 ,, ,,	,,
7630	9486	,,	Ashburnham	Forbes	0 2 0	10 ,, ,,	,,
8272	9454	,,	Canbalego	Hermitage	2 0 0	10 ,, ,,	,,
2995	9487	109	White	Cooma	260 0 0	10 ,, ,,	5428
,,	9488	,,	do	do	50 0 0	10 ,, ,,	,,
7400	9491	101	Cunningham	Taratta	560 0 0	10 ,, ,,	,,
7562	9508	109	Booroondarra	Euchara	640 0 0	10 ,, ,,	,,
,,	9509	,,	do	do	640 0 0	10 ,, ,,	,,
6756	9475	,,	Waljeers, &c.	do	178 sq. miles	10 ,, ,,	,,
					a. r. p.		
9287	9499	101	Westmoreland	Oberon	0 2 5	10 ,, ,,	5429
,,	9500	,,	do	do	5 1 9	10 ,, ,,	,,
,,	9501	,,	do	do	19 0 0	10 ,, ,,	,,

No. of Papers.	No of Reserve.	Section	County	Parish.	Area	*Government Gazette* in which the description is published.	Folio
					a. r. p.		
Ms. 89- 8137	9506	101	Bland	Narraburra	99 0 0	10 Aug., 1889.	5429
4919	9493	,,	Inglis	Attunga, &c.	400 0 0	10 ,, ,,	,,
2995	9489	109	White	Cooma	270 0 0	10 ,, ,,	,,
7227	9490	101	Gloucester	Wollom	32 0 0	10 ,, ,,	5430
9287	9504	,,	Westmoreland	Oberon	2 1 30	10 ,, ,,	,,
,,	9502	,,	do	do	5 1 16	10 ,, ,,	,,
,,	9503	,,	do	do	5 1 18	10 ,, ,,	,,
7747	9528	,,	Kilfera	Chnowa	2 0 0	17 ,, ,,	5658
8453	9521	,,	Macquarie	Stewart	10 0 0	17 ,, ,,	,,
6568	9518	,,	Mitchell	Sandy Creek	600 0 0	17 ,, ,,	,,
7824	9517	,,	Durham	Rowan	145 0 0	17 ,, ,,	,,
7126	9536	,,	King	Yass	27 0 0	17 ,, ,,	,,
8163	9535	109	Vernon	Glen Morison	39 0 0	17 ,, ,,	5659
6757	9526	,,	Nicholson	Whealbah, South	354 0 0	17 ,, ,,	,,
7126	9537	101	King	Yass	2 2 0	17 ,, ,,	,,
8250	9520	,,	Urana	Boree Creek	56 2 0	17 ,, ,,	,,
6671	9534	,,	Gough	Louis	200 0 0	17 ,, ,,	,,
,,	9541	,,	do	do	440 0 0	17 ,, ,,	,,
,,	9542	,,	do	do	520 0 0	17 ,, ,,	,,
7678	9519	,,	Northumberland	Cessnock	85 0 0	17 ,, ,,	5660
8464	9539	,,	Wynyard	Calafat	97 0 0	17 ,, ,,	,,
8652	9540	,,	Oxley	Terooble	280 0 0	17 ,, ,,	,,
7631	9516	,,	Ashburnham	Forbes	22 0 0	17 ,, ,,	,,
6828	9513	112	Buccleuch	The Peaks	7,000 0 0	17 ,, ,,	,,
6193	9453	,,	Bourke	Currawananna	830 0 0	17 ,, ,,	,,
7873	9538	101	Murray	Toreal	40 0 0	17 ,, ,,	,,
7631	9514	,,	Ashburnham	Forbes	0 0 16	17 ,, ,,	5661
,,	9515	,,	do	do	4 0 0	17 ,, ,,	,,
6579	9524	,,	Clarendon	Kimo	8 0 5	17 ,, ,,	,,
6803	9533	,,	Camden	Colo	1,310 0 0	17 ,, ,,	,,
9245	9606	109	Canbelego	Warong, &c.	2,100 0 0	17 ,, ,,	,,
10595	9577	101	Sandon, &c	Enmore, &c.	144,600 0 0	21 ,, ,,	5738
Aln. 89- 2653	9547	,,	Hawes	Uriamukki	876 1 0	24 ,, ,,	5804
88- 1300	9552	,,	Pottinger	Gunnedah	11 2 0	24 ,, ,,	5805
Ms. 89- 8843	9550	,,	Buccleuch	West Goodradigbee	20 0 0	24 ,, ,,	,,
8188	9548	,,	Cooper	Narrandera	0 2 0	24 ,, ,,	,,
5688	9545	,,	Macquarie	Arakoon	1 0 19	24 ,, ,,	,,
,,	9543	,,	do	do	1 0 17	24 ,, ,,	5806
9998	9555	,,	Georgiana	Yewiangara	6 0 0	24 ,, ,,	,,
9926	9530	,,	Clarke	Lagune	320 0 0	24 ,, ,,	,,
8188	9549	,,	Cooper	Narrandera	0 3 0	24 ,, ,,	,,
6568	9518	109	Mitchell	Sandy Creek	600 0 0	24 ,, ,,	,,
Aln. 88- 1300	9551	101	Pottinger	Gunnedah	14 3 0	24 ,, ,,	,,
Ms 89- 5688	9544	,,	Macquarie	Arakoon	0 3 29	24 ,, ,,	5807
C.S 89-736 Cor.	9685	,,	Gough	Hamilton	40 0 0	28 ,, ,,	5877
Ms. 89-10805	9612	,,	Northumberland	Corrabare	335 0 0	28 ,, ,,	,,
,,	9669	,,	do	Allandale	50 0 0	28 ,, ,,	5878
,,	9670	,,	do	Corrabare	17 3 23	28 ,, ,,	,,

Sydney . Charles Potter, Government Printer —1889

[3*d*.]

1889.

NEW SOUTH WALES.

CROWN LANDS.

(SITES FOR CITIES, TOWNS, AND VILLAGES, DECLARED UNDER THE 101ST SECTION OF THE ACT, 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act, 48 Vic. No. 18, sec. 101.

ABSTRACT of all sites for Cities, Towns, and Villages, declared under the 101st section of the Act, 48 Victoria No. 18.

City, Town, or Village.	Area for City, Town, or Village.	Area for Suburbs.	Locality.	*Government Gazette* in which published.
	acres.	acres.		
Tocumwal (Village)	300	160	County of Denison, parish of Tocumwal.	25 Jan., 1889, page 730.
Yarrangobilly (Village)	90	490	County of Buccleuch, parish of Yarrangobilly.	2 Feb., 1889, page 920.
Uralla (Town)	535	185	County of Sandon, parish of Uralla	9 ,, ,, 1166.
Drake (Village extension)	40	.....	County of Drake, parish of West Fairfield.	9 ,, ,, 1166.
Heathcote (Village)	.....	1,370	County of Cumberland, parish of Heathcote.	16 ,, ,, 1316.
Booroorban (Village)	660	4,320	County of Townsend, parish of Booroorban, &c.	16 ,, ,, 1317.
Thirlmere	104	301	County of Camden, parish of Couridjah.	23 ,, ,, 1485.
Moonbi (Village)	28	865	County of Inglis, parish of Moonbi	2 March, 1889, page 1740.
Glengarry (Village)	60	720	County of Georgiana, parish of Glengarry, &c.	30 ,, ,, 2463.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(SITES FOR CITIES, TOWNS, AND VILLAGES, DECLARED UNDER THE ACT, 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act, 48 Vic. No. 18.

ABSTRACT of all sites for Cities, Towns, and Villages, declared under the 101st section of the Act, 48 Victoria No. 18.

City, Town, or Village.	Area for City, Town, or Village.	Area for Suburbs.	Locality.	*Government Gazette* in which published.
Currabubula (Town)	acres. 97	acres. 2,463	County of Buckland parish of Currabubula.	4 May, 1889, page 3310.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(SITES FOR CITIES, TOWNS, AND VILLAGES, DECLARED UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of all sites for Cities, Towns, and Villages, declared under the 101st section of the Act 48 Victoria No. 18.

City, Town, or Village.	Area for City, Town, or Village.	Area for Suburbs.	Locality.	*Government Gazette* in which published.
	acres.	acres.		
Tabulam (Town)	Nil.	875	County of Drake, parish of Tabulam.	18 May, 1889, page 3636.
Hillgrove (Village)	230	170	County of Sandon, parish of Metz.	23 May, 1889, page 3709.
Woodstock (Village)	334	1,227	County of Bathurst, parish of Kenilworth.	23 May, 1889, page 3710.
Muswellbrook (Town).....	220	410	County of Durham, parish of Rowan.	23 May, 1889, page 3717.
Baratta (Town)	Nil.	102¼	County of Townsend, parish of Baratta.	1 June, 1889, page 3880.
Walbundry (Village)	160	3,040	County of Hume, parishes of Walbundry, &c.	1 June, 1889, page 3881.
Drake (Village).....	240	316	County of Drake, parish of West Fairfield.	1 June, 1889, page 3881.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(SITES FOR CITIES, TOWNS, AND VILLAGES, UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of all sites for Cities, Towns, and Villages, declared under the 101st section of the Act 48 Victoria No. 18.

City, Town, or Village.	Area for City, Town, or Village.	Area for Suburbs.	Locality.	*Government Gazette* in which published.
	acres.	acres.		
Huon (Village)	115	140	County of Goulburn, parish of Gerogery.	8 June, 1889, page 4059.
Cordillera (Village)	220	166	County of Georgiana, parish of Kangaloolah.	15 June, 1889, page 4212.
Musclebrook (Town)	220	410	County of Durham, parish of Rowan.	22 June, 1889, page 4403.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(SITES FOR CITIES, TOWNS, AND VILLAGES, DECLARED UNDER THE ACT, 48 VIC. No. 18.

Presented to Parliament, pursuant to Act, 48 Vic. No. 18.

ABSTRACT of all Sites for Cities, Towns, and Villages, declared under the 101st section of the Act, 48 Victoria No. 18.

City, Town, or Village.	Area for City, Town or Village.	Area for Suburbs.	Locality.	*Government Gazette* in which published.
	acres.	acres.		
Neranie (Village)	260	810	County of Gloucester, parish of Forster.	22 July, 1889, page 5145.
Murrumburrah (Village).....	515	1,460	County of Harden, parish of Murrimboola.	27 July, 1889, page 5156.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(SITES FOR CITIES, TOWNS, AND VILLAGES, UNDER THE ACT, 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of all Sites for Cities, Towns, and Villages, declared under the 101st section of the Act 48 Victoria No. 18.

City, Town, or Village.	Area for City, Town, or Village.	Area for Suburbs.	Locality.	*Government Gazette* in which published.
	acres.	acres.		
Mongarlowe (Village)	80	67	County of St. Vincent, parish of Budawang.	3 August, 1889, page 5259.
Bethungra	Nil	1,100	County of Clarendon, parish of Bethungra.	3 August, 1889, page 5267.
Oberon (Town)	408	Nil	County of Westmoreland, parish of Oberon.	10 August, 1889, page 5422.
St. Albans	Nil	440	County of Northumberland, &c., parish of St. Albans, &c.	21 August, 1889, page 5739.

1889.

NEW SOUTH WALES.

CROWN LANDS.

(SITES FOR CITIES, TOWNS, AND VILLAGES, UNDER THE ACT 48 VIC. No. 18.)

Presented to Parliament, pursuant to Act 48 Vic. No. 18.

ABSTRACT of all Sites for Cities, Towns, and Villages, declared under the 101st section of the Act 48 Victoria No. 18.

City, Town, or Village.	Area for City, Town, or Village.	Area for Suburbs.	Locality.	*Government Gazette* in which published.
	acres.	acres.		
Moree (Town)	670	1,640	County of Courallie, parish of Moree.	31 August, 1889, page 5989.
Sturt (Village)	Nil	728	County of Auckland, parish of Towamba.	31 August, 1889, page 5990.
Alectown (Village)	74	Nil	County of Kennedy, parish of Houston.	18 Sept., 1889, page 6564.
Maryland (Village)	165	Nil	County of Buller, parish of Maryland.	21 Sept., 1889, page 6642.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

HYDE, PHILLIP, AND COOK PARKS.

(REPORT OF TRUSTEES FOR YEAR 1888.)

Ordered by the Legislative Assembly to be printed, 14 *April*, 1889.

The Chairman, Trustees of Hyde, Phillip, and Cook Parks to The Secretary for Lands.

Sir, The Board Room, Hyde Park, 5 March, 1889.

The Trustees of Hyde, Phillip, and Cook Parks have the honor to submit to the Executive and to Parliament the following Report for the past year, 1888:—

1. As mentioned in our Report of the 24th March, 1887, the three Parks comprise not less than 52 acres, of which area Hyde Park contains about 45 acres, having asphalted walk nearly 5 miles in length, over which more than 30,000 persons (including all ages) pass daily.

2. We had then completed an enclosure for exclusively indigenous plants, of which about 300 species are now named and labelled. A second has in the past year been added, and both are among the most interesting portions of the Park. We reported also an increased number of other enclosures containing collections of rare plants, and the substitution of iron railing in various directions, as far as our means extended, for the unsightly old wooden structures.

3. During the year 1888 the following works have been accomplished:—Three large new beds have been made, enclosed with iron railing, trenched and planted: One devoted to the growth of palms, macrozamias, and agaves; one to ornamental plants of a sub-tropical character; and the third to ornamental indigenous trees and shrubs solely. There are now altogether twenty-three similar enclosures in Hyde Park, some of them nearly half an acre in extent, and laid out in parterres. We have in these enclosures a rich collection of plants, and a succession of flowers has been maintained in all of them during the different seasons of the year, adding greatly to the attractions of the Park and the pleasure of its numerous visitors.

4. A rockery has been erected round the playing fountain in the lakelet (near the junction of Elizabeth and Liverpool streets), with additions made to the waterfall and to the existing rockery, where the succulents are growing. A stone fountain, 22 ft. in diameter, having a centre-piece representing dolphins, made to throw out jets of water, has been erected in the north-eastern section of the Park. This was a gift to the Trustees by Mr. John Baptist, of Redfern. The same gentleman gave also to the Trustees eight large iron vases, which have been placed in suitable positions on the Park, with agaves and yuccas surmounting them. He has given us also many valuable plants, and two lofty palms (*Chæmerops excelsa*), 14 and 16 ft. high, which have been successfully transplanted.

5. Parliament having, in response to our suggestion in March, 1887, granted the necessary funds, a band pavilion has been erected on one of the large lawns on the north-eastern section of Hyde Park, and bands, both of the Permanent and Volunteer Artillery Forces and Infantry Regiments, as well as other associated city bands (the Young Australian and Centennial among others), have at stated intervals rendered excellent music there, many selections being of a superior and instructive class and character. These performances are very much appreciated by the public. On fine days there have been as many as 3,000 persons present. The Naval Brigade Band performed on one evening, greatly to the enjoyment of a large body of listeners, and the band of the Industrial Blind Institution, Boomerang-street, has also on one or two occasions played there.

6. Eighteen new seats have been purchased and placed in various positions on the Park, principally near the band pavilion, for the convenience of listeners there. A new lawn-mowing-machine has also been purchased and brought into use. All the asphalted walks have been top-dressed from time to time with tar and sand, a work necessary to keep them in order, the large traffic daily over them being considered. They require, in fact, constant supervision and care. One man is employed almost exclusively in keeping them free from the dropping of leaves and other *débris* left by night wanderers and others. On the other hand, four or five labourers are daily at work throughout the year keeping the numerous beds in order, trenching where necessary for additional enclosures, pruning or occasionally removing old and planting new shrubs and trees, watering, manuring, &c.

7. It will be obvious from this detail that a very considerable yearly expenditure is unavoidable, unless these extensive grounds, now becoming an ornament to the city, are to revert to their former unkept and discreditable state. This is, of course, a matter for Parliament to determine. Seven men altogether, including the overseer, are employed—practised and reliable workers—and our total expenditure, with secretary's salary, is £93 per month. We have made inquiries as to the cost of public gardens elsewhere, and we find that our own, the extent and kind of work being considered, is under the average expenditure.

On behalf of the Trustees,
ALFRED STEPHEN,
Chairman.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

NATIONAL PARK.

(EXTRACT OF DEED OF GRANT OF.)

Ordered by the Legislative Assembly to be printed, 1 *May*, 1889.

[*Laid upon the Table in answer to Question No.* 8, *of* 1*st May*, 1889.]

8. MR. WALKER *asked* THE COLONIAL SECRETARY,—Have the trustees the power and authority to grant a lease of any portion of the National Park to any publican for the purpose of erecting a public-house or hotel?

EXTRACT OF DEED OF GRANT.

IN the Deed of Grant of the National Park it is provided—"That for the purpose of providing accommodation for the persons visiting the said Park lands it shall be lawful for the said trustees of the National Park from time to time by deed under their hands and seals or the hands and seals of any three of them authorized so to do at any general meeting of the trustees of the National Park of which a copy of the resolution authorizing such letting endorsed upon the lease and signed by any three of the trustees of the National Park for the time being shall be *prima facie* proof to grant under such terms and conditions as to them shall seem expedient leases of parcels of the land of the said Park each parcel not to exceed five (5) acres, to any person or firm desirous of erecting buildings at which lodgings or refreshments may be purchased or to the owners or keepers of steam launches or boats for the use of visitors to the said Park in or at such part of the said land as the trustees of the National Park in their discretion may think fit for any number of years not exceeding seven years commencing from the time of the signing the lease by which the right of using the said lands shall be granted at such rents whether uniform or otherwise and subject to such terms and conditions as to the erection of buildings upon the said land so leased or as to the uses by the lessees of the lands so leased as the trustees of the National Park may think fit and that for the purpose of providing for a superior class of building for the accommodation of visitors to the said Park lands it shall be lawful for the trustees of the National Park by and with the consent of the Governor for the time being of the said Colony first obtained but not otherwise to grant leases of parcels of the said land (in addition to the leases which the trustees are hereinbefore empowered to grant) each parcel not to exceed five (5) acres in such position as the trustees of the National Park may think desirable for a term of more than seven (7) and not exceeding twenty-one years upon such terms as to the erection of buildings and the purpose for which such buildings shall be used by the lessees and as to whether any lessee shall be allowed to apply for and obtain a license for the sale of liquor at such buildings and as to the amount of rent to be paid and whether the same shall be uniform or not and whether all or any of the said parcels of land for the whole or part of the term of the lease shall be let at a rack-rent with or without building covenants or at a nominal rent or other rent with building covenants as the trustees of the National Park in their discretion shall think fit.

1889.

NEW SOUTH WALES.

COMMONS ACTS, 1873 AND 1886.

(REGULATIONS.)

Presented to Parliament pursuant to Acts.

Department of Mines,
Stock Branch,
Sydney, 15th February, 1889.

REGULATIONS.—THE COMMONS ACTS, 1873-1886.

His Excellency the Governor, with the advice of the Executive Council, has been pleased to cancel the Regulations of 13th November, 1886, and 14th July, 1887, under the above-named Acts, and to substitute the following in lieu thereof which are hereby published for general information.

JOHN MOORE CHANTER.

Meetings of Commoners and of Trustees.

Meetings of Commoners.

1. The Trustees of every Common shall cause at least seven days' notice of every meeting of Commoners to be given by advertisement in a local newspaper, and by posting notices at the Post Office nearest to the Common.

Trustees to meet once a quarter.

2. The Trustees of a Common shall meet once at least every quarter. Three to form a quorum, and the Chairman shall have a casting vote.

Business at special meetings.

3. A special meeting of Trustees may be convened by the Chairman or by any other Trustee upon twenty-four hours' notice being given of such meeting. No business shall be transacted at a special meeting except that specified in the notice thereof.

Service of notice of meetings of Trustees.

4. Notice of a meeting shall be given by delivering it personally to the Trustee, or leaving it at his place of business or residence, or by transmitting it by registered letter through the post.

Commoners' Roll.

Applications for enrolment.

5. Any person claiming commonable rights upon or with respect to a Common may make an application, to the effect of Form 1 hereto, to the Trustees of such Common to have his name entered on the Commoners' roll.

How and when applications for enrolment are to be lodged.

6. Every such application shall be lodged with the Chairman of the Trustees not more than fourteen nor less than seven days previous to the date of the meeting at which such application shall be considered.

How applications for enrolment are to be dealt with, and when.

7. All such applications shall be numbered and entered in the order in which they are received, in a list containing the names and addresses of the applicants, and the dates on which the applications were received, and shall, if lodged within the time hereinbefore prescribed, be considered and dealt with at the quarterly meeting of Trustees held next after the lodging of such application.

Procedure at meeting.

8. At such meetings the persons making application for enrolment may attend in support thereof, and the Trustees (whose decision shall be final) shall consider and decide with respect to all such applications and to any objections taken thereto.

Mode of enrolment.

9. The Trustees of every Common shall cause the names of the persons whom they consider entitled to commonable rights upon or with respect to such Common to be entered in the order in which they are numbered in a book to be kept by the Secretary for the Common to the effect of Form 2 hereto; and such book shall be the Commoners' Roll of such Common.

Revision of Commoners' Roll.

10. The Trustees of every Common shall, in the month of December in each year, at a meeting specially called for that purpose—of which notice, as prescribed by Regulation No. 1, shall have been given—revise the Commoners' Roll of such Common, and shall strike off from such roll the name of every person who is proved to their satisfaction to have died, or otherwise ceased to be entitled to commonable rights upon or with respect to such Common.

Fees for licenses to remove soil, stone, and timber from Commons.

11. The following fees shall be chargeable for licenses to remove soil or stone and to cut and remove timber from any Common :—

For soil, per load, one shilling.
For stone, per load, one shilling.
For standing timber for firewood, per load, not exceeding the rates set out in Form 4.
For other standing timber, per tree, one shilling and sixpence.

And all such fees shall be paid to the Trustees of the Common from which such soil or stone is intended to be removed or such timber is intended to be cut; and all such fees shall be applied to the improvement of such Common.

Fees for extended pasturage on Common.

12. The Trustees of any Common who shall allow the right of extended pasturage to any animals actually in use by *bona fide* carriers, teamsters, travellers, or drovers, for carriage, riding, or driving on such Common, may demand and receive from the owners or persons in charge of such animals fees for such pasturage at rates not exceeding those specified in Form 3 hereto.

13. The Trustees of any Common who shall allow any travelling stock to be depastured on such Common may demand and receive from the drover or person in charge of such stock fees for such pasturage at rates not exceeding those specified in Form 3 hereto for that description of stock.

14. All such fees shall be appropriated for the improvement of the Common on which such extended pasturage or the pasturage of travelling stock shall have been allowed.

FORM 1.

COMMONS ACTS, 1873–1886.

Application for enrolment as Commoner.

To the Chairman of the Trustees of the Common at

I, , of , hereby claim to be entitled to commonable rights upon or with respect to the Common at , on the following grounds [*here state qualification*], and to have my name entered on the Commoners' roll of the said Common.

Applicant.

Witness.

Dated at this day of 188 .

FORM 2.

COMMONS ACTS, 1873–1886.

Commoners' Roll of the Common.

No.	Date.	Name.	Address.	Age.	Ground of claim for enrolment.	Remarks.

FORM 3.

COMMONS ACTS, 1873–1886.

LIMIT of fees chargeable by Trustees for extended pasturage and for the pasturage of travelling stock.

Description of Stock.	Not exceeding		
	Per head per day.		Per eight head per day.
	Horses.	Cattle.	Sheep.
	s. d.	s. d.	s. d.
Carriers, teamsters, travellers, and drovers' working stock.	0 1	0 1	.....
Travelling stock	0 1	0 1	0 1

FORM 4.

COMMONS ACTS, 1873–1886.

SCALE of fees chargeable for standing timber cut for firewood.

Number of Loads.				
1 Horse.	2 Horses.	3 Horses.	4 Horses.	Bullock Team.
s. d.	s. d.	s. d.	s. d.	s. d.
0 6	0 8	0 10	1 0	1 0

Sydney: Charles Potter, Government Printer.—1889.

[3*d*.]

1889.

NEW SOUTH WALES.

LANDS FOR PUBLIC PURPOSES ACQUISITION ACT.

(RESUMPTION OF LAND AT SHELLHARBOUR FOR PUBLIC RECREATION.)

Presented to Parliament, pursuant to Act 44 Vic. No. 16, sec. 6.

NOTIFICATION OF RESUMPTION OF LAND UNDER 44 VICTORIA No. 16.

NEW SOUTH WALES, to wit. } By His Excellency The Right Honourable CHARLES ROBERT, BARON CARRINGTON, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.) CARRINGTON, *Governor.*

WHEREAS I, the Governor aforesaid, with the advice of the Executive Council of the said Colony, have duly sanctioned the resumption of a portion of land at Shell Harbour for public recreation, and for the acquisition thereof public funds are lawfully available; and whereas the land hereinafter described is required for public recreation: Now, I, the Governor of the said Colony, with the advice of the Executive Council of the said Colony, in pursuance of the powers in this behalf given to or vested in me by the "Lands for Public Purposes Acquisition Act," do by this notification, published in the Gazette, and in a newspaper, that is to say, in the "Kiama Independent," circulated in the Police District wherein the said land is situated, declare that the land hereinafter described has been resumed for the public purposes hereinafter mentioned, that is to say, for public recreation, to the intent that, upon the publication of this notification in the Gazette, the legal estate in the said land shall forthwith be vested in the Minister for Public Works and his successors, on behalf of Her Majesty, for the purpose of the said last-mentioned Act, for an estate of inheritance in fee simple in possession, freed and discharged from all trusts, obligations, estates, interest, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the intent, further, that the legal estate therein, together with all powers incident thereto or conferred by the said Act, shall be vested in the said Minister as a trustee with the powers stated in the said last-mentioned Act. And I declare that the following is the description of the land hereinbefore referred to, that is to say:—

All that piece or parcel of land situate in the county of Camden, parish of Terragong, town of Shell Harbour: Commencing on the left bank of a creek which forms the south-eastern boundary of section 1, at its intersection of the south-easterly prolongation of the north-eastern side of John-street; and bounded thence on the south-west by a line partly forming that side of that street north-westerly to the easternmost corner of allotment 4 of section 2, by the north-eastern boundaries of allotments 4, 5, 8, 9, 12, and 13 in the same section north-westerly to the northernmost corner of the last-named allotment, by a line north-westerly to the easternmost corner of allotment 2 of section 3, and by the north-eastern boundary of that allotment north-westerly to its northernmost corner; thence on the west by a line northerly to the southernmost corner of allotment 1 of section 4; thence on the north-west and west by the south-eastern and eastern boundaries of allotments 1 and 2 of that section north-easterly to the north-eastern extremity of the south-eastern side of Town's-street; thence again on the west by a line northerly to the easternmost corner of allotment 7 of section 5; thence on the south-west by part of the north-eastern boundary of that allotment north-westerly to high-water mark on the shore of the Pacific Ocean; and thence by that shore generally southerly to the left bank of the creek aforesaid, and by that bank upwards, to the point of commencement, containing about 30 acres.

In witness whereof, I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this twenty-third day of May, in the year of our Lord one thousand eight hundred and eighty-nine, and in the fifty-second year of Her Majesty's Reign.

By His Excellency's Command,

BRUCE SMITH.

GOD SAVE THE QUEEN!

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

HARGRAVES AND AVISFORD COMMONS.

(REPORTS, &c., IN CONNECTION WITH THE SALE OR LEASE OF.)

Ordered by the Legislative Assembly to be printed, 1 *March*, 1889.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 6th November, 1888, That there be laid upon the Table of this House,—

"Copies of all letters, papers, petitions, reports, applications, and other "documents received by the Lands and Mines Departments in connection "with the sale or lease of portions of the Hargraves and the Avisford "Commons."

(*Mr. Wall.*)

SCHEDULE.

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[870 copies—Approximate Cost of Printing (labour and material), £12 8s. 0d.]

HARGRAVES AND AVISFORD COMMONS.

Hargraves Common.

No. 1.

Memo. from Mr. District-Surveyor Crouch to Mr. Surveyor Conolly.

3 June, 1887.

Parishes of Grattai, Hargraves, Avisford, Windeyer, County of Wellington.

WITH reference to my circular of this date as to the desirability of offering annual leases in population areas, Mr. Conolly is requested to furnish a report, together with design of the vacant lands within the population area at Hargraves, in the terms of the circular referred to.

This population area is identical with the temporary Common, but the latter appears to be excessive in area, and might be reduced without detriment to public interests.

I have, &c.,
H. A. CROUCH,
District Surveyor.

Received, 14/6/87.—T.W.C. Replied to by 87-47, of 29th November.—T. W. CONOLLY, Surveyor.

No. 2.

The Trustees, Hargraves Common, to W. C. Wall, Esq., M.P.

Hargraves, 18 October, 1887.

Sir,

We, the Trustees of the Hargraves Common, beg to draw your attention to the following:—Whereas some few years ago a portion of our temporary Common was measured off for sale, and whereas there are further surveys now being made on the western side of our Common (which includes the only permanent water we have, and without which the remainder of the Common would be almost useless);—We, the Trustees, on behalf of the residents of Hargraves, respectfully request you, as our worthy representative, in co-operation with Messrs. Black and Haynes, M's.P., to ascertain whether the Government intends to curtail our Common still further.

We are forwarding copies of this to Messrs. Black and Haynes, and we beg that you will give the matter your earliest attention, so that we may take immediate steps to prevent such injustice.

We have, &c.,
JOHN PETRIE, Chairman.
ANDREW HICKEY.
JOHN M'GOWAN.
WILLIAM WAKELIN.
(*Per* JAMES B. BALEY, Hon. Sec.)

No. 3.

W. C. Wall, Esq., M.P., to The Secretary for Lands.

Legislative Assembly, 20 October, 1887.

Sir,

I have the honor to bring under your notice the above letter, which I have received from the Trustees of the Hargraves Common, protesting against the sale of portions thereof, which I respectfully trust will meet with immediate attention.

I have, &c.,
W. C. WALL.

The District Surveyor for early report.—S.F., B.C., 20/10/87. Inform Mr. Wall, M.P. Mr. Surveyor Conolly for explanatory report of projected action.—H. A. CROUCH, District Surveyor, 15/11/87. Received 18 November. Replied to by No. 87-46, 28th November.—T. W. CONOLLY, Surveyor.

No. 4.

Mr. Surveyor Conolly to Mr. District-Surveyor Crouch.

PROTEST by the Trustees of the Hargraves Temporary Common against alienation of any part thereof, and explaining projected action in dealing with the temporary Common, with a view to obtaining revenue from part thereof by leasing annually for pastoral purposes.

Mudgee, 28 November, 1887.

Sir,

In compliance with your B.C. instructions, No. 87-49, of 15th November, I have the honor most respectfully to submit,—

2. Your letter of 18th November, No. 87-214, to the Under Secretary, fully deals with the Hargraves Common Trustees' protest *re* alienation, none such being contemplated.

3. The projected action in connection with proposal to offer for annual lease for pastoral purposes certain lands within the population area of Hargraves, which is identical within the temporary Common, will contain a submission for reduction of Common by about 3,500 acres, leaving still an area of 9,000 acres, exclusive of permanent Common and unalienated lands within town boundaries for a population of not more than 200 people.

4. It will not be proposed to interfere with watering places, and much of the best grazing country will be retained in the interests of commoners.

5. Full report will follow in a few days.

I have, &c.,
T. W. CONOLLY,
Surveyor.

No. 5.

No. 5.

Mr. Surveyor Conolly to Mr. District-Surveyor Crouch.

REPORT *re* Temporary Common at Hargraves, within the population area of Hargraves, county of Wellington.

Sir, Mudgee, 29 November, 1887.

In compliance with your memorandum of instructions, No. 87–30, of 3rd June, I have the honor to report,—

2. The area of the Hargraves temporary Common is about 13,000 acres. The contained population is about 200. So the inhabitants enjoy the privilege of grazing their stock over an area equal to 65 acres per head of population. In addition to this privilege they have the use of unsold lands within town limits (about 360 acres), and a permanent Common of 640 acres, giving a total of 14,000 acres for 200 people.

3. It is so patent that the commonage is excessive, that I respectfully submit for your consideration the design herewith for seven annual leases for pastoral purposes, which lie partly within the population area. See Appendix

4. It is proposed to reduce the temporary Common to 9,500 acres, and to lease the remaining 3,500 acres in connection with adjoining Crown lands.

5. The Trustees for the Hargraves Common state that Stockyard Creek, which is a head of Maroombilla Creek, is one of their best watering places. The country throughout is mountainous and broken, but the water supply is good in all parts; however, as there has been an expressed wish to retain the south-west part of the Common, I would suggest that it be retained for the use of commoners.

6. As the mining population is so tenacious in holding to certain privileges granted at the time when it was deemed judicious to give large inducements and great freedom by reservations of land from sale and lease, I think it is expedient to leave very ample provision, lest by a vigorous readjustment popular excitement may be moved to defeat the object of turning altogether enormously disproportionate reservations for commonage into rent-producing pastoral leases, which, in view of the diminution of population and falling off of mining returns, is demanded in the interest of the State at large.

7. The most accessible and best grazing land is proposed to be retained for the use of the commoners.

8. The projected leases are indicated by the hetched lines, and upset rentals, which I think may fairly be expected, are shown on each block in blue colour.

I have, &c.,
T. W. CONOLLY,
Surveyor.

Entered in Reserve Book, District Survey Office.—J.G.F., 20/2/88. Annual leases dealt with separately by my memo. to Under Secretary, No. 88–22, 21st February, 1888.—H.A.C. Memo. of instructions and design herewith, Mr. Gerard.—9 December. Submitted in connection with my memo. of the 21st February, No. 88–22. 88–2,030 Occ. The area reserved for commonage purposes is unquestionably excessive, and the proposal to offer part of Common as annual lease under the 85th section is recommended.—H. A. CROUCH, District Surveyor, 21/2/88. The Under Secretary for Lands.

No. 6.

Minute for The Governor and Executive Council.

Withdrawal of Land from Temporary Commonage.

Department of Lands, Sydney, 21 May, 1888.

IT is recommended to His Excellency the Governor and the Executive Council that the within described portion of land, situated in the county of Wellington, parishes of Hargraves and Grattai, area about 3,635 acres, be withdrawn from the temporary Commonage at Hargraves for purposes of lease.

THOMAS GARRETT.

The Executive Council advise that the portion of land referred to be withdrawn from the temporary Commonage at Hargraves for purposes of lease. Approved.—CARRINGTON, 22/5/88. A. C. BUDGE, Clerk of the Council, 22/5/88. Minute, 22/5/88. Confirmed, 29/5/88.

WITHDRAWAL FROM TEMPORARY COMMON AT HARGRAVES.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that the portion of land hereinafter described has been withdrawn from the temporary Commonage at Hargraves.

Eastern Division—Land District of Mudgee—Within the population area of Hargraves.

Part of the Hargraves Temporary Common, county of Wellington, parishes of Hargraves and Grattai, area about 3,635 acres; that part of the Hargraves temporary Common, notified 7th June, 1870, included within the following boundary: Commencing at the south-west corner of the town of Hargraves, as notified 20th March, 1885, and bounded thence on part of the east by a line partly forming the west boundary of the town, bearing north to a point west of the south-west corner of portion 25, parish of Hargraves; thence on part of the south by a line bearing east to that corner of that portion; thence on the remainder of the east by part of the west boundary of portion 25 aforesaid, bearing north to the north boundary of the Hargraves temporary Common; thence on the north by part of the north boundary of the temporary Common, bearing west to its north-west corner; on the west by part of the west boundary of the temporary Common, bearing south about 2 miles to its intersection with the right bank of Maroombilli Creek; thence on the south-west by that creek upwards to a point west of the point of commencement; and on the remainder of the south by a line bearing east to that point.

This revocation does not affect reserve from conditional purchase proclaimed 17th March, 1884.

No. 7.

Gazette Notice.

Department of Lands, Sydney, 9 June, 1888.

WITHDRAWAL FROM TEMPORARY COMMON AT HARGRAVES.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that the portion of land hereinafter described has been withdrawn from the temporary commonage at Hargraves.

THOS. GARRETT.

Eastern Division—Land District of Mudgee—Within the population area of Hargraves.

Part of the Hargraves Temporary Common, county of Wellington, parishes of Hargraves and Grattai, area about 3,635 acres. That part of the Hargraves temporary Common, notified 7th June, 1870, included within the following boundaries: Commencing at the south-west corner of the town of Hargraves, as notified 20th March, 1885; and bounded thence on part of the east by a line partly forming the west boundary of the town bearing north to a point west of the south-west corner of portion 25, parish of Hargraves; thence on part of the south by a line bearing east to that corner of that portion; thence on the remainder of the east by part of the west boundary of portion 25 aforesaid bearing north to the north boundary of the Hargraves temporary Common; thence on the north by part of the north boundary of the temporary Common bearing west to its north-west corner; on the west by part of the west boundary of the temporary Common bearing south about 2 miles to its intersection with the right bank of Maroombilli Creek; thence on the south-west by that creek upwards to a point west of the point of commencement; and on the remainder of the south by a line bearing east to that point.

This revocation does not affect reserve from conditional purchase, proclaimed 17th March, 1884.

[Ms. 88-6,815]

No. 8.

Petition from Residents and Miners of Hargraves to The Secretary for Mines.

THE humble petition of the undersigned, residents and miners of Hargraves,—

Showeth:—

That it is with regret we notice in the *Government Gazette* of 9th June, 1888, that it is contemplated to withdraw from the Hargraves Common a large portion lying to the west of the township of Hargraves which embraces the most permanent water on the Common, and the proposed boundary line of which, running as it does along the western boundary of the township, it is evident that the loss of the block would largely interfere with mining interests.

More than 300 acres of the Common are at present held under gold-mining lease; upwards of £4,000 has already been expended on machinery within the last few months, and in all probability several other plants will follow in due course. These facts, together with the fact that gold is now being obtained in several of the mines now at work, have drawn a large and daily increasing population to the place.

Your Petitioners would humbly suggest that under these circumstances any curtailment of the Common at the present time is ill advised and would be injurious to the best interests of the district, and particularly detrimental to mining pursuits, and we therefore beg that the proposed curtailment be not carried out.

And your Petitioners, as in duty bound, will ever pray.

W. H. BOND,
R. G. BOND,
W. W. MILLETT,
And sixty-eight others.

Has this Department been consulted or notified of the intention to reduce this Common?—H.W., 14/7/88. No.—A.B., 18/7/88. The Under Secretary for Mines. Ask Lands Department whether it is proposed to cancel any part of this Common, and then refer to the Warden for report as to the effect of proposed cancellation.—H.W., 18/7/88. The Mining Warden, Mudgee, for report.—E.W. (for A.B.), B.C. 19/9/88. This petition seems to have been sent to me in error, as the locality is within Mr. Warden Steele's division of the gold-field, and I therefore forward to him.—W. D. MEARES, Warden, 12/10/88.

No. 9.

The Under Secretary for Lands to W. C. Wall, Esq., M.P.

Sir, Department of Lands, Sydney, 13 July, 1888.

Referring to the letter forwarded by you from the trustees of the Hargraves temporary Common, dated the 18th October, 1887, protesting against the curtailment of the Common in question,—I have the honor to inform you that under the report of the District Surveyor, to the effect that the area of the Common is excessive, areas of 675 acres and 3,635 acres have been withdrawn from the temporary Commonage at Avisford and Hargraves by notice in the *Government Gazette* of the 9th ultimo, with a view to the land being offered for annual lease.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 10.

The Under Secretary for Mines to The Under Secretary for Lands.

Sir, Department of Mines, Sydney, 19 July, 1888.

I have the honor to request that you will be good enough to state whether it is proposed to cancel any portion of the Common at Hargraves.

I have, &c.,
HARRIE WOOD,
Under Secretary.

No. 11.

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No. 11.

The Under Secretary for Lands to Mr. District-Surveyor Crouch.

Sir, Department of Lands, Sydney, 28 August, 1888.

I have the honor to request that you will be good enough to state whether any further withdrawals from the temporary Common at Hargraves are at present contemplated.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

Mr. Gerard, 4th September. It is not proposed at present to interfere with any portion of the Hargraves temporary Common.—H. A. Crouch, District Surveyor, 26 September, 1888. The Under Secretary for Lands.

The Mines Department may be so informed.—R.H.D. (for the Under Secretary). Corresponding Branch, 10/10/88. Under Secretary for Mines informed.—H.L.T., 17/10/88. Put away.—J.O.D., 19/10/88.

No. 12.

W. C. Wall, Esq., M.P., to The Secretary for Mines.

Sir, Mudgee, 13 September, 1888.

I had the honor some short time ago to present to you a petition from the miners at Hargraves protesting against the sale of a portion of the Hargraves Common, which you promised to forward to the Lands Department with a minute requesting that the land be withdrawn from sale. I heard no more of the matter, and I now learn that the land has been sold.

The miners and residents of Hargraves are justly indignant that their petition has been ignored. I would be extremely glad if you would furnish me with a copy of the reply, if any, received by your Department to the petition by which they, the Lands Department, justify their action in selling this land against the unanimous petition of the miners.

I have, &c.,
W. C. WALL.

No. 13.

Mr. Warden Meares to The Under Secretary for Mines.

Sir, Mudgee, 22 September, 1888.

With reference to the petition received on the 9th July last from miners and others at Hargraves against the withdrawal from the Hargraves temporary Common of an area of 3,625 acres, as Gazetted on the 9th June last, and which petition you have referred to me for report, I have the honor to inform you that a notice appeared in the *Government Gazette* of the 20th July last that this and some adjoining land would be offered for sale for annual lease on the 20th August last, and that on that day all the lots so offered, except one of 263 acres, were sold.

Under these circumstances I think it probable that you may not require any report from me, and before going out to Hargraves I shall await further instructions, as this sale of the leases may make further inquiry unnecessary.

I have, &c.,
W. D. MEARES,
Warden.

As the leases granted of the land here referred to are only annual, I think Mr. Warden Meares should be asked to make the report called for, when, if necessary, such portions of the land as may be required for the Common might not be relet.—A.B., 27/9/88.

The Under Secretary for Mines. Submitted.—H.W., 29/9/88. Approved.—F.A., 1/10/88.

No. 14.

Mr. J. B. Daly to The Secretary for Mines.

Sir, Hargraves, 24 September, 1888.

I have the honor to forward to you the accompanying petition, with 141 signatures attached.

You will probably remember that a petition from the miners and residents of Hargraves, praying that the Common be left intact, was presented to you on the 17th July last, by Mr. Wall, M.P., for Mudgee.

In conclusion, I would humbly suggest that it seems highly improbable that a block of land through which the main line of reef runs, and on which several gold-mining leases are held, would be cut up into pastoral leases unless the matter had been misrepresented either to the Mines Department or to the Department of Lands.

Trusting, therefore, that you will give the matter your consideration,

I have, &c.,
JAS. B. DALY,
Secretary to the Trustees, Hargraves Common.

For early report.—F.A.. 27/9/88.

It will be seen from the accompanying letter from the Lands Department that an area of 3,635 acres has been withdrawn from the Common at Hargraves for annual leasing. The Warden has been asked to report as to the area required for Commonage purposes, so that, if necessary, the Lands Department may be asked not to relet the land. The petitioners and Mr. Wall, M.P., might perhaps be informed.—A.B., 3/10/88. The Under Secretary.

Submitted; Mr. Haynes, M.P., also.—H.W., 12/10/88. Approved.—F.A., 13/10/88.

[*Enclosure.*]

[*Enclosure.*]

Petition from miners and residents, Hargraves, to The Secretary for Mines.

4 September, 1888.

THE humble Petition of the miners and residents showeth :—

It is with regret that we notice the sale of 4,040 acres of our Common on 21st August 1888, through which the main line of reef that is now being worked is known to run, and which comprises the choicest pastures and most permanent water.

Now, at the present time, upwards of 300 acres are held under mineral leases, for which £500 has been paid into the revenue for mineral leases and miners' rights during the past seven months.

At the present time two companies, holding about 60 acres, have expended £6,000 in machinery alone. Gold is being obtained at several of the leases now being worked on the line of reef, and this fact has drawn a large and daily increasing population.

Your Petitioners would humbly suggest that this curtailment of the Common at the present juncture is ill-advised and injurious to the best interests of the district, and particularly detrimental to mining pursuits; and your Petitioners beg that this portion of the Common may be restored to the inhabitants. And your Petitioners, as in duty bound, will ever pray.

A. M'LENNAN.
W. H. SMITHERS.
W. H. BOND.

[And 138 others.]

No. 15.

The Under Secretary for Lands to The Under Secretary for Mines.

Sir, Department of Lands, Sydney, 2 October, 1888.

With reference to your letter of the 19th July last, I have the honor to invite your attention to notice in the *Government Gazette* of the 9th June last, in which is intimated the withdrawal of certain land from the temporary Common at Hargraves, and to inform you that such withdrawal is for the purpose of leasing only.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 16.

The Chief Inspector of Stock to Mr. Warden Meares.

Sir, Department of Mines, Stock Branch, Sydney, 3 October, 1888.

With reference to your letter of the 22nd ultimo, with regard to a petition against the withdrawal of a portion of the Hargraves Common, I am directed by the Secretary for Mines to state that your report should be obtained, as the leases granted are only annual, and if necessary such portions of the land as may be required for the Common may not be relet.

I have, &c.,
A. C. THOMSON
(*Pro* Chief Inspector of Stock).

No. 17.

Newspaper Extract.

AN IMPORTANT LAND QUESTION—ALIENATION OF A COMMON—THE MINERS' PROTEST.

HARGRAVES is but a small place now; still there has happened lately (if what a correspondent states be correct) a matter in reference to the Hargraves Common of great general importance taken in connection with the alienation of the public lands. Our correspondent, signing himself "A Miner," writes thus from Hargraves :—"No small amount of commotion has been occasioned here by the action of the Government with reference to the Hargraves Common. In the *Government Gazette* of 9th June last appeared a notice intimating that it was intended to withdraw from the temporary Common at Hargraves a large portion on the north-western boundaries. Now this block embraces the most permanent water and the best pasture on the Common, and as the main line of reef (now being extensively worked on Hargraves) runs right through it—indeed the Homeward Bound and several other important claims are included in it—it was obvious that if the block was cut up into pastoral leases it would be a source of very serious annoyance and inconvenience to the mining population. It was thought advisable, therefore, to use all fair means to prevent its passing into the hands of the grazier. Accordingly a public meeting was held, and a petition from the miners, embodying the above facts, was forwarded to the Minister for Mines by the trustees of the Common. The only reply was another notice in the *Gazette* to the effect that the block was to be leased by auction on 21st August. The greater portion of the block was leased by a member of the Mudgee Land Board. In order to fully appreciate the injustice of this step, particularly to the mining population, the following facts must be borne in mind : Since 1st January last the miners of Hargraves have contributed to the public revenue not less than £600 for miners' rights and mineral leases. Several of the mines now at work on the line of reef already referred to are yielding good gold, and making employment for a large number of men, and the population of the place is consequently increasing rapidly. One of these mines was floated a short time ago for £40,000. It was on this line of reef that Dr. Kerr's great hundredweight nugget was found in 1851, and within half a mile of the same spot not less than £10,000 has been expended by two gold-mining companies within the last twelve months. It was also on this line, and within the very block now withdrawn, that the famous Jubilee nugget, now being exhibited at the Centennial Exhibition in Melbourne, was found; and a great many miners, most of whom own a horse or two each, are residing and working within the resumed portion, and have been for many years. It cannot therefore be denied that gold is known to exist on this block. Yet, in the face of these facts, it is allowed to pass away from the miner to the pastoralists for the paltry sum of £40. Thus the claims of the whole community are ignored for the sole benefit of one individual. Last week another petition, very numerously signed, was sent to the Minister for Mines, praying that the block be restored to the miners, and as it has been promised that the attention of Parliament shall be drawn to the subject there is some reason to hope that the miners will get fair play on this occasion."

Department

Department of Mines, Sydney.

Hargraves Common.

THE attention of the Lands Department may be invited to the practice of withdrawing or cancelling portions of Commons without consulting this Department.

This Department being charged with the management of Commons is naturally blamed for anything done to the prejudice of the commoners, and no defence can be made without casting blame upon another Department, which is most undesirable.

If this Department were consulted, as I venture to think it should be, then it would have properly to take the blame for any error in which it concurred.

H.W., 13/10/88.

Submitted. Approved.—F.A., 13/10/88.

No. 18.

The Chief Inspector of Stock to J. Haynes, Esq., M.P.

Sir, Department of Mines, Stock Branch, 15 October, 1888.

Referring to a petition which has been received in this Department from the miners and residents of Hargraves, praying that the area withdrawn from the Common for annual leasing may be restored, I have the honor, by direction of the Minister for Mines, to inform you that the Warden has been asked to report as to the area required for Commonage purposes so that, if necessary, the Department of Lands may be asked not to relet the land.

I have, &c.,
ALEX. BRUCE,
Chief Inspector of Stock.

No. 19.

The Chief Inspector of Stock to W. C. Wall, Esq., M.P.

Sir, Department of Mines, Stock Branch, 15 October, 1888.

Referring to a petition from residents and miners of Hargraves, presented by you to the Minister for Mines, praying that the area withdrawn from the Common may be restored, I have the honor to inform you that the Warden has been asked to report as to the area required for commonage purposes so that, if necessary, the Department of Lands may be asked not to relet the land.

I have, &c.,
ALEX. BRUCE,
Chief Inspector of Stock.

No. 20.

The Chief Inspector of Stock to Mr. J. B. Daly.

Sir, Department of Mines, Sydney, 15 October, 1888.

I am directed by the Minister for Mines to acknowledge the receipt of your letter of the 24th ultimo, forwarding a petition from the miners and residents of Hargraves, asking that the area withdrawn from the Common may be restored, and in reply to inform you that the Warden has been asked to report as to the area required for commonage purposes so that, if necessary, the Lands Department may be asked not to relet the land.

I have, &c.,
ALEX. BRUCE,
Chief Inspector of Stock.

No. 21.

The Under Secretary for Lands to The Under Secretary for Mines.

Sir, Department of Lands, Sydney, 17 October, 1888.

Referring to your letter of the 19th July last, inquiring whether it is proposed to cancel any portion of the Hargraves temporary Common, I have the honor to inform you that the District Surveyor at Orange reports that it is not proposed at present to interfere with any part of the Common in question.

I have, &c.,
F. H. WILSON
(For the Under Secretary.)

No. 22.

Mr. Warden Steel to The Under Secretary for Mines.

Sir, Warden's Office, Hill End, 23 October, 1888.

Referring to the petition (herewith) from certain miners at Hargraves, complaining against the withdrawal of a portion of the Hargraves Common, and forwarded to me by Mr. Warden Meares (Mudgee), to whom it appears to have been sent in error, I have the honor to report that I have visited the locality, and made inquiries from the trustees and miners in the neighbourhood. It appears from their statements that six sections of the Common have been leased, one to Andrew Hickey, Hargraves, two to a person named Brennan, and three to one Atkinson, of Mudgee. The portion leased to Hickey adjoins the township, and was rented by him on behalf of the miners, but has little permanent water on it. He informs me he is quite willing to consent to the lease being cancelled, and he believes Brennan will also, provided Atkinson also consents. On the leases held by Atkinson and Brennan (chiefly on the former) about 100 miners, including Chinese, reside, who have two stores, and most of the

miners

miners have stock of some kind, which now are at the mercy of the lessees, who can impound or charge the owners for grazing. The most permanent water is on Atkinson's portions. The stock owned by the residents of the town are liable to stray on Hickey's portion, owing to its proximity to the town boundary.

The commoners admit they have a very large area, that a third of it is worthless, which they would consent to have withdrawn, while the portion now withdrawn is mostly used. I am of opinion that injustice has been done to the miners and others by its withdrawal, which might have been obviated had the Department of Mines been first consulted. Under the circumstances I would respectfully recommend that the leases (if possible) should be cancelled, either by consent of the lessees or otherwise. I may add that the population of Hargraves is fast increasing, owing to a large amount of capital being invested and labour employed.

I have, &c.,
W. A. STEEL,
Warden.

No. 23.

Mr. A. Hickey to Mr. Warden Steel.

Sir, Hargraves, 23 October, 1888.

In reference to the block of land rented by me at Mudgee, on the 21st August, being a portion of the land lately taken from the Hargraves Common, I do agree to have the block cancelled, provided that Mr. Atkinson's two blocks, numbered 4 and 5, and Mr. Brennan's two blocks, numbered 2 and 3, be also cancelled.

I have, &c.,
A. HICKEY.

This has reference to the statements in my report on the petition against the withdrawal of portion of the Hargraves Common, forwarded yesterday.—W. A. STEEL, Warden, Hill End, 25/10/88.

Avisford Common.

No. 1.

The Secretary to Trustees of Avisford Common to The Secretary for Lands.

Sir, Avisford, 27 March, 1886.

I have the honor, at the request of the Trustees of the Avisford Common, to bring the following case before you: F. Lovett, of this place, has had for the last eight years some 5 acres of land fenced in and under cultivation on this Common. Some time since, availing himself of being a Trustee, he fenced in as much more, thereby having some 10 acres alienated from the Common, part of which has been surveyed for a recreation ground for the public school. The trustees hear that he is applying to purchase the whole of the land having a river frontage, and there being gold thereon, would long since have been taken up by diggers for sluicing purposes had it not been fenced in. Under those circumstances the Trustees trust he will not be allowed to purchase.

I have, &c.,
JOSEPH AMBLER,
Secretary.

Mr. Morris,—Any trace of I.P. application?—R.H.D., 30/3/86. Cannot trace.—J.E.M., 8/4/86.

No. 2.

The Secretary to Trustees of Avisford Common to The Secretary for Lands.

Sir, Avisford Common, Avisford, 24 May, 1886.

I have the honor to inform you that I have received a communication from the Department of Lands that a letter I sent to that Department on the 27th March last has been forwarded to the Department of Mines with a view of the trespass on the Common complained of being dealt with. As the case is urgent, F. Lovett, the party complained of making preparations for ploughing, and several miners being anxious to test the ground for gold, it being well known there is gold therein, may I beg an early reply.

I have, &c.,
JOSEPH AMBLER,
Secretary.

The Trustees complain that F. Lovett has fenced in 10 acres of the Common. They have the power and should compel him to remove the fences.—A.B., 1/6/86. The Under Secretary for Mines.—Inform.—G.E.H. (for U.S.), 5/6/86.

No. 3.

The Chief Inspector of Stock to The Secretary to Trustees of Avisford Common.

Sir, Department of Mines, Stock Branch, Sydney, 8 June, 1886.

With reference to your letter of the 24th ultimo, I have the honor to inform you that the Trustees have the power, and they should compel Lovett to remove the fences which he has erected on the Common.

I have, &c.,
ALEX. BRUCE,
Chief Inspector of Stock.

No. 4.

No. 4.

The Secretary to Trustees of Avisford Common to The Secretary for Lands.

Sir, Avisford Common, Avisford, 6 November, 1886.

From instructions received from the Trustees of the above Common I have the honor to inform you, that in accordance with section 7 of the Commons Act of 1886, and from instructions received from the Department of Mines, F. Lovett was served with a notice to remove the fences which he has erected on the Common, and the Trustees received answer that he had applied to purchase under the Gold-field Regulations Act. The Trustees protest against him being allowed to purchase the land he has applied for, for the reasons I stated in my last communication, viz.:—He has some 10 acres fenced in, the whole of which is river frontage, and contains gold. I was talking to a miner, and he told me before Lovett fenced in the first 5 acres he obtained 7 oz. of gold, and it would have been long since taken up by sluicers if it had not been fenced in, there being ground to occupy the limited number of miners about there for a long time.

I have, &c.,
JOSEPH AMBLER,
Secretary.

Submitted that this letter be forwarded to Mines Department.—R.H.D., 12/11/86. The Under Secretary for Mines, B.C., 17/11/86. Refer to the Warden for inquiry and report.—H.W., 27/11/86.

No. 5.

The Secretary to Trustees of Avisford Common to The Secretary for Lands.

Sir, Avisford Common, Avisford, 16 November, 1886.

At the request of the miners who got up the enclosed protest I have the honor to forward it to you.

I would remark that, acting under instructions contained in your letter of the 8th June, and section 7 of the new Commons Act, Lovett was served with notice to remove his fence, to which he paid no attention. I applied on the 5th instant at Hargraves for a summons, and was told by Senior-Constable O'Brien I could not have one, as Lovett had applied to purchase. I wrote to the Department of Lands on the 6th, protesting against the land being alienated.

I have, &c.,
J. AMBLER,
Secretary.

Mr. Warden Steel.—G.E. (for U.S.), B.C., 27/11/86.

[*Enclosure.*]

Protest from Miners, Avisford, to Secretary for Mines.

Sir, 13 November, 1886.

We, the undersigned diggers, holders of miners' rights, have the honor to lay before you the following statement:—

F. Lovett, of this parish, has had some 5 acres of land fenced in and under cultivation for the last ten years; he availed himself when Trustee of the Common to fence in as much more; it is all river frontage, and is well known to contain gold. A digger, just before he enclosed it, got 8 ounces of gold. He has now applied to purchase the land.

We, the undersigned, respectfully protest against it being alienated.

We have, &c.,
JOHN BOLTT.
E. DANIEL.

[And fifteen others.]

No. 6.

Mr. Warden Steel to The Under Secretary for Mines.

Sir, Warden's Office, Hill End, 20 December, 1886.

I have the honor to report that I have held an inquiry into the matter of complaint of the Avisford Common and miners against Frederick Lovett occupying Crown lands in excess of what he is legally entitled to.

I caused notices to be served on Joseph Ambler, secretary to the said Trustees, as well as the Trustees themselves, but they did not attend the inquiry. I forward herewith statements of two miners who signed the petition against Lovett, as well as Lovett's own statement, by which it will be seen that no miners have been prevented from mining on the land, and have now full liberty to do so, or any miner can apply to lease the land under the Act to amend the Act 37 Vic. No. 13, and wherein all temporary Commons are deemed to be Crown lands. However, as there seems to be also a complaint against Lovett by the Trustees of the Avisford Common for fencing in a portion of the Common, which appears to me to be the real grievance, I would respectfully point out that Lovett can be proceeded against under the Mining Act 37 Vic. No. 13, for holding land in excess of which he is entitled to in virtue of his miner's right, and thus put an end to the grievance as alleged.

I have, &c.,
W. A. STEEL,
Warden.

So long as Lovett does not apply to purchase the land no action appears to be necessary on the part of this Department, and the Trustees can proceed or cause proceedings, as suggested by the Warden, to be taken against Lovett, if necessary, in the interest of the Commoners.—H.W., 3/1/87.

Submitted. Approved.—C.K.M., 4/1/87.

[*Enclosure.*]

[*Enclosure.*]

INQUIRY into the matter of complaint by Trustees of the Avisford Temporary Common and certain miners against Frederick Lovett for illegally occupying Crown lands on a proclaimed gold-field, within the Avisford Temporary Common.

Warden's Office, Hargraves, 17 December, 1886.

William Henry Winnan states :—I am a miner, living at Avisford ; I signed a petition to the Minister for Mines, Sydney, dated the 13th November, 1886, complaining of F. Lovett trespassing on the Avisford Temporary Common, on a proclaimed gold-field ; I know the land occupied by Lovett on the Meroo Creek, in the Hargraves division of the Mudgee mining district ; Lovett has occupied it, about 5 or 6 acres, for the past ten years, which he has fenced in ; gold exists on the land, and many of the miners are desirous of working for gold on it ; I have never heard that miners have been prevented from working by Lovett ; I signed the aforesaid petition, believing that the whole of the land occupied by Lovett would be sold, and that the miners would lose the advantage of working on it for gold.

W. H. WINNAN.

John Miller states :—I am a miner, living at Avisford ; I remember signing a petition to the Minister for Mines complaining of F. Lovett trespassing on the Meroo Creek by fencing and cultivating certain land, about 7 or 8 acres ; I object to the land being alienated, and that was what I petitioned against ; Lovett has occupied it about ten years ; I was digging on it when Lovett put up the fence ; he did not object to my digging ; I know there is gold on it ; it cannot be worked on account of water ; I have never heard of Lovett preventing anyone mining on it ; I would work on it to-morrow if I wished to do so.

JOHN MILLER.

Frederick Lovett states :—I am a labourer, living at Avisford ; I occupy about 5 acres of land on the Avisford temporary Common ; I am a commoner ; also hold a miner's right ; I have lived on it fifteen years ; I applied to purchase two 2-acre blocks of the land about ten years ago ; I never signed an application, but instructed an agent (Mr. De Courcy Browne) to do so ; I have never refused or prevented any miners from working it, and have no objection to their doing so at any time ; miners have worked on it since I occupied the land.

FREDERICK LOVETT.

No. 7.

The Under Secretary for Mines to Mr. Warden Steel.

Sir, Department of Mines, Sydney, 5 January, 1887.

Referring to your report in the matter of the complaint of the Trustees of the Avisford temporary Common (and certain miners) against Frederick Lovett for illegally occupying Crown lands, I am directed by the Secretary for Mines to inform you that, so long as Lovett does not apply to purchase the land, no action appears to be necessary on the part of the Department, and the Trustees can proceed (or cause proceedings as suggested by you to be taken) against him in the interests of the commoners.

HARRIE WOOD,
Under Secretary.

No. 8.

The Secretary to Trustees of Avisford Common to The Secretary for Mines.

Sir, Avisford, 20 March, 1887.

I have the honor to refer you to a petition I forwarded to you in the month of November from a number of diggers of this township, and to which they have had no reply.

The Gold-field Warden, when he inquired into the matter, told the petitioners that the land should not be alienated. Since then a surveyor has surveyed F. Lovett's 1 acre, on which his house stands, and blocked off 8 acres to be sold by auction, including the whole lot objected to being sold in the petition, besides including a large portion surveyed as a recreation ground for the public school, bringing his peg within a short distance of the school.

We cannot see where Lovett is entitled to purchase by virtue of improvements, as the house in which he lives was erected by the inhabitants at a great cost as a school. Population dwindled down as the diggings gave out, and the school had to be closed, and Lovett jumped the school ; that's how he got the buildings. As population revived a school was wanted, and Government was put to the expense of building a new one. May I beg an early and favourable answer.

I have, &c.,
JOSEPH AMBLER.

The writer may be informed of the result of the inquiry, and a copy of this letter may be forwarded for the information of the Lands Department in case Lovett has applied to purchase in virtue of improvements.—H.W., 5/4/87.

No. 9.

The Under Secretary for Mines to The Secretary to Trustees of Avisford Common.

Sir, Department of Mines, Sydney, 7 April, 1887.

Referring to your letter of the 20th ultimo touching the petition forwarded by you from certain miners at Avisford against the alienation to Frederick Lovett of any land included in the temporary Common at Avisford, I am directed by the Secretary for Mines to inform you that, so long as Lovett does not apply to purchase the land, no action on the part of this Department appears to be necessary, and the Trustees can proceed or cause proceedings to be taken against him in the interests of the commoners.

I have, &c.,
HARRIE WOOD,
Under Secretary.

No. 10.

No. 10.

The Under Secretary for Mines to The Under Secretary for Lands.

Sir, Department of Mines, Sydney, 7 April, 1887.

I have the honor to forward herewith for your information a copy of a letter addressed to this Department by the Secretary to the Trustees of the temporary Common at Avisford, in case that Lovett has applied to purchase any land included in such Common, by virtue of improvements.

I have, &c.,
HARRIE WOOD,
Under Secretary.

No. 11.

Gazette Notice.

Department of Lands, Sydney, 14 May, 1887.

WITHDRAWAL FROM TEMPORARY COMMON AT AVISFORD.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that the portion of land hereinafter described has been withdrawn from the temporary Commonage at Avisford.

THOS. GARRETT.

Eastern Division—Land District of Mudgee.

County of Wellington, parish of Avisford. Area, 9 acres 1 rood 30 perches. That part of the Avisford temporary Common, notified 5th May, 1871, included within the boundaries of measured portions 3 and 4, as shown on plan catalogued 35, parish of Avisford, District Surveyor's Office, Orange.

No. 12.

The Secretary to Trustees of Avisford Common, to J. Haynes, Esq., M.P.

Sir, Avisford, 31 May, 1887.

You may perhaps think it late to congratulate you on your glorious victory, but it is never too late for a good thing, and my excuse being from home and not being well. You may perhaps not remember the name, but I seconded the candidates at the general election, at Windeyer, and I had the pleasure of meeting you at Mr. Jones', at last election, on the Sunday night.

I have a very important piece of business that I want you to look to and do your best for us. I have no personal interest in the matter, but a lot of hard-working miners have. It is their bread. In November last some score of miners, to a man voting for you (being presiding officer I know), sent a petition to the Minister for Mines, against a piece of ground containing some 6 or 7 acres, and fenced in by one Lovett, being alienated, it being a trespass on the Common, and known to contain gold. We thought it was all right, as I received an answer from the Department of Mines to that effect, when judge our surprise when a surveyor made his appearance and measured some 8 acres off in one block, including the ground petitioned against being alienated, and in either last week or week before *Gazette* it is revoked from the Common, having appeared in last week's *Independent* as news. Would you oblige by calling at the Lands Office and using your powerful influence, if it is to be put up for auction, getting it revoked. You may use your discretion whether you ask Mr. Black and Mr. Wall to accompany you or not. I trust you will be successful for the sake of the miners.

I have, &c.,
JOSEPH AMBLER.

For report early.—F.A., 27/6/87.

The Lands Department may be asked whether it is true that 8 acres of land has been withdrawn from the Common with a view to its sale, and if so, to urge that the sale may be stayed till this Department has reported whether the land is auriferous.—H.W., 30/6/87.

Submitted. Approved.—F.A., 1/7/87.

No. 13.

The Under Secretary for Mines to The Under Secretary for Lands.

Sir, Department of Mines, Sydney, 8 July, 1887.

I have the honor, by direction of the Secretary for Mines, to ask whether it is true that 8 acres have been withdrawn from the temporary Common at Avisford, with a view to its sale; and if so I am to urge that you will be good enough to move the Secretary for Lands to stay the sale of such land until this Department has reported whether the land is auriferous.

I have, &c.,
HARRIE WOOD,
Under Secretary.

No. 14.

The Secretary to Trustees of Avisford Common to The Secretary for Mines.

Sir, Avisford, 11 July, 1887.

I have the honor to refer you to your letter of the 7th April, in which you state so long as Lovett does not apply to purchase the land no action on the part of this Department appears to be necessary.

1st. I would respectfully submit that Lovett appears to have applied to purchase an improvement purchase, No. 87-2, on the 8th February, 1887, and the same will be before the Land Board in Mudgee during the week.

2nd.

12

2nd. As I remarked in my letter of the 20th April, the land petitioned against being alienated by the Mines was surveyed with additions and blocked off, and since, by notice in the *Government Gazette*, withdrawn from the Common with the view, I suppose, of being offered by auction, it is said here on application by Lovett.

I am writing this at the request of the miners who signed the petition I forwarded to you.

Having resigned the secretaryship to the Trustees you will oblige by addressing as below.

I have, &c.,
JOSEPH AMBLER.

Urgent. Will Mr. Warden Steel please report as to the auriferous character, or otherwise, of the land referred to.—G.E.H. (for U.S.), B.C., 15/7/87. Mr. Warden Steel.

No. 15.

The Under Secretary for Lands to The Under Secretary for Mines.

Department of Lands, Sydney, 14 July, 1887.

Sir,

Referring to your letter of the 8th instant, I have the honor to inform you that 9 acres 1 rood 30 perches, being portions 3 and 4, parish of Avisford, were, on the 14th May last, withdrawn from the temporary Common at Avisford, and to ask that your report as to whether the land is auriferous may be furnished as early as practicable.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 16.

Mr. Warden Steel to The Under Secretary for Lands.

Warden's Office, Hill End, 30 July, 1887.

Sir,

I have the honor to report for your information that I have inspected the land described as 9 acres 1 rood 30 perches, portions 3 and 4, parish of Avisford, in the letter from the Department of Lands, dated 14th instant, herewith annexed, and beg to state that with the exception of about 1 acre (on which stands the house and improvements occupied by Frederick Lovett) the land is auriferous, and should not be alienated. Large portions of the ground have been worked for gold at various times, with varied success, and abandoned through an influx of water; but it is the opinion of many old miners in the neighbourhood that gold exists in payable quantities.

The portion I refer to as having no gold has, in many places, soil not more than 6 inches in depth, and its alienation would not affect mining interests.

I have, &c.,
W. A. STEEL,
Warden.

The Warden's report may be forwarded, and the Lands Department may be informed that with the exception of (say) 1 acre, including Mr. Lovett's house, &c., the land should not be sold.—H.W., 3/8/87. Submitted. Approved.—J.I., 5/8/87.

No. 17.

The Under Secretary for Mines to The Under Secretary for Lands.

Department of Mines, Sydney, 10 August, 1887.

Sir,

Referring to your letter of the 14th ultimo, to the effect that the area of 9 acres 1 rood 30 perches of land, being portions 3 and 4, parish of Avisford, had been withdrawn from the temporary Common at Avisford, and in which you ask that the report as to the land being auriferous may be furnished, I have the honor to forward herewith a copy of the Warden's report on the matter, and I am directed by the Minister to point out that with the exception of (say) 1 acre, including Mr. Lovett's house, the land should not be sold.

I have, &c.,
HARRIE WOOD,
Under Secretary.

No. 18.

Minute for The Governor and Executive Council.

Withdrawal of land from temporary Commonage.

Department of Lands, Sydney, 21 May, 1888.

It is recommended to His Excellency the Governor and the Executive Council that the within described portions of land, situated in the county of Wellington, parish of Hargraves, area 675 acres, be withdrawn from the temporary Commonage at Avisford for the purposes of lease.

THOS. GARRETT.

The Executive Council advise that the portions of land referred to be withdrawn from temporary Commonage at Avisford for purposes of lease. Approved.—CARRINGTON, 22/5/88. ALEX. C. BUDGE, Clerk of the Council, 22/5/88. Minute, 22/5/88. Confirmed, 29/5/88.

13

WITHDRAWAL FROM TEMPORARY COMMON AT AVISFORD.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that the portion of land hereinafter described has been withdrawn from temporary Commonage at Avisford.

Eastern Division—Land District of Mudgee—Within the old settled district.

Part of the Avisford temporary Common, county of Wellington, parish of Hargraves, area about 35 acres. That part of the Avisford temporary Common, notified 5th May, 1871, within the following boundaries: Commencing at the south-west corner of the Avisford temporary Common, as notified 5th May, 1871; bounded thence on the south by part of its south boundary, bearing east about 18 chains to the left bank of Meroo Creek; thence by that creek downwards to its intersection with the west boundary of the temporary Common; and on the west by part of that boundary bearing south, to the point of commencement.

This revocation does not affect reserve from conditional purchase proclaimed 17th March, 1884.

WITHDRAWAL FROM TEMPORARY COMMON AT AVISFORD.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that the portion of land hereinafter described has been withdrawn from temporary Commonage at Avisford.

Eastern Division—Land District of Mudgee—Within the old settled districts.

Part of the Avisford temporary Common, county of Wellington, parish of Hargraves, area about 640 acres. That part of the Avisford temporary Common, notified 5th May, 1871, within the following boundaries: Commencing on the left bank of the Meroo Creek, at the north-west corner of portion 25; bounded thence on the east by part of the west boundary of that portion bearing south to the south boundary of the Avisford temporary Common, as notified 5th May, 1871; on the south by part of the south boundary of the temporary Common bearing west about 126 chains to the left bank of the Meroo Creek aforesaid; and thence on the north-west by that creek upwards, to the point of commencement.

This revocation does not affect reserve from conditional purchase proclaimed 17th March, 1884.

No. 19.

Gazette Notices.

Department of Lands, Sydney, 9 June, 1888.

WITHDRAWAL FROM TEMPORARY COMMON AT AVISFORD.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that the portion of land hereinafter described has been withdrawn from the temporary Commonage at Avisford.

THOS. GARRETT.

Eastern Division—Land District of Mudgee.

PART of the Avisford temporary Common, county of Wellington, parish of Hargraves, area about 35 acres. That part of the Avisford temporary Common, notified 5th May, 1871, within the following boundary: Commencing at the south-west corner of the Avisford temporary Common, as notified 5th May, 1871; bounded thence on the south by part of its south boundary bearing east about 18 chains to the left bank of Meroo Creek; thence by that creek downwards to its intersection with the west boundary of the temporary Common, and on the west by part of that boundary bearing south, to the point of commencement.

This revocation does not affect reserve from conditional purchase, proclaimed 17th March, 1884.
[Ms. 88-6,815]

Department of Lands, Sydney, 9 June, 1888.

WITHDRAWAL FROM TEMPORARY COMMON AT AVISFORD.

HIS Excellency the Governor, with the advice of the Executive Council, directs it to be notified that the portion of land hereinafter described has been withdrawn from the temporary Commonage at Avisford.

THOS. GARRETT.

Eastern Division—Land District of Mudgee.

PART of the Avisford temporary Common, county of Wellington, parish of Hargraves, area about 640 acres. That part of the Avisford temporary Common, notified 5th May, 1871, within the following boundaries: Commencing on the left bank of the Meroo Creek, at the north-west corner of portion 25; bounded thence on the east by part of the west boundary of that portion bearing south to the south boundary of the Avisford temporary Common, as notified 5th May, 1871; on the south by part of the south boundary of the temporary Common bearing west about 126 chains to the left bank of the Meroo Creek aforesaid; and thence on the north-west by that creek upwards, to the point of commencement.

This revocation does not affect reserve from conditional purchase, proclaimed 17th March, 1884.
[Ms. 88-6,815]

[One plan.]

Sydney: Charles Potter Government Printer.—1889.

[1*s.* 6*d.*] 51—C

Mis Lands
88/2036
enclosure

DESIGN

for Annual Leases partly within Population Area of Hargraves

Parish of Hargraves

County of Wellington

Scale

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

Parish of Grattai

Meroo Creek

Coorangore Creek

Parish of Millenbang

Parish of Kerr

Parish of Tatuali

Parish of Waudong

Parish of Windeyer

Meroo Parish

Warrawonga Creek

Tannam Ck

Louisa Ponds

Louisa Ck

Woolpila Ck

Ck

from Burrendong

Land District boundary between Mudgee and Wellington

To Sally's Flats

Henry Lewis 892 ac

Notified 5th May 1871.

25

700ac abt

Leases have been amended

The internal boundaries of the grazing farms

abt 740ac

abt 570ac

£2 16 4

£2 0 0

£2 7 6 Per

£3 8 8

abt 235ac

81 34 now 85 2092 Tannan W. B. Suttor abt 370ac

81 33 now 85 2091 W B. Suttor abt 390ac

81 32 now 85 2090 W B Suttor abt 460ac

78.75 now 85 5700

657ac abt

£3 8 3 Per

660ac abt

£3 8 9

HARGRAVES

PERMANENT COMMON

Dedicated 18th Feby 1870

640ac ex road

John Phillips 46ac Temply

62 now 81 85 2001 Common James Atkinson 640ac.

64 now 237 85 2004 F.S. A H Cox 800ac

V.R. Cook Under General Notice 24th Dec 1861

Windeyer Temporary Common Notified 22nd March 1880

29.6 now 85 4774 Wm Tilley 57ac 180

77 now 435 85 2067 Wm Mulholland 640ac

78 now 67 85 2078 Daniel Cleary 640ac.

78 now 66 85 2077 Daniel Cleary 640ac

80 now 125 85 2083 Wm Carty 640ac

81 now 492 85 2093 Robert Jones 800ac

Trustee of W. B Suttor Jr 360ac 86.1094

162 83.10 161 80ac 160 40ac 159 51.3.0 158 44a 3r 0p 163 59a 1r 0p

142 40ac CP 119 Wm B Suttor 40ac CP 141 Wm B Suttor 40ac

Joseph Bligh Wright 30ac

W E Bligh 30ac

153 52ac William Pope 38ac ca CP Robt Jones 62ac 2r 40ac

154 155 156 40ac 157 48a 3r

Recreation Reserve 85ac

147 40ac

143 Dan' Cleary 100ac CP

144 Dan' Cleary 40ac CP

145 Dan Cleary 40ac CP

146 Joseph Dempsey 40ac CP

Note

Annual Leases shewn by hatched lines

Transmitted to the District Surveyor with my report of 29th November No 87/47

J W. Conolly

Surveyor

Traced by H.J.C.M

Examined by

(Sig. 51)

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

NEWCASTLE PASTURAGE RESERVE BILL.

(MESSAGE No. 14.)

Ordered by the Legislative Assembly to be printed, 10 *April*, 1889.

CARRINGTON, *Governor.*

Message No. 14.

In accordance with the provisions contained in the 54th section of the Constitution Act, the Governor recommends, for the consideration of the Legislative Assembly, the expediency of making provision to meet the requisite expenses in connection with a Bill to legalize the occupation by certain persons of part of the Newcastle Pasturage Reserve, to admit of the withdrawal from mining lease of the surface of parts of the said reserve, and to authorize the alienation thereof.

Government House,
Sydney, 4*th April*, 1889.

[2*d.*] 152—

1889.

NEW SOUTH WALES.

ANNUAL REPORT

OF THE

DEPARTMENT OF MINES,

NEW SOUTH WALES,

FOR THE YEAR

1888.

Presented to Parliament by Command.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1889.

[10s.] 335—A

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ANNUAL REPORT.

To the Honorable Sydney Smith, Esq., M.P., Minister for Mines, &c., &c.

Sir,

I do myself the honor to submit to you the following Report upon the working of the Department under your control, and also the progress and results of Mining in this Colony during the year 1888.

The following statement shows to some extent the amount of work performed in this Department during the past year:—

Statement of the number of Papers Registered, and Letters despatched, by the several Branches of the Department of Mines.

	Papers Registered.		Letters Written.	
	1887.	1888.	1887.	1888.
Mines proper	19,209	31,983	10,406	19,694
„ Account Branch	.....	10,255	.....	.....
Stock	12,869	13,365	4,073	4,019
Drills and prospecting	4,399	5,559	2,558	2,809
Public Watering Places	7,176	8,881	4,121	3,214
	43,653	70,043	21,158	29,736*

* Exclusive of printed forms and circulars.

In comparing it with the work of the preceding year it is necessary to bear in mind that at the commencement of the year 1888 the Forest Branch, the Rabbit Branch, and the Public Parks Branch were transferred from this to the Lands Department, consequently the staff of the Department has been considerably reduced; nevertheless the number of papers registered exceeds the number (67,948) registered in 1887, when those Branches were included, and the number of letters written in 1888 is only 1,183 less than in 1887, before the officers of those several Branches were withdrawn. It has been necessary to obtain a little temporary assistance, but I have mainly depended upon the zeal and industry of the officers, who have cheerfully worked after office hours to keep down arrears. I take this opportunity to express my high appreciation of their conduct in the sacrifices they have made to duty. I am especially indebted to the Chief Clerk, the Chief Mining Surveyor, the Geological Surveyors, the Inspector of Mines, and the other heads of Branches, for the manner in which they have aided me in all my efforts to expedite the work of the Department.

The number of applications made to lease Crown lands for mining purposes during the year 1888, including applications for special gold leases, was 5,982, being an increase of 3,394, as compared with the number of such applications made in 1887.

Of the 5,982 applications so made 1,717 were for auriferous land, comprising an area of 14,838 acres 2 roods, and 4,265 were for mineral land, comprising an area of 180,648 acres 3 roods.

The number of applications dealt with in 1888 was 4,143, which, compared with the number dealt with in 1887, shows an increase of 2,393, considerably more than twice the number. I have persevered in my efforts to reduce the time occupied in dealing with applications to lease, keeping, however, in view the necessity for the utmost care in guarding against the creation of conflicting titles, and giving due consideration to the rights of applicants. The result as shown above, which has been secured without any increase in the staff, is, I venture to think, highly satisfactory and most creditable to the officers, whose

whose zeal has enabled me to prepare for Ministerial action such an exceptionally large number of cases. I still look forward to the adoption of certain changes, which will tend to increased expedition without sacrificing necessary safeguards.

Of the 4,143 applications dealt with in 1888, 1,054 were for gold-mining leases, comprising an area of over 9,107 acres, and 3,089 were for mineral leases, covering an area of over 117,170 acres.

The area of auriferous Crown lands applied for in 1888, as compared with 1887, shows an increase of 8,487 acres. The area of mineral Crown lands applied for in 1888 is greater than the area applied for in 1887 by 104,057 acres.

The following table shows the quantity of Crown land applied for to lease during year 1888, and the minerals to be mined for therein :—

	a.	r.	p.
Gold	15,831	2	0
Diamonds	948	0	0
Tin and diamonds	346	0	0
Tin	10,490	0	7
Tin and silver	80	0	0
Tin, silver, copper, and lead	720	0	0
Tin, silver, and lead	7,719	1	6
Tin and rubies	2,160	0	0
Tin and copper	130	0	0
Silver	56,266	1	13
Silver and lead	36,991	1	7
Silver, lead, and copper	13,219	2	10
Silver and arsenic	340	0	0
Silver and antimony	280	0	0
Silver, tin, and rubies	400	0	0
Silver, copper, lead, and rubies	200	0	0
Silver, lead, and limestone	280	0	0
Silver, lead, tin, and rubies	120	0	0
Silver and bismuth	120	0	0
Silver, lead, and rubies	110	0	0
Silver, tin, and copper	120	0	0
Silver, lead, and bismuth	100	0	0
Silver, lead, copper, and antimony	80	0	0
Silver, lead, tin, and iron	80	0	0
Silver, lead, copper, and limestone	60	0	0
Silver, calspar, and lime	40	0	0
Silver, lead, and calspar	40	0	0
Silver, lead, and iron	40	0	0
Silver and tin	720	0	0
Silver, antimony, and lead	40	0	0
Silver, calspar, and lime	40	0	0
Silver and cobalt	40	0	0
Silver, lead, and flux	100	0	0
Slate	20	0	0
Slate and silver	40	0	0
Copper	3,240	0	0
Copper and silver	1,512	0	0
Silver, alum, lead, and bismuth	40	0	0
Cobalt	20	0	0
Coal	14,639	0	0
Coal and shale	25,611	0	0
Coal, shale, petroleum, and gas	1,817	0	37
Hematite ore	40	0	0
Graphite	40	0	0
Plumbago	260	0	0
Zinc, lead, and silver	40	0	0
Antimony	501	0	0
Alumite and alum stone	40	0	0
Bismuth	199	0	0
Rubies, tin, and lead	120	0	0
Manganese and silver	49	0	0
Total	196,480	1	0

The aggregate area applied for in 1888 is considerably more than double that of 1887. The increase is chiefly in applications to mine for gold, diamonds, silver (either alone or with other minerals), and coal and shale.

The following table shows the quantity of Crown land held under application to lease on the 31st December, 1888, and the minerals proposed to be mined :—

	a.	r	p.
Gold	9,910	3	19
Antimony	757	0	0
Antimony and silver	45	0	0
Alumite and alum stone	40	0	0
Bismuth	70	0	0
Bismuth and silver	40	0	0
Coal	14,779	3	30
Coal and shale	36,083	3	0
Copper	3,120	0	0
Coal and ironstone	600	0	0
Coal, kerosene, shale, and ironstone	1,280	0	0
Copper and spar	20	0	0
Cobalt	20	0	0
Cobalt and nickel	85	0	0
Copper, tin, silver, and lead	40	0	0
Coal, petroleum, and shale	1,077	0	0
Diamonds	460	0	0
Hematite ore	40	0	0
Precious stone	80	0	0
Opals	80	0	0
Plumbago	300	0	0
Iron	80	0	0
Manganese and silver	85	0	0
Kerosene	640	0	0
Rubies and tin	220	0	0
Rubies, silver, and tin	40	0	0
Silver	33,503	0	0
Silver and lead	13,596	2	27
Silver, lead, and copper	6,039	2	34
Silver, lead, copper, and tin	280	0	0
Silver and lead	5,667	0	0
Silver and tin	237	2	23
Silver and arsenic	20	0	0
Silver, lead, and calcite	20	0	0
Silver and cobalt	40	0	0
Silver, lead, and tin	1,160	0	0
Silver, lead, and limestone	280	0	0
Silver, calspar, and lime	40	0	0
Silver, lead, and calspar	40	0	0
Silver, lead, and flux	60	0	0
Silver, lead, copper, and flux	80	0	0
Silver, lead, and iron	40	0	0
Silver, lead, and bismuth	40	0	0
Silver, lead, copper, and rubies	80	0	0
Silver, lead, tin, and iron	80	0	0
Silver, tin, and copper	120	0	0
Silver and copper	880	0	0
Silver, lead, and spar	40	0	0
Silver, lead, and antimony	60	0	0
Silver, lead, copper, and antimony	80	0	0
Slate	20	0	0
Sulphurous mineral	80	0	0
Salt	400	0	0
Tin	8,349	3	23
Tin and diamonds	166	0	0
Tin and copper	40	0	0
Tin, silver, and lead	2,580	0	0
Total	144,113	1	36

The aggregate area of Crown land held under application to lease on the 31st December, 1888, is more than double the area so held at the end of 1887.

The

The following table shows the area of Crown land held under lease, and the minerals to be mined :—

Mineral	Mining Act, 1874.	Mining Act Further Amendment Act, 1884.	Crown Lands Occupation Act, 1861	Total
	a. r. p.	a. r p.	a. r. p.	a. r p.
Gold	5,236 1 10	1,029 0 17		6,265 1 27
Antimony	120 0 0	90 0 0		210 0 0
Bismuth	105 0 0			105 0 0
Coal	2,824 0 0	27,126 0 19	2,604 0 0	32,554 0 19
Cobalt	20 0 0			20 0 0
Copper	325 0 0	20 0 0		345 0 0
Diamonds	469 0 29	240 0 0		709 0 29
Diamonds and tin	394 0 25	592 0 0		986 0 25
Manganese	60 0 0			60 0 0
Slate	90 0 0			90 0 0
Shale, copper, &c.				
Silver	10,121 1 19	935 0 10		11,056 1 29
Silver and lead	24,696 1 24	800 0 0		25,496 1 24
Silver and copper	225 0 0			225 0 0
Silver, lead, and copper	2,599 2 37	40 0 0		2,639 2 37
Silver, lead, copper, and tin	40 0 0			40 0 0
Silver and tin	890 0 0	80 0 0		970 0 0
Silver, lead, and tin	9,666 0 35	80 0 0		9,746 0 35
Tin	12,691 0 6	3,702 1 13		16,393 1 19
Silver, manganese, cobalt, and copper				
Limestone	20 0 0	260 0 0		280 0 0
Silver, lead, and limestone	335 3 18			335 3 18
Coal and shale	360 0 0	4,770 0 0		5,130 0 0
Silver, tin, and copper	80 0 0	40 0 0		120 0 0
Mineral salts	40 0 0			40 0 0
Marble	40 0 0			40 0 0
Manganese, cobalt, and copper	40 0 0			40 0 0
Alum	480 0 0			480 0 0
Silver, lead, and spar	140 0 0			140 0 0
Lead, silver, and asbestos	40 0 0			40 0 0
Not specified			37 1 33	37 1 33
Sulphate of alumina and potash	95 3 17			95 3 17
Iron	20 0 0			20 0 0
Tin and copper	30 0 0			30 0 0
Silver, lead, and iron	80 0 0			80 0 0
Silver, lead, and zinc	80 0 0			80 0 0
	72,455 0 20	39,804 2 19	2,641 1 33	114,901 0 32

The above table shows a considerable increase upon the area held under lease at the end of 1887. The area held for gold and copper respectively has been nearly doubled. The area for silver—silver and copper—silver, lead, and copper—silver, lead, and iron—silver, lead, and tin—silver, lead, and zinc—silver, lead, and limestone—silver, lead, and spar—silver and tin—tin, coal, and coal and shale respectively,—is increased, while the area for silver and lead and some other minerals is decreased.

The number of applications for permits or authorities, under section 27 and 28 of the Mining Act, to mine under reserves received during 1888 was 611, being an increase of 439 upon the number received during 1887—more than three times the number. The number dealt with in 1888 was 279, being greater by 137 than, or nearly double, the number dealt with in 1887.

The following table shows the area of reserved land, comprised in permits or authorities, granted during 1888, and the minerals to be mined thereunder:—

	a. r. p.
Coal	20,376 3 30
Coal and shale	30,282 2 39
Tin	11 0 14
Tin and diamonds	10 0 0
Silver	20 0 0
Silver and lead	20 0 0
Copper	160 0 0
Alum and alumstone	80 0 0
Gold	22 1 25
	50,983 0 28

In many cases the permits or authorities had not actually issued prior to the 31st of December, 1888.

The aggregate area of reserved lands comprised in permits and authorities granted in 1888 is greater by 33,295 acres than the area so granted in 1887, or nearly three times the area.

The

The following table shows the areas of reserved lands, comprised in authorities, granted under sections 27 and 28, which were issued prior to 1888, and the minerals to be mined thereunder :—

	a.	r.	p.
Coal	39,524	2	9
Coal and shale	3,029	1	0
Tin	318	1	26
Shale	8	2	32
Coal, iron, and shale	18	2	16
Ironstone	79	3	7
Silver and lead	15	3	5
Limestone	10	0	0
Marble	5	0	0
Bluestone and gravel	12	0	0
Gold	207	1	6
	43,229	1	21

This shows a considerable decrease, due to cancellation of authorities and change of title from authorities into leases.

Area comprised in permits or authorities (section 27 or 28) issued, which were in force 31st December, 1888 —

	a	r	p.
Coal	47,540	1	39
Coal and shale	4,949	1	0
Tin	376	1	35
Shale	8	2	32
Limestone	10	0	0
Bluestone and gravel	12	0	0
Marble	5	0	0
Silver and lead	22	1	30
Ironstone	79	3	7
Coal, iron, and shale	18	2	16
Alum and alumstone	80	0	0
Silver	20	0	0
Copper	80	0	0
Gold	227	1	8
	53,430	0	7

The number of applications under section 45 of the "Crown Lands Act of 1884," for permits to dig and search for gold, received during 1888 was 327, the number granted during the year was 97, the number refused was 51, and the number now in force is 135. At the end of 1887 the number in force was 57.

The number of applications for permits under section 7 of the "Crown Lands Act of 1884" received during 1888 was 128, the number finally dealt with was 73, the number granted was 32, but only 14 were issued, the others await payment of stamp duty, and the number of such permits issued and now in force is 36.

In the month of December last regulations were made, under which permits may be granted to search for minerals within conditional leaseholds ; the number of applications received since then to the end of 1888 was 38, and the number finally dealt with was 16. The number of permits issued was 11.

During the year two returns were published of holdings, under section 28 of the Mining Act, namely, one for the half-year, ending 31st December, 1887, the other for the half-year, ending 30th June, 1888. And three returns of gold and mineral leases were published during the year. These latter are very voluminous, containing full information concerning the holder's area and conditions of each, and occupy a considerable time in compiling and printing, and consequently they were not published as promptly as I could desire, but in view of the very great pressure of work during the whole year there is every excuse for the delay.

The foregoing tables do not include all the land occupied for mining purposes, as considerable areas are held under miners' rights as claims, and under mineral licenses as prospecting areas. There are also private lands, upon which extensive mines are being worked.

Prospecting Board.

During the year the Prospecting Board visited the following amongst other places, viz —

Adelong
Albury
Araluen
Armidale
Barraba
Bathurst
Bingera
Black Mountain
Blayney
Booroolong
Boro Creek
Bowling Alley Point
Broken Hill—"Waukeroo"
Bungendore
Bingera
Byrock
Canadian Lead
Canowindra
Capertee
Carcoar
Cowra
Crookwell
Captain's Flat
Deep Creek

Denison Town	Kiandra	Temora
Emmaville	Milburn Creek	Tichbourne
Forbes	Mitchell	Tumberumba
Forest Reefs	Moonbi	Tumut
Glen Innes	Mount M'Donald	Uralla
Grenfell	Old Junee	Vegetable Creek
Gulgong	Orange	Walcha
Gundagai	Parkes	Wattle Flat
Hanging Rock	Pinnacles	Windeyer
Hargraves	Queanbeyan	Wingello
Hill End	Sofala	Young
Hillgrove	Swallow's Nest	
Home Rule	Tamworth	

Aid granted in	133 cases.
Aid refused in	125 "
Applications not yet dealt with	359
	617

And dealt with a large number of applications for aid. In 133 cases the Board recommended that aid be granted, and in 125 cases that aid be refused. In many cases the works aided were not in a sufficiently forward state at the end of the year to indicate what the result will be, but in some cases the works had been completed without making any discovery. In some cases the works subsidized have proved of indirect benefit in attracting attention to particular localities which had been abandoned, but which are now busy scenes of mining industry. In some cases more direct results are reported, as, for example, one party at Dark Corner reported to have struck a reef 4 feet wide, at a depth of 275 feet, which is estimated to yield 2 oz. per ton. The deep shaft sunk by the prospecting party at Mount Brown has enabled the owners of the adjoining claim to work their deep ground, which appears to be moderately rich, though the prospectors have not yet bottomed. Rich stone is said to have been found at a depth of about 300 feet by one of the parties at Mount M'Donald, to whom aid was granted. The party at the Black Range, at Albury, to whom aid was granted, has had a crushing of 9 tons for a yield of 2 oz. per ton. My thanks are due to Mr. D. M'Culloch, of the Diamond Drill Branch, for the very efficient manner in which he has performed the clerical work of the Board.

Geological Survey.

Hitherto the records of the work of the Geological Survey Branch has been published in connection with the Annual Report of the Department, but during last year it was decided that these records should in future be published separately. I, however, propose still to submit a *résumé* of the work performed by the Geological Surveyor in charge, Mr. C. S. Wilkinson, F.G.S., F.L.S., and the staff under him in my report. I cannot speak too highly in praise of the labours of the Geological staff, and the zeal they always evince in the work of the Department. The Geological Survey staff have examined various parts of the Colony, some of which were visited in connection with applications for aid out of the prospecting vote. As a member of the Prospecting Board, the Geological Surveyor in charge accompanied me to Mudgee, Gulgong, Meroo, Two-mile Flat, Hargraves, Tambaroora, Hill End, Pyramul, and Windeyer. For the same purpose Mr. Wilkinson, with Mr. Slee, inspected the Sunny Corner, Bathurst, Crookwell, Taralga, Bungonia, Captain's Flat, Michelago, Bredbo, and Kiandra districts. Accompanied by Mr. Geological-Surveyor David, I proceeded to Gundagai, Adelong, Tumut, Tumberumba, Tarcutta, Junee, Temora, Barmedman, Cowabbee, Shoalhaven River, Mittagong, Wattle Flat, Sofala, Sally's Flat, and Albury, and dealt with the applications for aid in those gold-fields. Mr. Geological-Surveyor Anderson also assisted the Prospecting Board in examining Barraba, Nundle, Hanging Rock, Bowling Alley Point, Moonbi, Uralla, Bora Creek, Walcha, Glen Morison, Tia Reef, Armidale, Booralong, Eversleigh, Herbert Park, Warm Corner, Hillgrove, Gyra, Glen Innes, Vegetable Creek, Gulgong, Home Rule, Reedy Creek, Denisontown, Talbragar, Merindie, and Capertee, numerous sites proposed to be prospected both for alluvial and reef gold in these districts were inspected, and it is anticipated that the aid afforded by the Government will lead to discoveries of value, and stimulate mining interests.

Mr. Wilkinson proceeded to Queensland and inspected the Mount Morgan Mine, near Rockhampton it having been deemed advisable that an examination be made of the remarkably rich gold-bearing deposit at Mount Morgan, in Queensland, with the view of ascertaining the probable occurrence of similar deposits in New South Wales.

Mr. Wilkinson was instructed to visit the mine. He there found that the country rock formation consisted of lower carboniferous strata of the same age as those which form a considerable portion of the eastern and western slopes of the Dividing Range north of the Hunter River, in New South Wales. But about Mount Morgan the strata had been greatly metamorphosed by the intrusion of igneous rocks, and the main body of the mount, for a width of about half a mile, consisted of altered silicious rocks and

 quartz,

quartz with auriferous iron pyrites more or less disseminated through them in large masses, as well as in minute crystals. Through fissures in this pyritous formation thermal mineral waters, having gold in solution, issued, producing the deposit of sinter and ironstone which have been proved so rich in gold. Mr. Wilkinson's observations therefore confirm those of Mr. R. L. Jack, Government Geologist of Queensland, who, in 1884, was the first to describe the geyser origin of this unique and large auriferous deposit. This geyser deposit forms the summit of the mount, and is about 1½ acres. It is removed bodily for treatment at crushing and chlorination works. The ore varies in richness, but for convenience of treatment the rich and poor ores are mixed together so as to yield about 5 oz. of gold per ton. Mr. Wesley Hall, the able manager, states that ½ oz to the ton will pay working expenses and leave a good profit. Mr. Wilkinson is of opinion similar deposits may exist in New South Wales, especially in the metamorphosed formations on the eastern falls of the northern portion of our Dividing Range; the chief surface indications would be deposits of porous silicious ironstone. The occurrence of gold which has been deposited from solution is already known in this Colony at Brown's Creek, Barraba, &c., but the auriferous rocks in these places are not geyser deposits like that at Mount Morgan.

Mr. Geological-Surveyor David has been engaged in examining the country from Teralba, at the head of Lake Macquarie, to Gosford, in order to ascertain the southerly extension of the Northern coal measures, and the probable depth of the coal-seams in them. He has also commenced an examination of the coal formations in the Port Stephens and Raymond Terrace Districts, and has further mapped out the Greta coal series to the south-west of Maitland. Mr. Anderson, Geological Surveyor, inspected certain localities near Gunning and Tumut in connection with the alienation of lands, also numerous mining localities in the Bingera and Barraba districts, and has examined and reported upon the country to the north-west of Molong, the coal-bearing formation near Dubbo, and the remarkable fossiliferous deposits at Myall Creek and at Talbragar, from which the collector, C. Cullen, has lately obtained such valuable collections for the Mining and Geological Museum.

Mr. Robert Etheridge, junior, palæontologist, has been engaged upon the examination of the extensive collections of fossils, chiefly of the carboniferous fauna. His work on the Invertebrate Fauna of the Wianamatta Hawkesbury Series, Memoir No. 1 of the Palæontological Series of the Geological Survey, has been published, and also Memoir No. 2, by Baron von Ettinghausen, on the Tertiary Flora, which he has edited. The works of Dr. Ottakar Feistmanter on Carboniferous Flora, and of Professor de Konnick on the Devonian and Carboniferous Fauna, will also shortly be issued.

Mr. J. E. Carne, Curator and Mineralogist of the Mining and Geological Museum, in addition to his ordinary duties in connection with the Museum and the examination of mineral samples submitted by the public, has rendered valuable service in connection with the preparation and arrangement of the mineral exhibits, both private and departmental, in the Adelaide Jubilee Exhibition and the Melbourne Centennial Exhibition, in which the representation of the mineral resources of New South Wales was so successful. Particulars regarding the awards, &c., at these Exhibitions are given in Mr. Carnes' progress report herewith.

Whilst Mr. Carne was engaged upon the work of these Exhibitions, which occupied him during a considerable portion of the year, his duties relating to the examination of mineral samples were ably performed by Mr. G. A. Stonier, Assistant Geological Surveyor. The number of samples submitted for assay more than doubled that of the previous year, being 5,245 as against 2,222 in 1887.

In consequence of this large increase the resources of the laboratory of the department were completely overtaxed, and though Mr. Mingaye, the assayer and analyst did his utmost to meet the work, it was found necessary to appoint an Assistant Assayer, Mr. White, and to provide the larger laboratory now occupied at the old Naval depôt in George-street.

Numerous additions to the Mining and Geological Museum have been made during the year, both by the Geological Survey officers, and by private donors, many of whom have presented to the Department the samples of minerals exhibited by them at the Adelaide and Melbourne Exhibitions, so that the Department is now in possession of splendid collections representative of the mineral resources and geology of the Colony; but for want of proper Museum space, they cannot be adequately exhibited, which is consequently a loss to the public of a very important means of promoting the development of the mining interests.

The Library has received many additions, including important mining and geological works of reference. The number of volumes registered is 2,364.

The Superintendent of Caves, Mr. W. S. Leigh, reports that a growing public interest is manifested in regard to the caves, now that they are made more accessible, and better accommodation provided for visitors. Additional improvements have been effected, and some splendid new caverns discovered. The number of visitors during the year were—At Jenolan, 1,829; Wombeyan, 400; Wellington, 1,679; Yarrangobilly, 200.

It is my painful duty to record the death, on 31st December, of Mr. H. T. Wilkinson, J.P., the clerk and draftsman of the Geological Survey Office. Mr. Wilkinson was a very able officer, and was connected with the Geological Branch for many years. On behalf of this Department, and as Visiting Magistrate for the Government, he paid quarterly visits to Lord Howe Island; also, on behalf of His Excellency the Governor, he proceeded to Norfolk Island, in reference to the proposed transfer of that island to the Government of this Colony. At the request of the Honorable the Minister for Justice, in November last, he was deputed to act as City Coroner, and continued to perform his official duties until the day of his death.

Mining Surveys.

In consequence of the mining excitement which prevailed more or less all over the Colony during the year 1888, the work done in this Branch of the Department greatly exceeds any previous records.

Fifty-three surveyors were employed at mining surveys under the supervision of the Chief Mining Surveyor (Mr. E. F. Pittman). Of these 9 were in receipt of salaries, in addition to the fees, while 44 received fees only.

The total number of surveys made during the twelve months was 4,317, consisting of 1,208 gold-mining leases, 2,991 mineral leases, 85 mining tenements, and 33 mining permits. This total is more than three times that of the previous twelve months.

On the 1st of January, 1889, 980 applications were still awaiting survey; but I am happy to say these are being rapidly cleared off, and the work of this Branch is reaching its normal proportions.

In the Charting Branch, 4,977 applications for gold-mining and mineral leases were received, and of these 4,720 were finally dealt with during the same period. Two hundred and seventy-nine applications, under section 28, were also dealt with, out of a total of 611 received. In addition to these, 15 parish and gold-field maps were compiled, and 455 copies of mining-maps were revised, charted to date, and forwarded to the wardens, district surveyors, &c.

The very large increase of work in the Charting Branch has been dealt with, with scarcely any additions to the number of working hands, the only additions being two contract draftsmen from the middle of July—1 from the 1st of October, and 1 from early in December. About the middle of August a temporary clerk was employed, and on the 1st November a cadet. This expedition in dealing with the work is owing to the fact that during the early months of the year the draftsman worked after office hours, giving their services gratuitously, for which the thanks of the Department are due to these gentlemen. In August a system of contract work was instituted, and has been found to work well. Under this system draftsmen were paid extra for all cases dealt with by them in excess of a certain fixed number, which was adopted as a fair average month's work. If some such system as this had not been introduced the staff of the Branch would have been quite unable to cope with the unusual rush of work; and I look forward to the adoption of a scheme under which the work of this Branch will be done by contract.

Mineral and Gold Lease Applications received and dealt with in Charting Branch in 1888.

Month.	Cases received.	Cases dealt with.	Month.	Cases received.	Cases dealt with.
January	211	149	August	635	579
February	299	241	September	615	556
March	222	331	October	505	598
April	383	283	November	328	469
May	255	300	December	410	546
June	626	295			
July	488	375	Total	4,977	4,727

The following is a return of compiling work performed in the Charting Branch during the year 1888.

Parish.	County.	Mining District.	Parish.	County.	Mining District.
Fskdale	Roxburgh	Bathurst.	Alma. (2nd edition)	Yancowinna	Albert
Gillindich	,,	,,	Bolaira. (3rd edition)	,,	,,
Mulgunnia	Georgiana	,,	Byjerkerno. (2nd edition)	Farnell	,,
Oberon	Westmoreland	,,	Picton. (3rd edition)	Yancowinna	,,
Currajung. (2nd edition)	Ashburnham	Lachlan.	Stephen. (4th edition)	,,	,,
Parkes. (2nd edition)	,,	,,	Sebastopol. (2nd edition)	,,	,,
Young	Monteagle	,,	Wankeroo	,,	,,
Nerrimunga	Argyle	Southern.			

The following is a complete catalogue of all Mining Maps, arranged in alphabetical order, in the various mining districts, and giving the parish, county, locality, and date of publication :—

Mining District.	No.	Folio.	Parish, or part of	Edition.	Locality.	County.	Published.
Albert	1	B	Albert	2*	Thackaringa	Yancowinna	21 Nov., 1887
			Alma	...	"The Pinnacles"	do	10 Dec., 1885
	7	B	Alberta	...	Corona	Farnell	18 Jan., 1887
			Bomangaldy	2*	Silverton	Yancowinna	30 Dec., 1885
	5	B	Bray	2*	do	do	19 „ 1885
			Bolaira	2*	Silverton, Round Hill	do	11 Nov., 1885
			Bligh	...	Corona	Farnell	8 April, 1886
	13	B	Badjerrigarn	...	do	do	27 May, 1886
			Byjerkerno	...	Poolamacca	do	8 Jan., 1887
	4	B	Corona	...	Corona	do	30 Mar., 1886
	2	B	Edgar	2*	Silverton	Yancowinna	21 Nov., 1887
	6	B	Fowler's Gap (*see* Giles)	...	...	Farnell	...
	6	B	Giles	.	Fowler's Gap	do	25 Jan., 1887
	9	B	Lewis	2*	Silverton	Yancowinna	11 Mar., 1885
	15	B	Mount Gipps	2*	do	do	28 „ 1885
			Moorkaie	.	do Mount Gipps	do	25 Aug., 1885
	12	B	Naradin	2*	do	do	10 Mar., 1886
	3	B	Purnamoota	2*	do	do	9 Feb., 1886
			Picton	2*	do Broken Hill	do	28 Sept., 1885
	8	B	Robe	...	do Purnamoota	do	22 July, 1885
	11	B	Stephen	3*	do	do	26 May, 1885
	14	B	Soudan	...	do	do	2 July, 1886
			Sebastopol	...	do	do	17 May, 1886
			Tara	...	do Piesse's Nob	do	6 Jan., 1886
			Umberumberka	...	do	do	24 June, 1885
	10	B	Yancowinna	...	do	do	9 April, 1886
Bathurst	3	C	Bolton (*a*)	...	Wiseman's Creek	Westmoreland	1 May, 1886
			Baring	...	...	do	10 July, 1886
	10	A	Castleton	...	Sunny Corner	Roxburgh	25 Aug., 1887
			Coolamigal (*b*)	...	do	do	18 Sept., 1885
			Cullen Bullen (*b*)	...	do	do	18 „ 1885
			Falnash (*b*)	...	do	do	18 „ 1885
	3	C	Jocelyn (*a*)	...	Wiseman's Creek	Westmoreland	1 May, 1886
	3	C	Langdale (*a*)	...	do	do	1 „ 1886
	9	A	Lennox (*c*)	...	Ophir Gold-field	Bathurst	2 Dec., 1887
	9	A	Lewis (*c*)	...	do	do	2 „ 1887
	2	A	Tuena	...	Abercrombie Gold-field	Georgiana	1 Nov., 1887
	9	A	Worcester (*c*)	...	Ophir Gold-field	Bathurst	2 Dec., 1887
Clarence and Richmond	26	A	Nullama	...	Boyd or Little River Gold-field.	Gresham	Survey Office Litho. adopted.
Hunter and Macleay	..	.	Bindera (*d*)	3*	Barrington Gold-field	Gloucester	5 Dec., 1884
	.	...	Craven (*d*)	3*	do	do	5 „ 1884
Lachlan	2	C	Bundawarrah	...	Temora Gold-field	Bland	13 July, 1887
	6	C	Currajong (*e*)	2*	Billabong Goldfield	Ashburnham	7 Feb., 1888
	6	C	Parkes (*e*)	2*	do	do	7 „ 1888
Mudgee	...	...	Gulgong (*f*)	...	Gulgong Gold-field	Phillip	24 „ 1886
	.	..	Guntawang (*g*)	...	do	do	21 July, 1886
	8	C	Hargreaves	...	Wellington Gold-field	Wellington	25 Oct, 1887
	1	C	Wyaldra (*h*)	..	Gulgong Gold-field	Phillip	29 April, 1885
New England		...	Arvid	2*	Vegetable Creek	Gough	25 Aug., 1884
	30	A	Annandale	2*	do	Clive	11 Nov, 1884
		.	Bundar (*i*)	...	do	Gough	1 Oct, 1881
		.	Bookookoorara (*j*)	2*	Wilson's Downfall	Buller	31 „ 1885
	13	A	Bates (*k*)	...	...	Clive	23 April, 1885
	21	A	Blain (*l*)	.	...	do	20 Oct., 1885
	21	A	Bowman (*l*)	...	...	do	20 „ 1885
	14	A	Binghi (*m*)	..	...	do	10 Aug., 1885
	23	A	Boorook	..	Boorook and Lunatic Gold-field.	Buller	8 Oct., 1880
	3	A	Boonoo Boonoo (*n*)	...	do	do	24 Nov., 1887
	.	...	Corry (*j*)	2*	Wilson's Downfall	do	31 Oct., 1885
	..	.	Cullendore (*j*)	2*	do	do	31 „ 1885
	21	A	Cranbrook (*l*)	..	Emmaville Gold-field	Clive	20 „ 1885
	7	C	Callanyn ... Sketch	Map	Red Rock	Buller	25 Aug., 1887
	...		Dumaresq (*o*)	...	Vegetable Creek	Gough	4 Feb., 1881
	.	...	Frazer (*o*)	...	Emmaville Gold-field	do	4 „ 1881
		.	Flagstone	...	do	do	9 June, 1881
	29	A	Highland Home	2*	do	do	21 Mar, 1884
		..	Hamilton (*p*)	2*	do	do	16 Feb, 1884
	...	...	Haystack (*o*)	...	Vegetable Creek	do	4 „ 1881
		.	Land's End (*q*)	.	Emmaville Gold-field	do	6 April, 1881
		..	Muir (*q*)	.	do	do	6 „ 1881
		.	Maryland (*j*)	2*	Wilson's Downfall	Buller	31 Oct., 1885
			Marsh (*j*)	2*	do	do	31 „ 1885
		...	Paradise North (*i*)	.	Emmaville Gold-field	Gough	1 „ 1881
	21	A	Purvis (*l*)	...	...	Clive	20 „ 1885
	...	...	Ruby (*j*)	2*	Wilson's Downfall	Buller	31 „ 1885
	13	A	Rockvale (*k*)	...	Emmaville Gold-field	Clive	23 April, 1885
	13	A	Rockglen (*k*)	.	do	do	23 „ 1885
	19	B	Strathbogie	2*	do	Gough	30 Sept., 1884
	...	..	Strathbogie North (*p*)	2*	do	do	16 Feb., 1884
		.	Scone	2*	do	do	7 „ 1884
	20	B	Strachan	.	Emmaville Gold-field	Gough	6 April, 1880
	14	A	Silent Grove (*m*)	...	do	Clive	10 Aug., 1885
	22	B	Tent Hill	2*	do	Gough	15 Sept., 1884

Mining District.	No.	Folio.	Parish, or part of.	Edition.	Locality.	County.	Published.
	...	...	Undercliff (*j*)	2*	Wilson's Downfall	Buller	31 Oct., 1885
	...	...	Wellington Vale	2*	Emmaville Gold-field	Gough	3 Nov., 1883
	...	...	Wellington North (*i*)	...	do	do	1 Oct., 1881
	...	...	Wylie (*j*)	2*	Wilson's Downfall	Buller	31 ,, 1885
	1	D	West Fairfield	2*		Drake	6 Sept., 1887
Peel and Uralla	16	B	Ashton	...	Cope's Creek	Hardinge	18 Aug., 1884
	...	...	Bangheet (*r*)	...	Bingara Diamond-field	Murchison	13 June, 1885
	...	...	Bingara (*r*)	...	do	do	13 ,, 1885
	...	...	Boyd (*s*)	...		Gough	30 Jan., 1885
	...	...	Bloxsome (*s*)	...		do	30 ,, 1885
	...	...	Bald Nob (*s*)	...		do	30 ,, 1885
	...	...	Clive	2*	Cope's Creek	do	8 Dec., 1883
	9	B	Clare	2*	do	Hardinge	4 Mar., 1884
	18	B	Cope's Creek	2*	do	do	9 April, 1884
	...	...	Coventry	...		Clarke	16 Sept., 1886
	25	B	Darby	2*	Cope's Creek	Hardinge	31 July, 1884
	...	...	Dungowan (*t*)	...	Peel River Gold-field	Parry	26 May, 1887
	3	D	Dinoga (*u*)	...	Bingara Gold-field	Murchison	25 Feb., 1885
	...	...	Derra Derra (*r*)	...	do Diamond-field	do	13 June, 1885
	3	D	Gouron (*u*)	...	do Gold-field	do	25 Feb., 1885
	23	B	Herbert	2*	Cope's Creek	Gough	7 Jan., 1884
	6	B	Hanning	...		Inglis	21 Dec., 1886
	...	...	Hall (*v*)	...	Mitchell River	Clarke	25 Nov., 1886
	8	B	Hall	...	Giant's Den	Darling	21 Dec., 1886
	3	D	Hall (*u*)	...	Bingara Gold-field	Murchison	25 Feb., 1885
	...	...	Mayo	2*	Cope's Creek	Hardinge	30 July, 1884
	...	...	Mitchell (*s*)	...		Gough	30 Jan., 1885
	3	D	Macintyre (*u*)	...	Bingara Gold-field	Murchison	25 Feb., 1885
	...	...	Nundle	...	Peel River Gold-field, Hanging Rock.	Parry	26 April, 1887
	...	...	Swinton	2*	Cope's Creek	Hardinge	15 May, 1884
	...	...	Severn (*s*)	...		Gough	30 Jan., 1885
	...	...	Scott (*s*)	...		do	30 ,, 1885
	...	...	Sara (*v*)	...	Mitchell River	Gresham	25 Nov., 1886
	...	...	Scone and Strathbogie	...	(*See* New England Mining District.)		
	21	B	Tienga	...	Cope's Creek	Hardinge	6 Oct., 1884
	...	...	Worra (*v*)	...	Mitchell River	Gresham	25 Nov., 1886
	17	B	Wood's Reef	...	Ironbark and Ti-Tree Gold-field.	Darling	10 July, 1886
	...	...	Wellington Vale	...	(*See* New England Mining District.)		
Tambaroora and Turon	1	A	Carroll (*w*)	2*	Hill End and Tambaroora	Wellington	18 Oct., 1887
	1	A	Cummings (*w*)	2*	do	do	18 ,, 1887
	1	A	Tambaroora (*w*)	2*	Hill End and Tambaroora	do	18 ,, 1887
Tumut and Adelong	...	...	Adelong (*x*)	...	Adelong Gold-field	Wynyard	— Jan., 1880
	26	B	Bullongong (*y*)	...	Captain's Flat	Murray	8 Oct., 1886
	26	B	Ballallaba (*y*)	...	do	do	8 ,, 1886
	...	...	Calafat (*x*)	...	Adelong Gold-field	Wynyard	— Jan., 1880
	...	...	Ellerslie (*x*)	...	do	do	,, 1880
	...	...	Euadera (*x*)	...	do	do	,, 1880
	...	...	Gardara (*x*)	...	do	do	,, 1880
	...	...	Wondalga (*x*)	...	do	do	,, 1880

(*) Previous edition cancelled. (*a*) Published in Map. (*b*) Published in Map. (*c*) Published in Map. (*d*) Two sheets published in Map. (*e*) Three sheets published in Map. (*f*) Two sheets published in Map. (*g*) Two sheets published in Map. (*h*) Two sheets published in Map. (*i*) Two sheets published in Map. (*j*) Four sheets published in Map. (*k*) Two sheets published in Map. (*l*) Four sheets published in Map. (*m*) Two sheets published in Map. (*n*) Two sheets published in Map. (*o*) Two sheets published in Map. (*p*) Two sheets published in Map. (*q*) Two sheets published in Map. (*r*) Two sheets published in Map. (*s*) Two sheets published in Map. (*t*) Two sheets published in Map. (*u*) Two sheets published in Map. (*v*) Two sheets published in Map. (*w*) Four sheets published in Map. (*x*) Four sheets published in Map. (*y*) Four sheets published in Map.

Miscellaneous Maps and Compilations not yet published.

No.	Press.	Parish or part of, &c.	Locality.	County.	Mining District.
...	...	Anderson (in folio)		Gough	Peel and Uralla.
30	4	Astley	Emmaville Gold-field	Arrawatta	New England.
30	4	Athol	do	do	do
33	2	Bootawaa		Gloucester	Hunter and Macleay.
42	1	Barmedman	Barmedman Gold-field	Bland	Lachlan.
79	4	Bruinbun	Turon River Gold-field	Roxburgh	Tambaroora and Turon.
53	3	Budawang		St. Vincent	Southern.
68	3	Bagawa	Nana Creek Gold-field	Fitzroy	Clarence and Richmond.
82	4	Beargamil	Billabong Gold-field	Ashburnham	Lachlan.
82	4	Bindogandri	do	do	do
34	3	Cooloongolok		Gloucester	Hunter and Macleay.
47	3	Coba	Emu Creek Gold-field	Monteagle	Lachlan.
79	4	Coleridge	Chamber's Creek Gold-field	Bathurst	Tambaroora and Turon.
49	2	Cunglebung Gold-field		Gresham	Clarence and Richmond.
52*a*	2	Cavert		Bathurst	Bathurst.
56	1	Churchill	Solferino Gold-field	Drake	New England.
65	2	Cargo Gold-field		Ashburnham	Lachlan.
71	2	Cooyal (Village of)		Phillip	Mudgee.
72	3	Cobar		Robinson	Cobar.
84	2	Cowan		Gresham	Clarence and Richmond.
52	3	Dunleary	Milburn Creek Gold-field	Bathurst	Bathurst.

No.	Press.	Parish or part of, &c.	Locality.	County.	Mining District.
40	1	Eskdale	Green Swamp	Roxburgh	Bathurst.
50	2	Ermington	Cambigne Gold-field	Gresham	Clarence and Richmond.
81	4	Forbes	Lachlan Gold-field	Ashburnham	Lachlan.
30	4	Gordon	Vegetable Creek	Gough	Peel and Uralla.
30	4	Hawthorn	Emmaville Gold-field	Arrawatta	New England.
35	3	Irralong		Gloucester	Hunter and Macleay.
78	4	Inverell		Gough	Peel and Uralla.
73	1	Jingellic		Goulburn	Tumut and Adelong.
39	3	Krawaree		Murray	Southern.
82	4	Kamandra	Billabong Gold-field	Ashburnham	Lachlan.
40	1	Melrose	Green Swamp	Roxburgh	Bathurst.
58	3	Macquarie River Gold-field		Wellington	Tambaroora and Turon.
42	1	Mandamah	Barmedman Gold-field	Bland	Lachlan.
44	2	Mooney Mooney	Muttama Gold-field	Harden	Tumut and Adelong.
45	2	Meglo	Junction Point Gold-field	Georgiana	Bathurst.
53	3	Mongarlowe		St. Vincent	Southern.
57	1	Mulgunnia	Mulgunnia Gold-field	Georgiana	Bathurst.
66	2	May Day Reef	Black Range Gold-field	Goulburn	Tumut and Adelong.
69	3	Metz	Gara Falls	Sandon	Peel and Uralla.
70	2	Mitchell's River		Gough	do
72	3	Mopone		Robinson	Cobar.
76	3	Moogem	Pheasant Creek	Clive	New England.
43	2	Nuggetty Gully	Nowendoc Gold-field	Hawes	Peel and Uralla.
48	2	Nullama	Union and Lone Star Reefs, Quart-pot Creek.	Gresham	Clarence and Richmond.
66	2	Nail-can Reef	Black Range Gold-field	Goulburn	Tumut and Adelong.
74	1	Oban		Clarke	Peel and Uralla.
51	1	Perseverance Reefs, &c.	Boyd, or Little River Gold-field	Gresham	Clarence and Richmond.
86	4	Quidong, &c.		Wellesley	Southern.
41	2	Solitary Creek	Wattle Flat Gold-field	Roxburgh	Bathurst.
32	3	Teleraree	Gloucester Gold-field	Gloucester	Hunter and Macleay.
36	3	Topi		do	do
55	4	Tomingley Gold-field		Narromine	Mudgee.
80	1	Tunnabidgee		Wellington	Tambaroora and Turon.
35	3	Wangat		Gloucester	Hunter and Macleay.
39	3	Wyanbene		Dampier	Southern.
87	1	Warratta	Albert Gold-field	Evelyn	Albert.
40	1	Yetholme	Green Swamp	Roxburgh	Bathurst.
46	2	Young	Burrangong Gold-field	Monteagle	Lachlan.
54	3	Yalwal Creek Diggings		St. Vincent	Southern.

Inspection of Mines.

The Inspector of Mines (Mr. Slee, F.G.S.) reports 12 fatal and 9 non-fatal accidents during the year. Of the fatal accidents 4 were caused by falls of earth, 3 by explosions, and 4 by falling down shafts &c. Of the non-fatal accidents 6 were due to explosions, and 3 to falls of earth. Of the 21 accidents 13 occurred in silver-mines, 4 in gold-mines, 2 in copper-mines, and 2 in tin-mines.

The Inspector attaches to his report an interesting table, showing that the percentage of fatal accidents is ·0693 per 10,000 miners, and the non-fatal 0·52 per 10,000 miners employed. During the year the Inspector, in addition to his duties as Superintendent of Drills, and as a Member of the Prospecting Board, has visited and inspected the mines at Kiandra, Cooma, Michelago, Queanbeyan, Captain's Flat, Goulburn, Mount Costigan, Tuena, Young, Dubbo, Wellington, Buckenbah, Parkes, Forbes, Orange, Grenfell, Mudgee, Sunny Corner, Bathurst, Tamworth, Nundle, Walcha, Uralla, Hillgrove, Warm Corner, Armidale, Black Mountain, Glen Innes, Vegetable Creek, Silverton, Broken Hill, Purnamoota, Poolamaca, Wawkeroo, Euriowie, Milparinka, and Tibooburra. Such a record needs no comment from me to prove Mr. Slee's zeal in the performance of his duties.

Diamond Drills and Water Augers.

The work done by the diamond drills during the year 1888 is in every way highly satisfactory, and reflects the highest credit upon the management of Mr. Slee, F.G.S., the Superintendent.

The total depth bored during the year was 8,292 feet, as compared with 3,097 feet in 1887. The average rate bored per hour of boring was 13·67 feet, as compared with 10·22 feet per hour in 1887. The average cost per foot bored during the year (exclusive of salaries, &c., of officers) was 8s. 11¾d., as compared with 18s. 1d. per foot in 1887. The average cost per foot bored during the year (including salaries, &c., of officers) was 11s., as compared with £1 2s. 4⅛d. in 1887. The cost of diamonds destroyed during the year equalled 1s. $0\frac{2}{16}$d. per foot bored, as compared with 1s. $6\frac{14}{16}$d. in 1887. The gross earnings of the drills for the year amounted to £8,067 19s. 11d., as compared with £2,574 19s. 7d. in 1887. The gross cost (exclusive of depreciation of plant by wear, &c.) for the year was £4,564 8s. 2d., as compared with £3,460 17s. 7d. in 1887. The percentage of core saved is exceptionally high, a most important feature.

I am quite satisfied such results could not have been obtained without the strictest economy, and the ablest supervision both in the field and in the office. The office staff under Mr. Slee also deserves the utmost credit. The aim of the Department has been to perform the work of boring for the public at the lowest possible rate, and thereby to encourage the development of the mineral resources without putting the State to expense, and I think it may be fairly said that this has been accomplished, as the rates charged last year were comparatively very low (though I look forward to further reductions under Mr. Slee's management) yet the earnings were sufficient not only to cover the total cost of working and management, but also to provide for depreciation of plant from wear, &c.

During the year four augers were engaged in boring for water, three on the road Bourke to Milparinka, and one at Tibooburra, during the first part of the year, and later on at Milparinka. The total depth bored during the year was 1,962 feet, at a total cost of £2,702 6s. 7d., equal to £1 7s. 6½d. per foot. At the first glance the cost appears high, but when the cost of carriage, which, in 1888 amounted to £703 10d., equal to 8s. 1¼d. per foot bored, is taken into account, it will be seen that the cost is not exceptionally high. On the road, Bourke to Milparinka, artesian water (22,464 gallons per day) was struck at 101½ miles bore. Three other bores were started, and considering the state of the country during the severe drought good progress was made, but latterly one of them had to be temporarily abandoned in consequence of the complete absence of grass and water. During the year a bore was started at Tibooburra with the object of striking artesian water for mining purposes. When the bore had reached a depth of 233 feet operations had to be discontinued, in order that the townspeople, whose water supply was exhausted, might draw water from the bore, an ample supply of good water having been struck therein. The auger was then removed to Milparinka, the town supply there being also exhausted, but the bore at this place was not successful in striking water. The late rains having supplied the township, the bore at Tibooburra will now be continued until artesian water is reached. If this bore be successful in finding a large supply that will rise to a sufficient height to admit of its being carried by gravitation to the vicinity of the mines, it will prove a great boon to the miners, whose great difficulty in that dry country is to obtain water to wash out the gold.

Mineral Products.

The aggregate value of the mineral products of this Colony to the end of 1888 amounted to £76,818,235 4s. 10d.; the value of such products for the year 1888 was £3,879,333, showing an increase upon the value in 1887 of £713,895. This increase is mainly due to the output of silver and silver lead, the value of which is about double that of 1887. The increase in the output and value of coal is considerable. The output of copper is less, but the value shows a considerable increase. There is also an increase in iron and antimony. The output of gold, I regret to say, shows a considerable decrease, being the smallest for many years, due, no doubt, to the long and severe drought. There was also a decrease in output of shale, bismuth, and sundry minerals.

The production of fine silver, though showing a large increase as compared with that of 1887, falls very far short of that of 1885 and 1886. I trust, however, that it may be taken as an indication that we are beginning to solve the difficulty of treating our argentiferous ores. The fact that the value of our output of fine silver and of silver-lead ore in 1888 amounts to £1,142,405 is highly satisfactory.

The following table shows the aggregate value of minerals, the produce of New South Wales, for the years 1887 and 1888, respectively compared:—

Minerals.	Quantity.	Value.	Quantity.	Value.	Increase in value.	Decrease in value.
	1887.	£ s. d.	1888.	£ s. d.	£ s. d.	£ s. d.
Gold	110,286·06 oz.	394,578 16 3	87.503·24 oz.	317,099 12 0	.....	77,479 4 3
Silver	177,307·75 „	32,458 0 0	375,063·70 „	66,668 0 0	34,210 0 0	.....
Coal	2,922,497·0 tons	1,346,440 2 7	3,203,443·18 tons	1,455,198 4 1	108,758 1 6	.....
Shale	40,010·00 „	87,761 0 0	34,869·00 „	73,612 0 0	.....	14,149 0 0
Tin	4,961·05 „	525,420 0 0	4,809 50 „	582,496 0 0	57,076 0 0	.....
Copper	4,763·35 „	199,102 0 0	3,899·35 „	275,034 0 0	75,932 0 0	.....
Iron	2,797·43 „	14,542 15 1	*3,747·10 „	23,721 6 9	9,178 11 8	.....
Antimony	168·35 „	1,641 0 0	190·35 „	2,918 0 0	1,277 0 0	.....
Bismuth	36·55 „	6,695 0 0	18·07 „	3,911 0 0	.....	2,784 0 0
Sundry Minerals	1,431·00 „	15,624 0 0	119·30 „	3,438 0 0	.....	12,186 0 0
Silver-lead Ore	12,530·17 „	541,952 0 0	29,841·60 „	1,075,737 0 0	533,785 0 0	.....
Manganese	460·65 „	1,702 0 0	23 00 „	75 0 0	.....	1,627 0 0
Cobalt	6 40 „	1,330 0 0	.....	.....	.....	.....

* Not manufactured from the ore but old iron.

The value of the output of minerals in 1888 exceeds the decennial average value by £1,063,237.

The

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The following Return shows the quantity and value of Gold, Coal, Shale, Copper, Tin, Silver, Silver-lead Ore, Iron, Antimony, Asbestos, and Bismuth produced in the Colony of New South Wales during the last ten years:—

Year.	Gold.		Coal.		Shale.		Copper and Regulus.		Tin and Tin Ore.		Silver.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Oz.	£	Tons.	£	Tons.	£	Tons.	£	Tons.	£	oz. dwt.	£
1879 ...	109,650	407,219	1,583,381	950,879	32,519	66,930	4,142	257,352	5,921	372,349	83,164 0	18,071
1880 ...	118,600	441,543	1,466,180	615,337	19,201	44,725	5,394	364,059	6,159	471,337	91,419 0	21,878
1881 ...	149,627	566,513	1,760,597	603,248	27,894	40,748	5,494	355,062	8,200	724,003	57,254 0	13,026
1882 ...	140,469	526,521	2,109,282	948,965	48,065	84,114	4,958	324,727	8,670	833,461	38,618 0	9,024
1883 ...	123,806	458,509	2,521,457	1,201,942	49,250	90,861	8,957·7	577,201	9,125·5	824,552	77,065 18	16,488
1884 ...	107,199	395,292	2,749,109	1,303,077	31,618	72,176	7,305·4	416,179	6,665·9	521,587	93,660 5	19,780
1885 ...	103,736	378,665	2,878,863	1,340,213	27,462	67,239	5,746	264,920	5,193	415,626	794,174 0	159,187
1886 ...	101,417	366,294	2,830,175	1,303,164	43,563	99,976	4,027	167,665	4,968	467,653	1,015,433 10	197,544
1887 ...	110,288	394,579	2,922,497	1,346,163	40,010	87,761	4,763	199,102	4,961	525,420	177,307 15	32,459
1888 ...	87,503	317,100	3,203,443	1,455,198	34,869	73,612	3,899	275,034	4,809	582,496	375,064 0	66,668
	1,152,295	4,252,235	24,033,984	11,068,186	364,451	728,142	54,686·1	3,200,301	64,672·4	5,738,484	2,803,160 8	554,124

Year.	Silver-lead and Silver-lead Ore.		Iron.		Antimony and Ore.		Asbestos.		Bismuth.		Sundry Minerals.		Total.
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	
	t. c.	£	t. c.	£	t. c.	£	t. c.	£	t. c.	£	t.	£	£
1879 ...	18 13	535	1,118 0	10,550	76 16	1,046	...	...	...	...	25	525	2,085,456
1880 ...	27 14	890	2,322 0	15,335	99 19	1,652	12 8	323	...	...	21	795	1,977,874
1881 ...	52 14	1,625	6,560 0	47,871	539 4	17,346	...	...	12 10	2,728	15¼	1,020	2,373,190
1882 ...	11 19	360	7,476 0	37,224	1,068 18	16,732	7 10	75	2 14	162	7	979	2,782,344
1883 ...	136 4	2,075	3,434 3	26,908	375 11	5,555	...	...	3 14	650	31	160	3,204,901
1884 ...	9,167 11	241,940	3,759 2	24,572	433 12	6,458	...	...	14 7½	2,770	...	...	3,003,831
1885 ...	2,286 0	107,626	4,176 0	25,793	293 0	4,296	6 0	90	14 0	3,700	457	7,820	2,775,175
1886 ...	4,802 2	294,485	3,685 17	19,068	273 3	3,381	...	...	20 18	3,870	69	5,327	2,928,427
1887 ...	12,530 3	541,952	2,797 8	14,543	168 7	1,641	...	...	36 11	6,695	1,431	15,624	3,165,938
1888 ...	29,841 12	1,075,737	3,747 0	23,721	190 7	2,918	...	...	18 1½	3,911	119	3,438	3,879,833
	58,874 12	2,267,225	39,075 10	245,585	3,518 17	61,025	25 18	488	122 16	24,486	1,944¼	35,688	28,165,969

Gold.

When preparing my Report for 1887 I had the pleasure of inviting attention to an increase in the output of gold, and I then hoped we had reached the lowest point, and were on the eve of more prosperous time in gold-mining, but the severe drought, and possibly to some extent other causes, have proved my hope fallacious. Yet, in spite of the small production of gold in 1888, I feel convinced we still possess most valuable auriferous deposits, from which we shall yet obtain much larger yields of gold than have been won during the past few years. During last year, in spite of the drought, considerable prospecting was carried on, though no doubt under considerable disadvantage, and some finds were made which give promise of considerable future yields.

The Inspector of Mines reports no new discoveries of any great importance were made during the year in alluvial mining, and that sluicing had in most cases to be discontinued owing to the protracted drought, but quartz-mining progressed steadily. In some districts, where quartz-mining had been dormant for years, revivals occurred. The most important was the opening of the rich reefs at Baker's Creek, Hillgrove, and he anticipates the discovery of payable reefs between Hillgrove and the Woolumlumbi and Warm Corner Falls towards Kempsey. He also reports that at Parkes quartz-mining has taken the place of alluvial, and has become a permanent and profitable industry. A fresh start has also been made in the Grenfell district, and at Sofala, Sunny Corner, Hargraves, Mudgee, and other districts.

The following extracts from the reports of the Wardens and Mining Registrars indicate the condition of gold-mining in the several mining districts during the past year:—

In the Bathurst District the reports say:—"There has been no sluicing at all during the year, and many of the alluvial claims were idle for want of water. On the banks of the Abercrombie an attempt has been made by means of powerful pumping machinery, but it has not been at work sufficiently long to prove the value of the property operated upon. Quartz-mining has been carried on at Napoleon Reef and at Cheshire's Creek, and several parties are prospecting. Yield of gold, 435 oz. alluvial, 300 oz. quartz. The returns from quartz-mines have not been very encouraging at Mount M'Donald, Trunkey, Tuena, Oberon, and Mitchell, but the work has been carried on in a half-hearted manner; ten times the quantity

of

of stone should have been treated. At Trunkey, the Bathurst Company is sinking a vertical shaft 800 feet to test the reef at that depth. The reef was payable from the surface to a depth of 520 feet. Owing to want of water, only about £1,000 worth of alluvial gold was won during the year. At Tuena, £4,500 worth of gold was obtained from alluvial deposits. At Mitchell, the Paddy Lackey Company crushed 80 tons quartz for 145 oz. gold. The St. George Company obtained 186 oz. from 9 tons of stone. Gold to the value of about £5,161 was won during the year. At Mount M'Donald, 438 tons of stone yielded 677½ oz. of gold. Only 1,130 oz. of gold was won during the year. Permission has been given to some miners to prospect on the Grabine estate (freehold), near the Lachlan River. Three parties bottomed on wash, varying from 3 gr. to 6 gr. to the dish. At Burraga only £501 worth of gold was sold locally. This was obtained at the Isabella River. At Rockley, the Blossom Hill Co. washed 70 tons of dirt for 22 oz. of gold. Yield of gold at Rockley for the year was 196 oz. In the Orange division some promising reefs or veins have been discovered at Carangarah (freehold); 3 tons crushed yielded 33 oz. At the Bluff Ophir an expensive tunnel is being constructed through the company's leases; 50 tons of quartz is at grass. About fifty miners are working alluvial at Lewis Ponds, with a fair show of success. At Caloola several promising reefs and some alluvial deposits are attracting attention. At Lucknow the New Reform Co. has reached a depth of 525 feet, the lode varying from 1 to 20 feet in width. About 3,000 tons of ore raised during the year, valued at £6,484. After extracting the free gold the ore is sent to Germany for further treatment. The New Reform Pups, at a depth of 225 feet, have a lode 3 feet wide. They have raised about 250 tons of ore. The quantity of gold purchased by the banks at Orange was 2,588 oz., valued at £7,702. At Gulley Swamp (Carcoar division), the Homeward Bound Co., at a depth of 140 feet, have cut lodes of a more permanent and valuable character, which are said to increase in width and richness in depth; 120 tons of stone from a higher level, and including 50 tons of surface stone, yielded 200 oz. of gold. The Brown's Creek Co. was not worked, owing to the mine being flooded and other causes. 2,890 oz. of gold was sent from Carcoar during the year, but this, it is thought, does not represent all the gold won there. At M'Phillamy's Hill, King's Plains, two shafts have been sunk 116 feet and 98 feet. At 114 feet a cross-cut driven 98 feet has cut twenty-one gold-bearing veins. It is proposed to work alluvial on the same property. In the Blayney division, 1,009 oz. of gold was won, 276 oz. from alluvial and 733 oz. from quartz. In the Cowra and North Cowra divisions 121. oz. of gold was won, 70 oz. from alluvial and 71 oz. from quartz.

In the Mudgee District, the reports say:—At Limestone Creek (Mudgee division), several small nuggets were found, varying from 4 oz. to 10 oz. In the Gulgong division, 1,268 oz. of gold was obtained from alluvium. In the Wellington division, 595 oz. of gold has been won from alluvium, chiefly from the beds of the Macquarie and Mudgee Rivers, and 27 oz. from quartz. In the Dubbo division there are three parties at Tomingley Reef. They crushed 253 tons for 60 oz. 13 dwt. of gold, and they have 305 tons of stone at grass. The width of the reefs varies from 3½ to 10 feet. There are two parties working on the Myall Reef. They crushed during the year 568 tons for 707 oz. of gold. The reef is 12 feet wide. 75 tons of stone and 25 tons of tailings have been sent Home to be tested. These claims have been idle the greater part of the year, owing to the drought. In November alluvial gold was discovered about 9 miles south of Tomingley. No washing could be done owing to want of water. Twelve claims have bottomed on apparently good wash. The depth varies from 40 to 140 feet; the wash is from 1 to 3 feet thick. There are several reefs in the locality. On one a claim has been worked, and 30 tons raised, estimated to contain 1 oz. per ton. In the Hargraves division, at the Big Nugget Battery, 365 tons was crushed for a yield of 8 dwt. per ton. The last crushing at Queen of Sheebah Co. yielded 2½ oz. per ton. The Catherine Co. crushed 50 tons for 18 dwt. per ton. Sundry parcels, aggregating 100 tons, yielded from 12 to 25 dwt. per ton. The Hargraves Co. is raising a trial crushing of stone. Some valuable reefs have been discovered at Tucker's Hill, about 3 miles from Hargraves. In the Tambaroora and Turon District, at Hill End, a few nuggets were unearthed, one weighing 28 oz. The Red Hill Co. struck a reef, yielding 7 oz. per ton, and improving. The Cornelian Co. crushed 1,400 tons of quartz from a blow 15 to 50 feet wide, for about 207 oz. of gold. In the Sofala division several valuable reefs have been discovered. An important discovery has been made in the Queenslander mine. It consists of a mass of auriferous rock, the extent of which has not yet been ascertained. The gold obtained by the battery pays expenses, and concentrating plant is being erected, which is expected to increase the yield; 120 oz. has been obtained from 500 tons. George Williams, to whom aid was granted out of the Prospecting Vote, discovered a payable reef. An engine and battery are about to be erected on the mine. The Big Oakey Co., to whom aid was granted, struck a rich vein at 200 feet deep. Some rich specimens were found on Whalen's Hill. Sundry parcels of quartz (292 tons) crushed yielded 212 oz. 3,054 oz. of gold sent from Sofala. At Ironbarks considerable quantities of quartz are awaiting crushing when water is available. 1,300 oz. gold obtained from alluvium and 700 oz. from quartz. At the Gordon mine, 2,459 tons of stone raised yielded 600 oz. of gold.

In the Lachlan District, the reports say:—The Brittania Reef (Forbes), which had been long abandoned, has been taken up again, and a good crushing plant and gear have been erected thereon; the last crushing gave nearly 1½ oz. per ton, the average being over 1 oz. The reef is about 2 feet wide, and appears to improve in depth. The Pinnacle Reef, between Forbes and Grenfell, though poor, is large—11 feet wide in places—and has averaged ½ oz. per ton, and appears to improve with depth. A good battery has been erected by Nicholas and party on their claim. The Forbes Alluvial Co., Old South Lead, have won over 400 oz. of gold for the year. At the Bald Hills one claim is at work in alluvium, from which ½ oz. per load has been obtained at a considerable depth. A quartz reef 4 feet wide showing gold has been discovered. The gold won in the Forbes division was 549 oz. from alluvium, and 402 oz. from quartz. At Parkes, Hazlehurst and party won 860 oz., and Drummond and party 740 oz. from the quartz claims. The small reefs at Opossum Gully continue to pay well. At the Kohinoor Reef, Caledonian Hill, a large body of stone has been regularly worked, and yielded 1¾ oz. per ton. The old Strickland Reef has been opened again, and a body of stone varying from 12 to 15 feet wide, carrying a fair proportion of gold, has been discovered. Sundry parcels of quartz, aggregating 2,789 tons, were crushed at Parkes yielding 3,742 oz. of gold. 1,245 tons alluvium puddled gave 243 oz. The quantity of gold purchased by the banks was 4,269 oz. At Delaney's Dyke, about 15 miles from Molong, Delaney Bros., the prospectors, their shafts have been sunk, one to a depth of 145 feet; there is a large lode visible all the way, averaging 6 feet wide. A crosscut at the 60-feet level has cut another lode of 7 feet wide. From 1,500 to 1,800 tons of lode stuff is at grass. 70 tons crushed in March is said to have yielded 15 dwt. of gold and 5 dwt. of silver per ton. Since then there has been no water to crush with. Most of the quartz claims in the Grenfell division were idle for want of water. At the Pinnacle Battery several parcels from Sandy Creek were crushed, varying from 14 to 21 dwt. per ton. About 600 tons was at grass. Machinery has been erected at Star Gully to treat quartz tailings, but has been idle for want of water. At Quondong, a few claims were raising payable wash, but only 90 tons (which averaged 1 oz. per ton) could be puddled, owing to the scarcity of water. 166 oz. was won in the Grenfell division. At Boney's Rock (Cudal), 85 tons of quartz crushed yielded 125 oz. At Paling Yards, 80 tons gave 40 oz.; this is a large lode, and should give employment to a number of miners. At Canowindra, 1,237 tons from the Blue Jacket Reef, which is 4 feet wide, gave 1,293 oz. of gold. 44 tons from Hayes Reef gave 49 oz. of gold. The Ironclad Co., Cargo, crushed 723 tons for 566 oz. of gold. In the Young division, several new reefs were discovered during the year, from which a number of miners are earning good wages. The new Burrangong Co. which only recently reached the main wash, obtained 215 oz. from the Burrangong Lead. Two other Co's. start shortly. Two trial crushings from a reef on private property at Wombat gave 1½ oz. and 2¼ oz per ton, and it is reported that gold-bearing stone has been found on the surface about ½ mile eastward 156 tons from the Archdeacon Reef yielded 1½ oz. per ton. At Murrumburrah, a new reef of great promise has been found on private property. The Cunningar works obtained 1,565 oz. 10 dwt. of gold, valued at £6,490, during the year. Gold won in the Murrumburrah division, 218 oz. from alluvial, 1,718 oz. from quartz. At Temora, 6,400 loads of alluvium puddled gave an average of 2⅓ dwt. per load. Bourke's Reef Co. crushed 417 tons for 178 oz. of gold. Gold purchased at Temora, 1,771 oz. At Barmedman, 2,665½ tons crushed for 989 oz.; the low yield is due to the fact that the bulk was obtained from stone and mullock raised from shallow workings.

In the Cobar District, the reports say:—Considerable work has been done on the claims on the reefs discovered near the town of Cobar, though the drought has retarded the development of them. At Fort Bourke, arrangements are being made for the erection of a large crushing plant on the Chesney Cobar Co.'s mine. Some 22½ tons of quartz from this mine was sent to Melbourne for treatment, the result being 47 oz. of gold. Encouraging prospects have been obtained from other mines, both at Fort Bourke and at the Peak. At Mount Billagoe, the Mount Billagoe Co. have had assays of their ore as high as 32 oz. gold and 946 oz. of silver. Some 30 cwt. of quartz was sent to Ballarat for treatment, and 31 to Sandhurst, with the following results:—Ballarat, gold, 6·85 oz. silver, 46·047 oz.; Sandhurst, gold, 11·876 oz., silver, 112·076 oz. Since then 2 tons 18 cwt. of stone was sent to Dry Creek, S.A., for treatment, with the following result:—8 oz. gold, and 121 oz. of silver per ton.

In the Albert District, the reports say:—At Milparinka and Tibooburra the rainfall for 1888 amounted to about 2 inches, and at Mount Brown to about ½ inch; the effect of this upon mining can easily be understood. Mining operations at Tibooburra ceased by the end of February, and some of the miners turned their attention to the reefs in the Warratta Range. Messrs. House and Lawes struck a promising leader, and at the Milparinka mine the battery and other machinery have been put in order, and the mine is being pumped out with a view to thorough working. At Mount Brown there was no water for any purpose, except what was raised from the mines; this enabled some of the puddling machines near to work during part of the year, and dirt that was rich enough was carted to them. For surfacing,

the

the miners had to resort to dry blowing. The Mount Brown Prospecting Co. had to discontinue sinking when they had sunk to a depth of 241 feet, owing to their inability to keep down the water by means of a whim, though they worked their shifts. The quantity of gold won at Tibooburra was about 764 ozs.; at Milparinka, say 1,120 ozs. There have been some nuggets found during the year—one 12 oz. 1 dwt., one 28 oz. 17 dwt., one 9 oz., and several from 1 oz. to 4 oz. A specimen of gold-bearing quartz was brought into Wilcannia, said to have been found 30 miles from that town; want of water prevented prospecting operations being carried on.

In the Tumut, and Adelong District, the reports say:—At Tarcutta, the Wagga Wagga Co. have raised 300 tons of stone ready for crushing. At Adelong, the total yield of gold, 1,357 oz., viz., 350 oz. from alluvium, and 1,007 oz. from quartz. 273 tons stone from the Perseverance, Victoria, and Williams mine gave 335 oz. of gold. Owing to the difficulty and danger of working the mine by means of underground excavations, Mr. A. D. Shepherd has been engaged in bringing to perfection appliances for stripping the ground by machinery with the aid of water, and it is thought he will succeed. At Tumut, 138 oz. of gold was won. At Reedy Flat, 453 oz. of gold was won. A prospecting party has found a reef showing gold at a depth of 36 feet; it is 8 inches wide; 17 tons have been raised, estimated at 3 oz. per ton. At Cowabbie, Ferrier and party crushed 200 tons for a yield of 4 dwt. per ton, but it is supposed a large proportion of the gold was not saved, and they are introducing special appliances. They have 200 tons at grass. Several new and apparently promising reefs have been discovered in the Junee Division; the crushings from the Redan claim have given from 1½ to 2 oz. per ton, notwithstanding the defective machinery. Some very rich stone is being raised from Fincher's claim at a depth of 60 feet; the last crushing of 14 tons gave 2 oz. 13 dwt. per ton. There is about 120 tons of stone at grass at Wantiool. The Pioneer Co., at Eurongilly, 105 tons have been crushed for 79 oz. Prospectors have obtained some very good specimens from the reefs at North Junee. The gold won in the division was 232 oz. The yield of gold at Tumbarumba was 151 oz. The prospecting party (aided by Government) had sunk 48 feet through basalt, and expect to bottom in nine weeks. If they find the lead payable it will open up a large extent of untested alluvial. At the Black Range (Albury), some very rich specimens were found in Meredith and party's claim, and there is now a prospect of the reefs on the range being tested to a depth. Some rich crushings have been obtained from the Hawksview claim, on Maher's Hill. At May-Day Hill, Pye and party obtained 95½ oz. from 13 tons, and 45 oz. 13 dwt. from 10 tons. Yield of gold (Albury), 425 oz. Gold won at Kiandra, 586 oz. At Kydra, a large quantity of stone has been raised, but could not be crushed, owing to want of water. The Fiery Creek Reefs, on the Umeralla River, have caused some excitement. On the Coolamon Creek (Queanbeyan), several men were getting good returns from alluvial workings. At Bindabella there is said to be an alluvial deposit, which has been tried to a depth of 95 feet, and is 300 yards wide, upon which operations are about to start. At Mac's Reef, a vein 18 inches wide showing gold was struck by a party to whom aid out of the Prospecting Vote had been granted. On Wright and party's lease, 400 tons of 4-dwt. stone has been raised; reef 4 feet wide. On New Mac's Reef work has been suspended, as the mines are within a conditional lease. The Colinton Reef (Cooma), found in June last, has been tested to a depth of 40 feet; is 3 feet wide. Several tons of stone sent to Sydney for treatment yielded from 2 to 8 oz. per ton. At Fiery Creek there are several parallel reefs from 6 inches to 3 feet. The gold is very fine, and the stone requires careful treatment. The assays made show from 1 to 10 oz. per ton. Over 100 tons of stone has been raised ready for crushing. Several other auriferous reefs have been found in the district.

In the Southern District, the reports say:—Gold won in the Braidwood division, 727 oz. The Day Dawn Reef, Little River, averages 36 inches wide. The tailings from this reef contain 5 per cent. clean pyrites, which assay 20 oz. of gold per ton. 10 tons of these pyrites have been sent to Cunningar for treatment. The Day Dawn Co. crushed 240 tons for 143¾ oz. of gold, and have 150 tons at grass waiting crushing. In the Little River division, 650 oz. was obtained from alluvial, and 335 from quartz. In the Nerriga division, 450 oz. from alluvial. At Major's Creek (Braidwood), machinery is being erected for the treatment of the mundic reefs in that locality, and if it prove successful, it will probably lead to the working of numerous reefs now lying idle. 554 oz. of gold was won at Major's Creek—459 oz. from quartz, and 95 oz. from alluvial. The yield of gold at Araluen was 4,128 oz. At the Homeward Bound claim, Yalwal, lately worked as an open quarry, during the twelve months prior to May, 1888, gold to the value of £8,000 was taken out. From then till the end of the year crushing was retarded by repairs to the machinery and want of water; nevertheless, gold to the value of £2,565 was won. Since June, 1882, this claim has yielded gold to the value of £25,600. At the Pioneer mine, 400 tons of stone has been raised. During five years this mine has turned out gold to the value of £10,000. While awaiting the erection of machinery on this mine, small crushings made at a local battery have yielded from 15 dwt. to 2 oz. per ton. From the Eclipse mine, during the past eight years, gold has been won to the value of £10,577. From the Pinnacle mine, it is said, gold to the value of

£15,000 was obtained—1875 and 1885. The tailings from the creek having been tested, and given 7 oz. per ton, some 2,000 bags will probably be sent to Sydney. At Moruya, the Little Gem Co. has recently completed the erection of machinery, and has about 300 tons ready for crushing. The quantity of gold won in the division was 1,100 oz. From Coman and party's reef, at Bumbo, 30 tons crushed gave 30 oz. of gold. At the Mount Coman Co. mine, Nerrigundah, the reef is 4 feet 6 inches. 600 tons have been raised ready for crushing. Motley Bros. crushed 49 tons for 150 oz. The Fiery Cross Co. crushed 277 tons for 48½ oz. Total, Nerrigundah Division, 896½ oz. Quantity of gold purchased in the Bombala Division, 502 oz. At one of the mines at Dalton (Gunning), 500 tons have been raised ready for crushing. Trial crushings from these reefs have given satisfactory results.

In the Hunter and Macleay District, the reports say:—At Wonga Wonga mine, Lower Wangat (Dungog), 90 tons of stone crushed yielded 98 oz. 12 dwt. Total yield of gold in the division, 112 oz. At Copeland the small quantity of stone crushed has yielded nearly 2¼ oz. per ton. notwithstanding the absence of modern gold-saving appliances. Total yield of gold for the division, 330 oz. At the Golden Butterfly (Bulladelah Division), 115 tons crushed yielded 16½ dwt. per ton. They have 40 tons at grass. The reef varies from 7 to 12 inches. Stuart and party (the Mount Springfield Co.), owing to want of water, were able to crush only 50 tons, which gave 1 oz. per ton. They have 100 tons at grass. At 70 feet deep the reef is 4½ feet wide. The Suttor Co. crushed only 5 tons for 8 dwt. per ton. They have a well-defined reef 3 feet wide at Paddy's Creek. A trial crushing gave 2 oz. per ton. Total yield of gold in the division, 167 oz. At Deep Creek (Kempsey Division), a considerable blow of mispickel quartz was found, from which several samples were sent for assay, with results varying from 3 to 6 oz. of gold per ton, while a sample from a depth of 40 feet gave 11½ oz. of gold per ton. Since then a quantity of stone has been sent to Sandhurst to be treated by chlorination. The reef has also been struck on an adjoining claim, but the stone is difficult to treat, and there is no machinery or appliances on the field.

In the Peel and Uralla District, the reports say:—(Scone Division).—The Royal Standard Co. have crushed 800 tons of stone, which yielded 1,900 oz. The total yield of gold at Stewart's Brook, from about 1,250 tons of stone, is estimated at 2,250 oz, and there is a large quantity of stone at grass waiting to be crushed. Two crushings from the New Year's Gift line of reef gave 13 and 21 dwt. per ton respectively. From Carter's line of reef, average width of reef 2 feet, several crushings were had, averaging 1 oz. per ton. Crushings from the Early Rose line of reef have given nearly 5 oz. per ton. From Fuller's Reef numerous crushings have yielded from 1 oz. to 10 oz. per ton. From Welchman's Reef, which is 16 feet wide in places, some crushings have yielded as much as 5 oz. per ton. 150 tons crushed at Denison yielded 197 oz. of gold. At Tamworth, Aitken and party (aided out of Prospecting Vote) are driving a tunnel 250 feet, to cut a series of reefs; they have driven 80 feet, and have cut one reef 10 to 21 inches wide, carrying gold. At Mount Ephraim, Nundle, a quantity of cement has been treated in pans, with satisfactory results. Extensive water-supply works for sluicing at Mount Sheba have been constructed, but operations have been delayed by the drought. Tunnels are being constructed for working deposits of cement on a large scale; if successful, a field of labour, 10 miles by 5 miles, will be opened. The yield of gold in the division was (approximately) 1,700 oz. The quantity of gold won in the Armidale Division was 11,500 oz., at Hillgrove 10,454 oz. The Baker's Creek Co., in the four and a half months between May and December, obtained 8,964 oz. from 766 tons of stone. The Eleanora Co. crushed 6,053 tons for 1,490 oz., average 4 dwt. 22 gr. per ton. Work was stopped during four weeks from want of water. The drought, though it retarded the working of the mines, is thought to have given an impetus to prospecting. Great progress is anticipated in the development of the Hillgrove mines in 1889. (Walcha Division).—The Glen Morrison Prospecting Co. report they have good prospects on the Star Reef, at 50 feet level, and 127 feet level 4 oz. to 5 oz. per ton; width of reef, 6 to 15 inches. On the Bar Reef the stone averaged 3 oz. per ton; the width of the reef at 150 feet is 1 foot to 3 feet. On the Temperance Reef which is 2 feet wide, trial crushings gave 16¼ dwt. per ton. The Centennial Co. reports the reef 3 feet wide; stone estimated to yield 1 oz. per ton. At the Tia Reefs, 150 tons of stone has been raised ready for crushing. On the Mountain Maid Reef the prospectors (aided out of the Prospecting Vote) have sunk 101 feet; have a reef, 22 inches wide, showing gold; 10 tons stone raised. Gold won in the division, 100 oz. (Uralla Division).—Of the three parties to whom aid was granted out of the Prospecting Vote the return obtained by me is so far very poor, but the prospects of another are very promising. About a dozen parties have been working at the rush at Mount Jones, the yield averaging ½ oz. per load. The sinking is shallow, and the wash is about 2 inches. During the drought the wash-dirt had to be carted about a mile. The wash is very patchy, and the rush is not likely to be permanent. Yield for division, 820 oz. (Bingera Division).—The yield of gold was 1,250 oz., in spite of the suspension of work, owing to the drought. Large quantities of wash stacked waiting for rain. Mr. A. S. Low has sunk a shaft 250 feet in basalt, with a view to test a deep lead, but had to suspend work, owing to a great influx of water. Payable gold is said to have been struck on the Town Flat. (Glen Innes Division).—410 oz. of gold won. The reefs at Kookabookra are narrow, but the stone in places is very rich.

rich. The owners of the Welcome Stranger Mine are erecting a battery. The field appears to be extensive. Alluvial gold has been worked for years in all the creeks and gullies in the neighbourhood; but quartz veins have only recently been prospected.

In the New England District, the reports say:—In the Fairfield Division the difficulty of saving the gold, owing to its fineness and its association with other minerals, has not yet been overcome, though extensive works are in course of erection, which will soon prove whether the practically unlimited extent of poor or low class ores can be profitably treated. If it proves that ores containing from 4 to 10 dwt. of gold to the ton can be made to pay, it will open a vast field for enterprise. In the Straus Mine the ore is low grade, but from the size of the lode (9 or 10 feet wide) the ore is plentiful and easily obtained. From the surface to water-level about 1,400 tons crushed gave about 10 dwt. per ton. At the Great Northern Mine extensive appliances are being provided for working, at small cost, for gold, silver, and copper, an extensive deposit. The ore is not expected to yield more than 4 to 6 dwt. of gold per ton. 1,420 tons of stone taken from various parts of the mine yielded about 235 oz. of gold, but tests show a loss of gold in the tailings. A deep shaft is to be sunk on the Adeline Mine, and a new process to be used for saving the gold, which is mixed with iron, copper, and other minerals. A small, but rich, find of gold was made in Rivers and Co.'s lease at Long Gully; 13 tons of ore treated gave 353 oz. of gold. The reef is a narrow seam of zinc blende, carrying free coarse gold. At Red Rock a considerable quantity of work has been done, chiefly by the Great Red Rock Gold-mining Co., who have crushed a large quantity of ore; but it was found that by the ordinary process they could not save all the gold, nor any of the silver, and a proper plant is now being obtained, under the advice of Mr. Howell. 800 tons of stone taken from various parts of the mine was crushed for 207 oz. of gold, whereas the ore assays over 1 oz. per ton. Assays of the tailings show a loss of nearly two-thirds of the gold. 1 ton tested at Sandhurst by chlorination yielded 1 oz. 3 dwt., and a ton of tailings similarly treated gave 14 dwt. Total, 1,713 oz. of gold won in the Fairfield Division. The Surface Hill Co. (Timbarra) are working auriferous granite dykes, which, by crushing and hydraulic sluicing, yield about 4 or 5 dwt. per ton. The ore, which is unlimited in quantity, can be broken out at a low cost, and worked on a large scale should pay, but the plant is quite insufficient. The water is very troublesome in the quartz mines at Boonoo Boonoo, and at several of them machinery has been erected, and crushing has been carried on, but the results are not made known. Some stone was recently crushed from Vickery's mine at Boonoo Boonoo which yielded 3 oz. 9 dwt. per ton. A few men are making fair wages working the alluvium in the creeks. At Solferino, an alluvial deposit 3 feet deep, yielding ½ dwt. to the dish, was found on Marcolini Creek in December. The Garibaldi Prospecting Co. had 25 cwt. of picked stone treated at the Mint for 144 oz. Three tons of stone from the John Bull Reef, Cangi, sent to the Mint for treatment, gave 3½ oz. per ton. Total, Solferino Division, 343 oz.

In the Clarence and Richmond District, the reports say:—At Grafton, 400 oz. gold purchased At Nana Creek, a crushing of 20¼ tons from the Nana Queen Co. yielded 25½ oz. From the Day Dawn Reef, 4 tons crushed gave 5 oz. 13 dwt. Parcels of quartz crushed, aggregating 133 tons 17 cwt., gave 159 oz. 7 dwt. At Dalmorton, four new reefs showing gold were opened. From the Little Dora Reef, trial crushings gave from 1¼ to 2 oz. per ton—total gold, 277 oz. At Ballina, rich alluvial deposits are supposed to exist behind the terraces on the Beach; but there are no appliances in the locality to cope with the water. Some sluicing claims south of Evans River are working with payable results. Trial crushings aggregating 8 tons from the mine at Block Rock averaged 12 dwt. per ton; the gold is found in a seam 9 feet thick, showing in the face of the cliff at Black Head, Ballina.

The following information has been kindly furnished by R. Hunt, Esq., C.M.G., F.G.S., the Deputy-Master of the Royal Mint.

QUANTITIES of Gold, the produce of New South Wales, received into the Royal Mint, Sydney, during 1887 and 1888 compared.

District.	Division.	1888.	1887.	Increase.	Decrease.
		oz.	oz.	oz.	oz.
Bathurst	Bathurst	677·71	1,259·00	.....	581·29
	Carcoar	3,542·40	9,992·92	.....	6,450·52
	Orange	2,233·65	5,817·20	.....	3,583·55
	Trunkey Creek	173·82	200·78	.....	26·96
	Tuena	249·00	142·32	106·68	.....
	Mount M'Donald	27·43	263·31	.....	235·88
Tambarcora and Turon	Hill End	1,362·19	1,061·35	300·84	.....
	Tambaroora	805·79	486·75	319·04	.....
	Sofala	263·86	195·97	67·89	.....
	Stony Creek	293·34	262·59	30·75	.....

District.	Division.	1888	1887	Increase.	Decrease.
		oz.	oz.	oz.	oz.
Mudgee	Mudgee	3,750·42	3,233·54	516 88	
	Gulgong	291·93	526·77		234·84
	Hargraves	425 23	1,005·84		580 61
	Wellington	50 98		50·98	
Lachlan	Parkes	3,975·08	6,355·58		1,936 65
	Forbes	443 85			
	Grenfell	127·64	339·14		211·50
	Young	476 51	565 59		89 08
	Temora	2,011·73	3 571·82		1·560·09
Albert	Wilcannia	1,881·44	4,199 29		2,317·85
Southern	Goulburn	218·72	138 57	80·15	
	Braidwood	1,317·50	1,536·24		218·74
	Araluen	56·41	127·88		71·47
	Shoalhaven	2,202 61	2,989 86		787·25
	Nerrigundah	537·78	388·17	149 61	
	Bermagui		1·14		1·14
Tumut and Adelong	Adelong	1,730 84	2,210 79		479·95
	Tumut	38 28	14·42	23·86	
	Cootamundra	64 28	55·97	8 31	
	Tumbarumba	1,653 74	1,401·71	252·03	
	Wagga Wagga	6·79	118 37		111·58
	Gundagai	122·50	40 60	81·90	
	Cooma	174·19	77·49	96 70	
	Kiandra	414 28	465 95		51 67
Peel and Uralla	Armidale	9 421 27	1,329 17	8,092 10	
	Rocky River	363 05	363 94		·89
	Nundle	173·62	156·52	17·10	
	Tamworth	455·81	466 11		10·30
	Bingera	1,045 94	871·67	174·27	
Hunter and Macleay	Copeland	261 92	882 22		620·30
Clarence and Richmond	Grafton	466 21	626 71		160·50
New England	Tenterfield	1,799 47	974 23	825 24	
Localities unknown		37,302 08	50,551 22		13,249·14
Total		82,891·29	105,268·71	11,194 33	33,571·75

SUMMARY.

District.	1887.	1888.
	oz.	oz.
Bathurst	17,675 53	6,904·01
Tambaroora and Turon	2,006·66	2,725·18
Mudgee	4,766 15	4,518·56
Lachlan	10,832·13	7,034·81
Albert	4,199·29	1,881·44
Southern	5,181·86	4,333 02
Tumut and Adelong	4,385 30	4,204 90
Peel and Uralla	3,187·41	11,459 69
Hunter and Macleay	882·22	261 92
Clarence and Richmond	626 71	466·21
New England	974·23	1,799·47
Localities unknown	50,551·22	37,302·08
	105,268 71	82,891·29

From the above statements it appears that the quantity of New South Wales gold sent to the Mint in 1888 is less than the quantity sent in 1887 by 22,377·42 oz. This, as will be seen by the reports of the Wardens, &c., is mainly due to the severe drought.

THE following table is compiled from information kindly furnished by the Collector of Customs:—

EXPORT of Gold, 1888.

Gold.		Quartz Tailings and Pyrites		Total.	
Quantity.	Value.	Quantity	Value.	Quantity.	Value.
oz.	£		£	oz. dwt. gr.	£
6,896	28,023	Tailings, 6,523 packages Pyrites, 3 tons 4 cwt.	8,279	9,103 14 16	36,302

The quantity of gold sent to the Mint added to the quantity exported makes 91,995 oz., but according to the Deputy-Master of the Mint, 4,491 8 oz. of the gold exported passed through the Mint, therefore the total yield is set down at 87,503·24 oz., valued at £317,099 12s., which, compared with the output for 1887, shows a decrease in quantity of 22,784·82 oz., and in value of £77,479 4s. 3d.

The

The output of gold, according to the returns furnished by the Mining Registrars, is less than the quantity sent to the Mint by 9,557 oz. This indicates the difficulty of obtaining complete returns from the owners of mines; at the same time it shows that the Mining Registrars do not exaggerate the gold yield in their respective divisions.

RETURN of Gold for 1888 from Mint and Mining Registrars compared.

District.	Mint.	Mining Registrars.	Excess.	Deficiency.
	oz.	oz.	oz.	oz.
Bathurst	6,904	11,821	.....	4,917
Tambaroora and Turon	2,725	5,884	.....	3,159
Mudgee	4,518	8,271	.....	3,753
Lachlan	7,034	13,176	.....	6,142
Albert	1,881	1,500	381	.....
Southern	4,333	9,409	.....	5,076
Tumut and Adelong	4,204	3,345	859	.....
Peel and Uralla	11,459	16,400	.....	4,941
Hunter and Macleay	261	610	.....	349
Clarence and Richmond	466	832	.....	371
New England	1,799	2,057	.....	256
Cobar	.....	21	.....	21
Localities unknown	37,302	.....	37,302	.....
			38,542	28,985
The quantity sent to the Mint exceeds the returns by Mining Registrars by			28,985	
			9,557	.....

Returns furnished by the Mining Registrars for the year 1888, compared with such returns for 1887, show a decrease of 13,871 oz.

MINING Registrars' Returns of Gold for 1886 and 1887 compared.

District.	1887.	1888.	Increase.	Decrease.
	oz.	oz.	oz.	oz.
Bathurst	25,694	11,821	.....	1,3873
Tambaroora and Turon	7,656	5,884	.....	1,772
Mudgee	8,380	8,271	.....	109
Lachlan	13,220	13,176	.....	44
Albert	4,709	1,500	.....	3,209
Southern	8,209	9,409	1,200	.....
Tumut and Adelong	7,947	3,345	.....	4,602
Peel and Uralla	8,220	16,400	8,180	.....
Hunter and Macleay	453	610	157	.....
Clarence and Richmond	974	837	.....	137
New England	1,740	2,057	317	.....
Cobar	.....	21	21	.....
			9,875	23,746
Less increase			.....	9,875
Decrease in yield for 1888			....	13,871

The following table shows the results obtained from the treatment of certain parcels of alluvium in 1888, compared with the results obtained in 1887. The meagreness of the information for last year under this head is probably due to the fact that owing to the drought little or no work was done in alluvial mining in some districts, and in many cases where alluvial mines were worked the wash-dirt had to be stacked till the drought broke up. The average, however, is higher in 1888 than in 1887.

COMPARATIVE Statement of Average Yields from Alluvial Mines for 1887–8.

1887.							1888.						
District.	Quantity.	Average per ton.			Yield of Gold.			District.	Quantity.	Average per ton.			Yield of Gold.		
	Tons.	oz.	dwt.	gr.	oz.	dwt.	gr.		Tons.	oz.	dwt.	gr.	oz.	dwt.	gr.
Tumut and Adelong	6,653	0	5	4·27	1,722	9	0	Bathurst	70	0	6	6·85	22	0	0
Lachlan	10,763	0	2	11·97	1,544	15	0	Lachlan	10,439	0	3	5·63	1,682	12	1
Southern	158	0	4	0·45	31	15	0	Southern	200	0	15	21·60	159	0	0
Peel and Uralla	5,000	0	0	2·40	25	0	0	Peel and Uralla	40	0	1	0	2	0	0
	22,574	0	2	18·42	3,123	19	0		10,749	0	3	11·31	1,865	12	1

The following table shows the yields obtained from certain parcels of quartz crushed in some of the Mining Districts. As to 1888 the table appears less complete than for 1887. This may be in part accounted for by the fact that in some localities the quartz raised had to be stacked owing to insufficient water for crushing purposes. The average yield, however, shows a considerable improvement.

This

This may, however, indicate that in consequence of the water supply being insufficient for general crushing only the best of the stone was treated, but it is largely due to the rich stone raised by the Baker's Creek Company at Hillgrove.

COMPARATIVE Statement of Average Yields from Quartz-mines for 1887–8.

1887.									1888.								
District	Quantity.			Average per ton.			Yield of Gold.			District.	Quantity.				Average per ton			Yield of Gold.		
	Tons	cwt.	qr.	oz	dwt	gr.	oz.	dwt.	gr		Tons.	cwt	qr.	lb.	oz.	dwt.	gr	oz	dwt.	gr.
Bathurst	44,291	0	0	0	6	13 51	14,533	17	1	Bathurst	1,655	2	2	16	1	0	3 39	1,667	11	23
Tambaroora and Turon	3,134	0	0	0	8	21 19	1,391	18	20	Tambaroora & Turon	4,749	0	0	0	0	5	4 84	1,235	7	1
Lachlan	8,539	0	0	0	19	4 97	8,200	8	8	Lachlan	9,790	10	0	0	0	17	18 85	8,706	11	18
Southern	4,273	0	0	0	2	22 66	629	0	0	Southern	1,387	0	0	0	0	8	0 31	555	14	11
Tumut and Adelong	3,175	0	0	0	14	7 43	2,271	13	0	Tumut and Adelong	1,645	0	0	0	0	10	11 82	863	0	9
Peel and Uralla	585	0	0	1	2	21 00	669	2	0	Peel and Uralla	2,180	0	0	0	5	4	20 92	11,431	0	5
Hunter and Macleay	258	0	0	1	3	6 14	300	0	0	Hunter and Macleay	342	0	0	0	0	15	4 17	259	9	12
Clarence and Richmond	208	0	0	0	16	8 31	170	0	0	Clarence & Richmond	133	17	0	0	1	3	19 40	159	7	12
New England	1,266	0	0	0	7	7 17	462	0	0	New England	3,033	0	0	0	0	7	16 31	1,395	0	0
Mudgee	2,726	0	0	1	1	3 03	2,879	10	9	Mudgee	1,252	0	0	0	0	15	10 60	966	13	0
										Cobar	22	10	0	0	2	1	21 33	47	2	12
	68,455	0	0	0	9	4 93	31,507	9	14		26,789	19	2	16	1	0	8 32	27,286	18	7

The number of miners engaged in gold-mining in 1888 was, according to the returns furnished, 8,460, being 2,400 more than in 1887. Of these, 7,897 were Europeans, and 563 were Chinese. 4,092 were engaged in alluvial mining, 3,310 in quartz-mining, and as to 1,058, the reports do not say whether they were working quartz or alluvial.

Dividing the quantity of gold won by the number of miners, the result obtained is that each miner appears to have won only 10·34 oz of gold, valued at £37 7s. 11·12d. Ordinarily, a certain proportion of our miners are engaged during part of each year in other pursuits, but last year it is probable that the number was largely increased, because, by reason of the drought, they were prevented from carrying on mining operations.

During the year, 4,976 assays for gold were made, by direction of this Department.

3,798 yielded nil.

896 yielded under 10 dwt. per ton.

282 yielded as follows :—

Locality.	Description.	Per ton.		Per cent.	
		Gold.	Silver.	Lead	Copper.
		oz dwt gr	oz. dwt. gr.		
Abercrombie River	Ferruginous quartz and brown iron ore	0 10 21	12 14 18		
Aconite (parish-county Hardinge	Quartz, galena, and zinc-blende	0 10 21	23 19 2		
Adelong	Concentrated pyrites	5 12 8	1 8 20		
,,	Quartz, with massive pyrites and a little zinc-blende	2 8 22	0 14 3		
Albury	,, pyrites and veins of zinc-blende	1 9 0	5 6 16		
Armidale	Ferruginous felspathic rock	12 6 1	2 7 21		
,,	,, quartz (calcined)	9 16 0	1 1 16		
,,	Pyritous quartz	7 10 5	1 3 22		
,,	Ferruginous quartz (crushed)	3 5 8	1 12 6		
,,	,,	1 17 0	0 19 11		
,,	Quartz, with arseniate of iron	1 9 22	3 8 1		
,,	Ferruginous quartz	1 3 22	0 15 5		
,,	Quartz tailings	1 1 16	2 1 9		
,,	,, with mispickel	0 16 8	1 18 2		
Ballina (Black Rock.)	Decomposed scoriaceous basalt	3 16 5	0 16 6		
Barrata	Slate rubble	2 18 19	0 12 13		
Bathurst	Ferruginous quartz	5 19 18	0 10 21		
,, (Clear Creek),	Quartz, with a little sandstone	2 10 0	6 12 20		
Bathurst (Green Swamp).	Porous ferruginous gossan	2 8 23	5 4 12		
,, ,,	,, ,,	1 6 0	1 7 2		
Bathurst	Mispickel, with slate casing	0 11 23	0 9 18		
,,	Ferruginous quartz, with a little zinc-blende	0 14 14	0 10 13		
Bellinger	Mispickel	4 18 0	0 5 10		
Bellinger (Deep Creek).	,,	3 7 12	1 19 4		
,, ,,	Ferruginous quartz, with felspathic lodestuff	1 1 16	8 3 8		
,, ,,	Mispickel, with a little quartz	0 10 21	5 19 19		
Bendemeer	Sulphide of antimony	0 13 0	0 6 0		
Bethungra	Ferruginous gossan	7 18 3	4 8 4		
,,	Quartz and felspathic lodestuff, with a little galena	2 3 13	0 16 4		
Binalong	Vitreous quartz, with a little zinc-blende	10 7 16	3 19 2		
Bingera (Spring Creek).	Quartz and calcite, with a little mispickel	25 9 14	1 9 0		
Bingera	Pyritous quartz	2 16 4	0 16 6		
Bingolong	Pyrites and quartz (crushed)	18 8 1	2 19 5		
Blayney	Quartz, with a little galena and zinc-blende	1 6 2	0 19 12		
Blayney (Galley Swamp).	Ferruginous band in schist	2 1 8	0 9 18		

Locality.	Description.	Per ton. Gold.	Per ton. Silver.	Per cent. Lead.	Per cent. Copper.
		oz. dwt. gr.	oz. dwt. gr.		
Blayney	Ferruginous gossan	0 10 21	trace.		
Boney's Rocks	Massive iron pyrites and quartz	0 13 0	10 8 7		
Boonoo Boono	Quartz and micaceous felspathic rock, with a little pyrites	1 1 16	30 2 3		
"	" with pyrites	0 10 21	12 4 5		
"	Ferruginous quartz	0 10 21	trace.		
Booroolong	" with a few specks of copper pyrites	1 6 2	0 4 8		
Braidwood	Concentrated pyrites, with free gold	202 0 18	25 16 0		
" (Little River).	Pyritous quartz, with free gold	9 9 10	0 8 16		
Braidwood	" " a little free gold	3 10 9	0 15 5		
"	Quartz, with pyrites and galena	3 5 8	2 3 13		
"	Porous ferruginous quartz	0 16 6	0 5 10		
Bredbo	Slightly porous quartz, with pyrites and zincblende	2 0 2	0 16 6		
"	Quartz, with galena and copper and iron pyrites, and slightly stained with carbonates of copper.	1 13 16	2 2 10		
Bungonia	Pyritous quartz, showing gold freely	70 15 13	5 8 21		
"	Ferruginous slightly porous quartz, with pyrites	4 0 13	0 4 8		
"	" quartz	2 3 13	0 13 0		
"	" "	1 6 2	0 12 0		
"	" "	1 1 6	0 10 21		
"	" "	0 10 21	trace.		
Buna Buna	Quartz and pyrites	2 7 21	0 6 12		
Bunagorang	Ferruginous quartz	0 16 6	0 5 10		
Burrowa	" porous quartz	0 18 10	0 5 10		
"	" cellular quartz, with brown iron ore	0 10 21	1 0 16		
Byong (Parish-county Murray).	Concentrated pyrites	5 4 12	0 3 6		
Cadia	Gravel	3 10 18	0 5 10		
"	Drift	2 14 10	0 4 6		
"	Ferruginous conglomerate	0 12 22	0 4 8		
Caloola	Limonite after pyrites	2 14 10	0 6 12		
Canowindra	Ferruginous quartz, with galena	2 5 16	2 12 4		
"	" " a little pyrites	1 18 2	0 5 10		
"	Ferruginous copper gossan	0 10 21	1 12 6		
Captain's Flat	Galena and iron pyrites	0 13 1	4 15 19		
Carcoar	Pyritous quartz (crushed)	11 8 16	2 5 16		
" (Burnt Yards).	Brown iron ore	1 12 6	0 13 0		
Carcoar	Galena, copper pyrites, and zincblende in quartz	0 10 21	4 18 0		
Cargo	Slightly porous ferruginous felspathic rock	9 16 0	0 19 12		
"	Quartz, brown iron ore and felspathic lodestuff	4 12 12	0 16 6		
"	Ferruginous quartz (crushed)	1 6 2	0 16 6		
"	Brown iron ore and felspathic lodestuff	0 19 12	0 8 16		
Clyde River (Nelligan).	Ferruginous quartz	2 3 13	0 10 21		
Cobar	Quartz and schistose breccia	3 10 18	80 16 23		
"	Ferruginous quartz	0 18 13	0 15 13		
"	Tailings	0 18 12	0 11 10		
"	Altered cement	0 18 10	94 5 22		
"	Ferruginous quartz	0 16 6	0 10 21		
"	"	0 16 6	0 8 3		
"	"	0 10 21	0 4 8		
Cobar (Fort Bourke Hill).	" with a little felspathic material	6 5 5	0 5 10		
" "	"	0 13 0	0 8 0		
" "	"	0 10 21	0 5 10		
" "	"	0 10 21	trace.		
" (Billygoe)	" with free gold and chloride of silver	16 11 0	413 12 4		
" "	"	4 18 0	90 8 5		
" "	Quartz veinstone, with a little copper and iron pyrites	4 3 19	105 4 16		
Condobolin	Ferruginous quartz, with a trace of green carbonate of copper	0 13 0	4 15 18		
Coolac	Quartz, with galena and copper pyrites	1 1 16	9 5 10		
"	Ferruginous quartz, with a little pyrites	15 17 21	1 8 7		
Cooma (Fiery Creek).	Brown iron ore and felspathic lodestuff	6 6 7	0 7 0		
Cooma	Ferruginous siliceous gossan	1 19 4	0 9 0		
"	" "	1 7 4	0 7 14		
Cowra	Quartz and felspathic rock, stained with arseniate of iron	1 14 21	51 3 13		
"	Ferruginous carbonate of lead	1 3 22	37 13 12		
"	Grey sulphide of copper	0 16 6	6 0 18	...	33·1
"	Ferruginous schist	0 13 1	0 12 12		
Cudgegong	Pyritous quartz and felstone	8 19 15	0 16 6		
"	Ferruginous quartz	1 1 16	0 10 21		
"	Quartz, with aggregated crystals of pyrites	1 1 16	0 7 14		
"	Ferruginous quartz, with a little pyrites	0 18 12	0 7 4		
"	Quartz, with pyrites	0 11 23	0 9 18		
Dalton	Ferruginous quartz	11 2 14	0 16 20		
"	" with a little pyrites	7 1 13	5 17 14		
Dangera Creek	Felsite, with a little quartz	49 16 8	16 9 22		
Darling River	Ferruginous quartz, with a speck of free gold	10 19 1	0 13 0		
Deep Creek	Mispickel, with a little quartz	0 10 21	5 19 19		
Delegate	Ferruginous quartz, with free gold	29 2 3	0 19 18		
"	Crushed sample	17 14 10	2 2 10		
"	Cavernous quartz veinstone	2 14 10	0 5 10		
Denison Town	Ferruginous quartz	0 10 21	14 0 21		
Drake (Red Rock)	Porous quartz, with yellow ochre and galena	20 9 10	12 9 4		

Locality.	Description.	Per ton.		Per cent.	
		Gold.	Silver.	Lead.	Copper.
		oz dwt gr	oz dwt gr		
Drake	Quartz	0 16 8	1 9 6		
„	Felstone, with cellular veins of ferruginous quartz	0 10 21	0 16 6		
Dry River	Quartz, with free gold and a little mispickel	7 19 2	0 2 16		
Dungaree	Brown iron ore and quartz	1 6 0	1 12 16		
Eurongilly	Pyritous tailings	3 8 14	15 17 22		
Fairfield	Quartz, pyrites, and galena (tailings)	1 9 22	0 16 8		
„	„ (crushed)	0 16 8	1 9 22		
„	„ with sulphide of antimony	0 10 21	3 11 20		
„	Ferruginous quartz	0 10 21	trace.		
„ (between Forest Reefs and Carcoar).	Porous brown iron ore and quartz	5 8 21	8 3 7		
„ „	Pyritous epidote rock, with quartz	1 7 4	1 1 16		
Frogmore	„ cellular quartz	2 14 10	2 16 14		
„	„ „	0 10 21	5 2 8		
Galley Swamp	Concentrated pyrites, with free gold	40 16 16	4 7 2		
Garland	Quartz, and altered slate	20 3 10	1 6 3		
Glanmire	Mispickel, with a little quartz	1 12 16	13 16 13		
Glencoe	Quartz, with native, oxide, and carbonate of bismuth (concentrated)	4 11 10	1 1 16	Bismuth 62 0	
Glen Innes	Ferruginous quartz	43 11 2	12 10 10		
„	Quartz, with a little pyrites	21 4 16	5 19 18		
Golspie	Galena in quartz	0 13 0	6 2 12		
Gowonglah	Micaceous felspathic veinstone, with carbonate of lead	2 3 13	19 12 9	Lead 30 33	
„	„ „ „ and quartz	0 10 21	11 8 16		
Grenfell	Ferruginous quartz	1 6 0	0 4 8		
Gundagai	„ „ with a few specks of zincblende and one of free gold.	1 18 5	0 14 3		
Guyong	Crushed ferruginous quartz and gossan	2 1 8	3 7 12		
Hargraves	Quartz, with arsenical pyrites and a very little galena	2 0 6	0 8 16		
„	„ „	1 9 9	0 19 12		
Hillgrove	Ferruginous quartz, with sulphide of antimony	11 13 10	1 18 2		
„	„ „	5 8 21	1 3 22		
„	Felstone, with quartz	3 11 20	1 17 20		
„	Ferruginous crystalline quartz	3 8 14	0 14 0		
„	„ quartz	2 17 16	0 18 12		
„	Quartz with pyrites, galena, and sulphide of antimony (part of the sample calcined, and showing globules of metallic silver.)	2 10 2	115 7 0		
„	Mispickel in felsitic rock	0 10 21	1 1 16		
Ironbarks	Quartz, with coarse specks of gold	2,537 7 14	.....		
„	Quartz, with a little sulphide and carbonate of copper	3 7 12	0 6 12		
Kiandra	Pyritous quartz, with a little galena	3 6 10	5 0 0		
„	Ferruginous porous quartz	2 18 15	2 16 14		
Krawarre	Quartz, with zincblende, galena and pyrites	0 16 6	4 1 15		
Kydra	Ferruginous quartz, with galena and copper pyrites	1 14 21	69 0 16		
„	„ „ pyrites	1 12 16	0 15 5		
„	„ galena and iron pyrites	0 18 11	4 15 18		
Lewis Ponds	„ „ a speck of free gold	1 18 2	0 5 10		
Limestone Creek	Quartz	19 14 4	3 3 3		
„ „	Quartz and felspar, with a few specks of galena	2 1 21	0 19 12		
„ „	Quartz, with a few specks of galena	1 12 16	0 19 12		
Little River	Ferruginous quartz	0 16 6	3 11 20		
Locksley	Quartz, with galena, pyrites, mispickel, and zincblende	0 10 21	8 7 6		
Lue	Ferruginous porous quartz and brown iron ore	0 10 21	4 2 17		
„	Porous ironstone, with quartz	0 10 21	1 12 16		
Mandurama (Belubula River)	Galena in felspathic lodestuff	1 1 18	7 6 23		
„ „	Felspathic rock, with galena	0 10 18	11 8 12		
Manilla	Quartz pyrites and mispickel (crushed)	121 5 18	15 13 12		
Melrose	Mispickel in quartz	4 19 2	1 12 16		
„	Ferruginous quartz, with galena, mispickel, and a little free gold.	0 10 21	2 3 13		
Michelago	Ferruginous quartz	5 2 8	0 10 21		
„	„ with pyrites	3 16 5	3 16 5		
„	„ „ copper pyrites, galena, and a speck of free gold.	1 14 20	0 13 0		
Mitta Mitta	Tailings	2 18 16	0 16 8		
Modbery Ranges	Pyritous quartz, with galena	1 12 16	1 12 16		
Molong	Ferruginous felspathic rock, with quartz and barytes	1 1 18	1 0 16		
„	„ quartz and felspathic lodestuff, slightly stained with carbonate of copper.	0 10 16	0 8 16		
Molong (Delaney's Dyke)	Siliceous gossan, stained with oxide of manganese, and a little carbonate of copper, and showing free gold.	429 11 8	214 15 14		
„ „	Siliceous gossan, showing free gold	14 15 2	55 10 16		
„ „	„ „ „	9 14 21	6 0 18		
Mooney Mooney	Ferruginous quartz	4 9 7	1 6 2		
Moruya	Quartz	6 16 0	0 5 10		
„	Pyrites in felspathic rock	3 5 8	1 6 0		
„	Ferruginous quartz	2 18 16	2 10 1		
„	„	2 1 8	1 6 0		
„	„ with mispickel	0 19 12	3 3 2		
„	Quartz, with massive mispickel, zincblende, and a little galena	0 15 5	20 14 18		
„	Ferruginous quartz	0 10 21	1 12 6		
Moss Vale	Quartz, with mispickel	2 12 4	1 19 4		

Locality.	Description.	Per ton.		Per cent	
		Gold.	Silver.	Lead	Copper.
		oz. dwt. gr.	oz. dwt. gr.		
Mount Hope	Ferruginous felspathic gossan	6 10 16	2 14 10		
„	„ „ „	5 0 4	0 17 1		
„	„ „ „	4 9 7	0 19 2		
„	Lodestuff	3 7 11	0 8 15		
„	Ferruginous felspathic gossan	2 16 14	0 11 23		
„	Lodestuff	1 7 5	0 11 23		
„	„	1 1 18	0 10 21		
„	Ferruginous felspathic gossan	0 10 21	0 8 16		
„	Lodestuff	0 10 18	0 10 18		
Mudgee (Cudgegong River.)	Ferruginous quartz, with a little pyrites and free gold	3 6 10	0 13 0		
Mudgee	„ „ pyrites, zincblende, and galena	2 11 17	1 6 15		
„	„ „ a little pyrites and free gold	1 8 7	0 9 0		
„	Quartz, with arseniate of iron	0 16 6	0 16 6		
„ (Budgee Budgee.)	Ferruginous quartz and felspathic lodestuff, stained with arseniate of iron.	0 13 0	1 10 10		
„ „	Ferruginous felspathic rock, with quartz and barytes	0 10 21	0 6 12		
Mudgee	Quartz, stained with arseniate of iron	0 10 21	50 12 16		
„	„ „	0 10 21	16 0 0		
„	Siliceous veinstone and capel, stained with arseniate of iron	0 10 21	5 8 21		
„	Quartz, stained with arseniate of iron	0 10 21	1 14 20		
Between Mudgee and Rylstone.	Slightly ferruginous quartz, with a speck of free gold	2 14 10	1 1 16		
Nambucca	Mispickel	4 0 13	0 17 6		
„	„ with a little felspathic material	3 5 8	0 10 21		
„	„	1 10 10	0 12 0		
Native Dog Creek.	Quartz and felspathic veinstone	5 19 18	0 13 0		
„ „	„ „	4 12 12	0 5 10		
Nerrigundah	Ferruginous quartz	10 7 5	0 5 10		
New England	„ „	10 14 16	4 15 16		
„	„ claystone (crushed)	2 6 19	0 4 0		
Nine-mile (Vegetable Creek).	Magnetic pyrites, galena and zincblende	0 10 21	8 6 14		
Nimitybelle	Quartz and felspathic lodestuff, with specular iron	1 8 7	1 8 7		
Northern Coast District.	Mispickel, in felspar	0 10 21	trace.		
Nundle	Ferruginous quartz, with fragments of claystone	0 10 21	0 5 10		
Oberon	„	15 5 7	1 19 4		
„	„	0 19 12	0 16 6		
Orange	Quartz, pyrites, and ironstone (crushed)	9 9 8	9 6 4		
„	Ferruginous quartz, with pyrites and galena	4 2 17	1 6 0		
„ (Bulga)	Earthy ironstone gossan	2 14 10	29 18 21		
„	Porous ferruginous quartz, with pyrites	2 9 0	0 7 14		
„	Ferruginous quartz, with pyrites	2 7 21	2 3 13		
„	Quartz, with pyrites	1 12 16	0 10 21		
„ (Spring Hill)	Ferruginous quartz (crushed)	1 3 22	0 15 5		
„	Siliceous gossan, with carbonate of lead	0 17 9	11 17 8		
„	Porous ferruginous quartz	0 13 0	2 1 8		
„	Siliceous gossan	0 10 21	14 3 18		
Parkes	Ferruginous quartz, with pyrites	6 6 7	1 9 0		
„ (Tichborne)	Gossany dykestone	2 7 21	0 17 9		
Port Macquarie (Beechwood).	Quartz, with mispickel and pyrites	2 12 5	5 15 9		
Pretty Gully	Porous quartzite and ferruginous quartz, with a speck of free gold.	0 17 20	0 4 8		
Rockley (Back Creek).	Barytes and talcose schist, with oxide of antimony	5 13 5	212 2 6		
„ „	Ferruginous quartz and felspathic lodestuff, with a little oxide of antimony.	2 0 19	94 8 2		
Rockley	Ferruginous quartz veins in slate	1 1 16	0 10 21		
Seven-mile	„	1 12 16	0 10 21		
Shoalhaven River	„	0 10 21	trace.		
Sofala	„	1 1 16	0 4 0		
„	Pyrites and quartz (crushed)	1 2 18	0 7 14		
Solferino	Mispickel, with calcite, in felspathic rock	32 8 22	6 19 4		
„	Limestone, with pyrites and veins of quartz and calcite	1 8 7	0 8 16		
Tamworth	Ferruginous quartz	1 10 11	0 6 12		
„	„ with a little free gold	1 8 7	0 8 10		
„	„ with a very little galena	1 8 7	0 5 10		
„	„	0 17 9	0 4 10		
„	„	0 15 3	0 4 11		
Tenterfield	Iron and magnetic pyrites	1 12 16	2 14 10		
„	Ferruginous quartz, with pyrites	1 8 7	6 4 2		
„	„ with a very little pyrites and free gold	1 6 3	0 8 21		
„	Pyritous quartz	0 10 21	116 10 5		
Tibooburra	Quartz, with free gold	6 5 14	0 7 14		
„	„	2 1 20	0 9 0	Bismuth.	
Tingha	Ferruginous quartz, with native, oxide, and carbonate of bismuth.	0 13 6	trace.	5 36	
Trunkey (Mr. Gray).	Ferruginous quartz and quartzite	5 8 21	0 13 0		
„ „	„ „ (crushed)	1 8 7	0 6 12		
„ „	„ „	1 3 22	0 5 10		
„ „	„	0 16 8	0 7 14		
Tuena	„ with a little galena	1 14 20	0 17 9		
„	Talcose clayslate, with thin quartz vein	7 15 3	0 19 1		
„	Quartz, with pyrites	0 17 9	0 6 12		
„	„ „	0 13 0	0 4 8		

Locality.	Description.	Per ton.		Per cent.	
		Gold.	Silver.	Lead.	Copper.
		oz. dwt. gr.	oz. dwt. gr.		
Tumberumba	Jasperoid quartz veinstone	0 13 0	0 8 16		
Turon River (Quartz Ridge).	Ferruginous quartz, with a very little galena and a coarse speck of gold.	19 3 2	2 2 10		
Walcha	Ferruginous quartz	6 4 2	0 17 9		
Wattle Flat	Mispickel	143 14 17	16 0 0		
Wellington	Ferruginous quartz, with traces of copper pyrites	1 7 4	0 8 16		
Windeyer (Long Creek).	Vitreous quartz	2 5 16	0 6 10		
Wiseman's Creek..	Quartz.....	3 16 5	11 8 16		
Wagonga.....	Concentrates	3 15 18	1 14 10		
Junction Wombat and Candoin Cks.	Quartz and mispickel	1 9 8	0 10 12		
Yalwal.....	Tailings	0 19 12	0 7 14		
Yeoval.....	Ferruginous quartz, with a little oxide of copper, and stained with green carbonate of copper.	2 18 16	1 6 2		
,, ...	Chlorite rock and felstone, with galena	1 14 20	15 2 16		

Coal.

The output of coal for 1888 as compared with that of 1887 shows an increase of 280,947. The value of the coal raised in 1888 exceeds that of 1887 by £108,758. The export of coal to colonial ports in 1888 shows a decrease of 37,506 tons, while value of the coal so exported shows a decrease of only £791. The decrease in the quantity sent to the other colonies is no doubt due to the strike which occurred last year. The reason that the decrease in value, as compared with 1887, is so small, is that the coal averaged 4·36d. more in 1888 than in 1887. The export to foreign ports in 1888 exceeded that of 1887 by 170,936 tons. This, the largest quantity sent in one year to foreign ports, indicates that our foreign trade was not affected by the strike to the same extent as intercolonial trade. The value of the coal sent to foreign ports in 1888 compared with 1887 shows an increase of £104,724. This is due, not alone to the increase in the quantity so sent, but in part, to the fact that the coal realized an average of 2·60d. ton more in 1888 than in 1887. Our home consumption in 1888 shows an increase of 147,517 upon the previous, which must be regarded as highly satisfactory in view of the disturbance of the coal trade during the strike. It is, however to be noted, the average price of coal in the home market was lower in 1888 than in the previous year, but this may, I think, be clearly traced to the strike, the consumption of Northern coal having been replaced by coal from the Southern and Western mines. Hence our total output for 1888 averaged 1·55d. per ton less than that of 1887. As indicating the growth of our coal trade I may invite attention to the fact that our output has more than doubled within the last ten years. During the past twenty years it has increased 3·48 times.

During the year 14,618 tons of coke, valued at £23,020, was sent from Newcastle. The bulk of it was sent to South Australia and Victoria.

The aggregate thickness of coal-seams pierced by Government diamond drills in 1888 was 185 ft. 6⅞ in., namely:—At Joadja, 19 ft. 2 in. and 2 ft. 11 in.; Redhead, 18 ft. 2 in.; Snake Creek, 37 ft. 7½ in.; Cockle Creek, 47ft. 8¾ in.; Woodford, 28 ft. 7⅝ in.; Fassifern, 9 ft. 9 in.; Hexam Island, 9 ft. 6¼ in.; and Ash Island, 12 ft. 1 in.

The number of mines opened out or in course of development during the year 1888 was 30. One was abandoned, as compared with 8 opening out and 1 abondoned in 1887.

Prospecting for coal and shale has been extensively carried on in the Lithgow division.

Quantity and Value of Coal raised from the opening of the Coal-seams to 1857, inclusive:—

Year.	Quantity.	Average per ton.	Value.	Year.	Quantity.	Average per ton.	Value.
Prior to 1829	50,000	£ s. d. 0 10 0	£ 25,000	1844	23,118	£ s. d. 0 10 8·34	£ 12,363
1829	780	0 10 1·23	394	1845	22,324	0 7 10·27	8,769
1830	4,000	0 9 0·00	1,800	1846	38,965	0 7 0·46	13,714
1831	5,000	0 8 0·00	2,000	1847	40,732	0 6 9·01	13,750
1832	7,143	0 7 0·00	2,502	1848	45,447	0 6 3·38	14,275
1833	6,812	0 7 6·73	2,575	1849	48,516	0 6 0·45	14,647
1834	8,490	0 8 10·00	3,750	1850	71,216	0 6 6·77	23,375
1835	12,392	0 8 10·19	5,483	1851	67,610	0 7 6·51	25,546
1836	12,646	0 9 1·06	5,747	1852	67,404	0 10 11·33	36,885
1837	16,083	0 9 8·81	5,828	1853	96,809	0 16 1·51	78,059
1838	17,220	0 9 9·05	8,399	1854	116,642	1 0 5·63	119,380
1839	21,283	0 9 9·73	10,441	1855	137,076	0 12 11·96	89,082
1840	30,256	0 10 10·86	16,498	1856	189,960	0 12 4·06	117,906
1841	34,841	0 12 0·00	20,905	1857	210,434	0 14 0.97	148,158
1842	39,900	0 12 0·00	23,940				
1843	25,862	0 12 6·54	16,222		1,468,961	0 11 10·72	869,391

TABLE showing the Quantities and Average Value per ton of Coal exported to Intercolonial and Foreign Ports respectively, the Quantity of Coal consumed in this Colony, and the Average Price per ton of the total output of the Collieries, from 1858 to 1888 inclusive.

Year.	Exports to Intercolonial Ports.			Exports to Foreign Ports.			Total Exports.			Home consumption.	Total Output and Value.		
	Quantity.	Average per ton.	Value.	Quantity.	Average per ton.	Value.	Quantity.	Average per ton.	Value.		Quantity.	Average per ton.	Value.
	Tons.	£ s. d.	£	Tons.	£ s. d.	£	Tons.	£ s. d.	£	Tons.	Tons.	£ s. d.	£ s. d.
1858	101,488	0 15 1·67	76,824	12,039	1 0 1·85	12,132	113,527	0 15 8·05	88,956	102,870	216,397	0 14 11·84	162,162 0 0
1859	129,586	0 14 6·67	94,312	44,349	0 17 5·27	38,672	173,935	0 15 3·49	132,984	134,278	308,213	0 13 3·14	204,371 0 0
1860	140,183	0 14 10·85	104,471	93,694	0 16 11·10	79,290	233,877	0 15 8·57	183,761	134,985	368,862	0 12 3·36	226,493 0 0
1861	157,278	0 15 2 25	119,433	50,502	0 16 5·37	41,532	207,780	0 15 5·92	160,965	134,287	342,067	0 12 9·52	218,820 0 0
1862	195,427	0 15 0·55	147,019	113,355	0 17 4·34	98,403	308,782	0 15 10·75	245,422	167,740	476,522	0 12 9·73	305,234 0 0
1863	213,909	0 13 8·40	146,532	84,129	0 17 6·10	73,649	298,038	0 14 9·30	220,181	135,851	433,889	0 10 10·66	236,230 0 0
1864	283,539	0 10 3·74	146,199	88,927	0 14 10·90	66,289	372,466	0 11 4·91	212,488	176,546	549,012	0 9 10·10	270,171 0 0
1865	292,664	0 9 11·83	146,129	90,304½	0 15 0·79	68,029	382,968½	0 11 2·20	214,158	202,556½	585,525	0 9 4·43	274,303 0 0
1866	344,194	0 9 2·98	159,175	196,711	0 14 4·53	141,413	540,905	0 11 1·37	300,588	233,333	774,238	0 8 4·44	324,049 0 0
1867	312,101	0 9 4·35	146,111	161,256	0 13 3·47	107,148	473,357	0 10 8·40	253,259	296,655	770,012	0 8 10·79	342,655 0 0
1868	329,052	0 9 5·76	155,975	218,984	0 12 5·29	136,226	548,036	0 10 7·96	292,201	406,195	954,231	0 8 9·08	417,809 0 0
1869	340,466	0 8 9·07	149,059	255,087	0 11 8·31	149,136	595,553	0 10 0·16	298,195	324,221	919,774	0 7 6·32	346,146 0 0
1870	335,564	0 8 6·02	142,656	242,325	0 10 3·57	125,025	578,389	0 9 3·07	267,681	290,175	868,564	0 7 3·54	316,836 0 0
1871	378,891	0 8 6·91	162,470	186,538	0 10 1·22	94,220	565,429	0 9 0·95	256,690	333,355	898,784	0 7 0·47	316,340 0 0
1872	394,052	0 8 8·11	170,947	275,058	0 9 11·46	136,914	669,110	0 9 2·42	307,861	343,316	1,012,426	0 7 9·92	396,198 0 0
1873	425,937	0 12 9·32	272,110	347,142	0 14 7·59	253,979	773,079	0 13 7·32	526,089	419,783	1,192,862	0 11 1·94	665,747 0 0
1874	467,533	0 13 8·30	320,119	405,442	0 15 4·76	312,128	873,025	0 14 5·81	632,247	431,587	1,304,612	0 12 1·37	790,224 0 0
1875	518,853	0 13 7·77	354,074	408,154	0 15 6·64	317,409	927,007	0 14 5·84	671,483	402,722	1,329,729	0 12 3·89	819,420 17 2
1876	542,952	0 13 8·45	372,045	325,865	0 15 6·45	253,166	868,817	0 14 4·70	625,211	451,101	1,319,918	0 12 2·06	803,300 5 6
1877	563,757	0 13 8·64	386,740	351,970	0 14 10·81	282,237	915,727	0 14 2·08	648,977	528,544	1,444,271	0 11 10·74	858,998 8 2
1878	623,323	0 13 8·77	427,954	383,097	0 14 7·69	289,452	1,006,420	0 14 0·93	708,406	569,077	1,575,497	0 11 8·28	920,936 7 4
1879	621,087	0 13 6·75	421,198	376,962	0 14 6·13	273,509	998,049	0 13 11·05	694,707	585,332	1,583,381	0 12 0·12	950,878 18 3
1880	550,672	0 11 2·67	309,004	202,684	0 11 5·70	116,295	753,356	0 11 3·48	425,299	712,824	1,466,180	0 8 6·36	615,336 11 7
1881	657,135	0 7 9·34	255,572	372,709	0 8 8·29	161,958	1,029,844	0 8 1·30	417,530	739,753	1,769,597	0 6 9·55	603,248 5 8
1882	760,226	0 9 9·54	372,334	501,319	0 10 11·50	274,699	1,261,545	0 10 3·09	647,033	847,737	2,109,282	0 8 11·97	948,965 0 0
1883	855,704	0 10 5·75	448,356	656,741	0 11 7·34	331,306	1,512,445	0 10 11·65	829,662	1,009,012	2,521,457	0 9 6·40	1,201,941 12 11
1884	994,087	0 10 8·66	532,938	696,676	0 11 5·14	398,107	1,690,763	0 11 0·15	931,045	1,058,346	2,749,109	0 9 5·71	1,303,076 19 11
1885	991,924	0 10 7·13	525,443	764,432	0 11 6·52	441,220	1,756,356	0 11 0·09	966,663	1,122,507	2,878,863	0 9 3·72	1,340,212 13 7
1886	1,027,775	0 10 7·22	544,824	708,090	0 11 4·31	402,178	1,735,865	0 10 10·93	947,002	1,094,310	2,830,175	0 9 2·53	1,303,164 4 1
1887	1,077,270	0 10 5·89	565,084	713,172	0 11 1·08	395,455	1,790,442	0 10 8·75	960,539	1,132,055	2,922,497	0 9 2·57	1,346,440 2 7
1888	1,039,764	0 10 10·25	564,293	884,108	0 11 3·77	500,179	1,923,872	0 11 0·78	1,064,472	1,279,572	3,203,444	0 9 1·02	1,455,198 4 1
	15,666,443	0 11 1·88	8,739,400	10,212,321½	0 12 6·22	6,392,355	25,878,764½	11 8·33	15,131,755	15,800,625	41,679,380	0 9 8·80	20,284,915 10 10

The following comparative statement shows a decrease in the output of coal from the Northern collieries during 1888 as compared with 1887 of 176,749 tons, value £74,679; while the output from the Southern collieries shows an increase of 420,238 tons; increase in value £167,355; and the output of the Western collieries shows an increase of 37,457 tons; increase in value, £16,100. The above figures indicate pretty clearly the effect of the recent strike upon the Northern collieries. If the collieries in the south and west had reaped the whole of the benefit the Colony as a whole might have had no cause to complain but the Customs returns justify the belief that the stoppage of our Northern mines has led to the development in other colonies of their coal resources which will permanently deprive us of some of our best customers. It is true our aggregate output shows a large increase, but it is almost certain that but for the closing of many of our most important mines it might have been much larger.

COMPARATIVE Statement of Output of Coal in the Northern, Western, and Southern Districts.

	1884.		1885.	
	Tons.	Value.	Tons.	Value.
		£ s. d.		£ s. d.
Output, Northern District	2,055,342 10 3	1,011,933 13 7	2,113,372 13 0	1,032,904 13 4
Increase as compared with previous year	155,722 14 3	83,907 0 2	58,030 2 1	20,970 19 9
Decrease do do	.....	.....	.....	.....
Output, Western District	273,823 14 0	74,161 9 7	311,762 16 0	76,836 13 3
Increase as compared with previous year	41,405 11 0	.....	37,939 2 0	2,675 3 8
Decrease do do	.....	3,619 8 11	.....	.....
Output, Southern District	419,942 9 0	216,981 16 9	453,727 15 3	230,471 7 0
Increase as compared with previous year	30,523 7 0	20,847 15 9	33,785 6 3	13,489 10 3
Decrease do do	.....	.....	.....	.....

	1886.		1887.		1888.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		£ s. d.		£ s. d.		£ s. d.
Output, Northern District	2,178,116 0 0	1,084,554 17 1	2,243,792 0 0	1,096,720 0 7	2,067,042 4 3	1,022,022 8 10
Increase as compared with previous year.	64,743 7 0	51,650 3 9	65,676 0 0	12,165 3 6	.....	.....
Decrease do	.....	.....	.....	.....	176,749 15 1	74,697 11 9
Output, Western District	281,229 0 0	68,615 15 0	302,137 0 0	79,036 0 2	339,594 9 0	95,136 3 0
Increase as compared with previous year.	.....	.....	20,908 0 0	10,420 5 2	37,457 9 0	16,100 2 10
Decrease do	30,533 16 0	8,220 18 3	.....	.....	.....	.....
Output, Southern District	370,830 0 0	149,993 12 0	376,568 0 0	170,684 1 10	796,806 10 0	338,039 12 3
Increase as compared with previous year.	.....	.....	5,738 0 0	20,690 9 10	420,238 10 0	167,355 10 5
Decrease do.....	82,897 15 3	80,477 15 0	.....	.....	.....	.....

The average price of coal per ton in the several districts was as follows :—

	1887. s. d.		1888. s. d.	
Northern	9 9·3	... ...	9 10·66	—an increase of 1·36d. per ton.
Western	5 2·78	... ...	5 7·23	—an increase of 4·45d. per ton.
Southern	9 0·77	... ...	8 5·81	—a decrease of 6·96d. per ton.

The number of collieries under inspection during 1888 was 91, namely :—55 in the Northern; 18 coal and 2 shale in the Western, and 15 coal and 1 shale in the Southern District, as compared with 72 in 1887.

TABLE compiled from Reports furnished by Owners of Collieries, showing the quantity and value of Coal and Shale won during the year 1888, and the number of Men employed in the Collieries.

Company.	Locality.	Men Employed.			Quantity.	Value.
		Above ground.	Under ground.	Total.		
COAL.					Tons cwt. qr.	£ s. d.
Australian Agricultural Co.	Newcastle	160	786	946	270,976 0 0	129,756 0 0
Wallsend	,,	180	990	1,170	372,743 6 0	185,200 2 7
Newcastle Coal Co.	,,	75	378	453	105,750 0 0	68,900 0 0
Lambton	,,	65	404	469	164,048 0 0	80,304 9 0
Co-operative	,,	73	498	571	172,256 0 0	83,882 14 0
Pride of Ferndale	,,	3	8	11	5,454 0 0	2,249 15 6
New Lambton	,,	9	29	38	18,796 0 0	8,515 16 0
New Lambton C.	,,	30	180	210	45,441 6 0	21,868 11 0
Greta B Greta C	Maitland	66	303	369	99,109 0 0	49,554 0 0
Duckenfield	Newcastle	25	195	220	78,345 0 0	37,887 0 0
Brown's	,,	48	203	251	78,273 0 0	37,847 0 0
Waratah	,,	64	166	230	45,897 8 0	21,174 0 0
East Waratah	,,	10	36	46	28,130 0 0	12,662 0 0
New Duckenfield	,,	9	29	38	18,796 0 0	8,515 16 0
Goose	,,	2	6	8	5,760 0 0	2,880 0 0
New Park	Singleton	9	20	29	8,114 7 0	3,879 0 0
Ellesmere	,,	3	23	26	14,743 17 0	7,152 0 0
Thornton	Newcastle	2	9	11	8,000 0 0	2,800 0 0
Bloomfield	Maitland	3	8	11	3,500 0 0	1,050 0 0
Hetton	Newcastle	29	120	149	22,287 0 0	9,738 0 0
Sunderland	Four-mile Creek	2	2	4	1,050 0 0	8,262 10 0
Brookstown	Newcastle	4	10	14	8,866 8 0	4,174 18 0
Rix's Creek	Singleton	1	2	3	558 0 0	334 0 0
Wickham and Bullock Island	Newcastle	30	245	275	68,240 0 0	34,107 0 0
Rosedale	Singleton	2	2	4	1,864 0 0	825 0 0
Burwood	Newcastle	54	313	367	106,853 0 0	58,769 3 0
Thornley Colliery	Four-mile Creek	2	8	10	7,434 0 0	2,079 0 0
Great Northern	Newcastle	25	155	180	61,479 0 0	31,495 0 0
Hillside	,,	2	6	8	3,280 0 0	1,032 0 0
Maryville	,,	14	60	74	11,126 0 0	5,390 16 6
Stockton	,,	65	300	365	182,480 0 0	87,686 0 0
Rathluba	Maitland	1	4	5	1,630 10 0	610 8 6
Ferndale	Newcastle	14	71	85	14,871 0 0	6,997 0 0
Linwood	,,	9	41	50	3,207 0 0	1,655 7 0
West Burwood	,,	1	5	6	2,451 0 0	980 0 0
West Wallsend	,,	20	70	90	7,645 0 0	3,307 10 0
South Greta	Maitland	10	12	22	5,900 0 0	2,360 0 0
New Anvil Creek	,,	5	27	32	9,228 0 0	3,085 10 0
Dulwich	Singleton	1	1	2	181 0 0	90 0 0
Gladstone	Gunnedah	3	5	8	1,460 4 2	584 1 9
Springfield	,,	2	2	4	100 0 0	30 0 0
Black Jack	,,	3	2	5	40 0 0	12 0 0
M'Cosker's ...	,,	2	2	4	677 18 1	339 0 0
		1,137	5,736	6,873	2,067,042 4 3	1,022,022 8 10

COAL AND SHALE—*continued.*

Company.	Locality.	Men Employed.			Quantity.	Value.
		Above ground.	Under ground.	Total.		
COAL.					Tons cwt. qr.	£ s. d.
Metropolitan	Helensburgh	25	20	45	4,220 0 0	2,000 0 0
Coal Cliff	Clifton	36	104	140	82,157 0 0	48,000 0 0
North Illawarra	North Bulli	42	285	327	123,440 0 0	60,103 0 0
Bulli	Bulli	83	130	213	77,042 0 0	28,890 14 0
South Bulli	South Bulli	70	100	170	90,000 0 0	27,000 0 0
Osborne Wallsend	Wollongong	50	170	220	121,825 0 0	38,581 0 0
Illawarra Coal	,,	60	170	230	100,794 10 0	39,617 18 3
Mount Kembla	,,	47	213	260	152,839 0 0	78,567 0 0
Wollongong Coal	,,	5	22	27	24,500 0 0	5,000 0 0
Mittagong	Mittagong	3	6	9	5,000 0 0	3,000 0 0
Australian Kerosene Oil and Mineral Co.	Joadja	4	10	14	8,780 0 0	4,395 0 0
Great Southern	Berrima	7	14	21	6,200 0 0	2,885 0 0
		432	1,244	1,676	796,806 10 0	338,039 12 3
Vale of Clwydd	Lithgow Valley	27	157	184	50,091 8 0	14,999 16 7
Lithgow Valley	,,	6	68	74	52,360 0 0	15,687 13 1
Eskbank	,,	8	65	73	57,800 0 0	17,699 16 1
Eskbank Old Tunnel	,,	1	6	7	5,000 0 0	1,000 0 0
Hermitage	,,	1	9	10	6,304 0 0	1,925 13 3
Zig Zag	,,	6	70	76	53,000 0 0	13,250 0 0
Cooerwull	,,	.....	1	1	500 0 0	112 10 0
Katoomba	Hartley	23	60	83	65,680 0 0	16,420 0 0
Carlo's Gap	Capertee	2	2	4	659 0 0	164 15 0
N.S.W. Shale and Oil Co.	Hartley	2	9	11	5,883 0 0	1,617 16 6
Main Camp	,,	3	25	28	13,200 0 0	3,689 5 0
Oakey Park	Lithgow	3	6	9	527 0 0	158 2 0
Lidsdale	,,	1	1	2	80 0 0	32 0 0
Rawdon	,,	4	30	34	6,000 0 0	1,500 0 0
Vale	,,	23	133	156	22,510 1 0	6,878 15 6
		110	642	752	339,594 9 0	95,136 3 0
SHALE.						
Australian Kerosene Oil and Mineral Co.	Joadja Creek	91	95	186	26,821 0 0	53,642 0 0
N.S.W. Shale and Oil Co.	Hartley	12	50	62	7,748 0 0	19,370 0 0
Northern Shale	,,	2	3	5	300 0 0	600 0 0
		105	148	253	34,869 0 0	73,612 0 0

The number of accidents during the year was 15 fatal, and 43 non-fatal, total, 58; while in 1887 there were 140, of which 95 were fatal, and 45 non-fatal, but deducting the 81 deaths caused by the Bulli disaster there remained 14 fatal, and 45 non-fatal, total 59 against the total of 58 for 1888. This, considering the increase in the number of collieries under inspection, is on the whole satisfactory. Of the 43 non-fatal accidents 32 occurred in the Northern, 7 in the Southern, and 4 in the Western District. Of the 15 fatal accidents 9 occurred in the Northern, 5 in the Southern, and 1 in the Western District.

The following is a summary of the chief practical results of a partial geological examination of the Northern Talbragar River Coalfield:—

The original classification of the Palæozoic coal-bearing formations of New South Wales, adopted by the late Rev. W. B. Clarke, Mr. C. S. Wilkinson, F.G.S., and Mr. J. Mackenzie, F.G.S., according to which the measures were divided into four groups, has been quite confirmed by subsequent geological examination. The four groups, ranged in descending order, are as follows:—

4. Newcastle series.
3. Tomago and East Maitland series.
2. Greta series.
1. Lepidodendron or Stroud series.

1. *Lepidodendron or Stroud Series.*

Until quite lately only thin unworkable seams of coal have been discovered in this series, but last year a geological examination of the outcrop of a seam on Mr. Garrett's land at the 7-mile on the Raymond Terrace to Stroud road, showed that this seam, which, inclusive of bands, is over 10 feet thick, is in reality in the lepidodendron series. Although there is not more than 2 feet of clean coal in any single layer in this seam, and the lower part of the seam is much split up with bands, and the percentage of ash in the coal is rather high, still a thinning out of some of the bands, and a slight improvement in the quality of the coal might render this seam workable in other localities. This is, therefore, geologically the oldest known seam of coal at all approaching a workable thickness in Australia.

2 *Greta Series.*

By means of a detailed mapping of the Maitland District the outcrops of the Greta seams have been traced continuously for a distance of 22 miles in a southerly and south-westerly direction from Maitland, the exact line of outcrop for the greater part of that distance being known on the geological map, furnished last year by the Department. In the course of the geological survey the actual outcrop of a seam of coal 16 feet thick was discovered at Deep Creek, near Bishop's Bridge, West Maitland, and the continuation of the outcrop of the same coal seam has been observed by Mr. Geological Surveyor David quite recently near Cessnock, and within 3 miles of Ællalong. This sou'-sou'-westerly extension of the Greta measures from Deep Creek towards Ællalong is important, as the angle of dip being low a much larger area of coal lies here within workable depth than was originally contemplated. All the Crown lands covering this coal seam, where it lies at a workable depth, have been recommended for reservation for mining purposes, and four companies have already commenced prospecting operations within the reserved area.

Geological evidence proves that the Greta measures will be found to extend, with only local interruptions, from near Ællalong to Anvil Creek, near Greta, and Black Creek, near Branxton. At Leconfield, 2 miles north of Greta, the actual lines of outcrop of the Greta, seams were traced during the preliminary geological survey of the Greta Coal-field, and this greatly facilitated the subsequent opening out of the coal seams, which are now being worked. Geological examination has also demonstrated that the seam which outcrops on Drinan's selection, near Billybrook, parish of Stanhope, county Durham, is unquestionably a continuation from Leconfield of the Greta seam, which at Billybrook is 9 feet 9 inches thick, and contains 6 feet 6 inches of good coal, and as the dip here is gradual, there is an extensive unworked area of the Greta coal measures in this locality.

In the neighbourhood of Raymond Terrace also, although no actual outcrops of the seams have been observed, there are strong geological indications of the existence of the Greta Measures under the town of Raymond Terrace, and under a considerable area of country to the north-east and north-west of that town.

3. *Tomago and East Maitland Series.*

The geological survey of the Maitland District showed that the Rathluba seam, the best workable seam of this series, probably extended from East Maitland at least as far east as Ash Island, and acting on the advice given by the geological survey, the North Stockton Coal Company continued their bore at Ash Island until the horizon of the Rathluba seam was reached, when the seam was struck, and proved to be 5 feet 7 inches thick, inclusive of three small bands. The continuity of the Rathluba seam is thus established over the large area of intervening country, 9 miles wide. Recent geological examination has also shown that these Tomago Coal Measures extend to Port Stephens, and so must underlie the greater part of the intervening country between Ash Island and Port Stephens, a distance of 15 miles, and also that they extend in a southerly direction from East Maitland to the "Ovens," near Mount Vincent, a distance of 9 miles. A seam of coal 7 feet 4½ inches thick, outcropping in the bank of the Hunter River at Piercefield near Muswellbrook, has been reported on by Mr. Geological Surveyor David, and from the character of the coal and the associated strata, it is considered to belong probably to the Tomago measures.

At Westbrook, near Singleton, Mr. C. S. Wilkinson, F.G.S., the Government Geologist has observed nine coal seams, one of which is 24 feet thick, which he considers as belonging to this group. None of those seams have been worked up to the present, but the high angle of dip would considerably increase the cost of winning coal from them.

4. *Newcastle Series.*

A geological examination of the country between Lake Macquarie and Gosford shows that the Newcastle coal measures, when traced southerly from Lake Macquarie dip under the Hawkesbury Series near Dora Creek, at the rate of about 113 feet per mile. A seam about 12 feet thick, and estimated by the Examiner of Coal Fields, Mr. J. Mackenzie, F.G.S., to contain a thickness of about 10 feet of workable coal, was proved near Wyong in Alison's Wallarah Bore at a depth of 778 feet, so that here also is an extensive area of country containing workable coal.

At Black Jack, near Gunnedah, near the North Western Railway, coal has been discovered, and according to Mr. Geological Surveyor David's report, there are here probably two seams at least, one of which is 6 feet 4 inches, and the other about 7 feet thick, each containing coal of good quality for all purposes. Coal has also lately been discovered within 2 miles of the North Western Railway Line at Curlewis, near Gunnedah.

This coal-field, which is at present quite unworked, is of considerable extent, and probably belongs to the Newcastle or Tomago measures. At Ashford, near Inverell, a seam of coal has been reported by Mr.

Mr. Geological-Surveyor David to be 30 feet thick, and to contain coal of good quality, especially for steam and smelting purposes, so that it may hereafter be utilized when wood becomes scarcer, for tin smelting in the adjoining tin-field of Vegetable Creek.

The reports of Mr. Wilkinson and Mr. Geological-Surveyor Anderson show that the Ballimore Coal Measures extend towards the town of Dubbo. On the Talbragar River, about 20 miles north-east of Dubbo, a seam of coal 5 feet thick has been proved in a diamond drill bore. It is probable that other seams of coal occur in these measures.

During the year the following analyses of coal were made in this Department:—

Locality.	Description of Mineral.	Analysis.		Coke %	Sulphur %	Specific Gravity.	Remarks.
Branxton (Leconfield)	Bituminous coal	Hygroscopic moisture	2·35	58·03	·817	1·271	Coke, hard, fairly lustrous, and slightly swollen; ash, buff colour, floculent.
		Volatile hydrocarbons	39·62				
		Fixed carbon	48·30				
		Ash	9·73				
			100·00				
Camberwell (Rosedale Colliery.) (Top band.)	Bright black bituminous coal	Hygroscopic moisture	2·71	61·2	·75	1·266	Ash, reddish; coke, firm and bright, but not much swollen.
		Volatile hydrocarbons	36·09				
		Fixed carbon	57·59				
		Ash	3·61				
			100·00				
Do (2nd band)	do	Hygroscopic moisture	1·96	60·3	·67	1·26	Ash, buff colour; coke firm and bright, but not much swollen.
		Volatile hydrocarbons	37·74				
		Fixed carbon	55·17				
		Ash	5·13				
			100·00				
Do (3rd band)	do	Hygroscopic moisture	2·39	60·6	·73	1·272	Ash, reddish; coke, firm and bright, but not much swollen.
		Volatile hydrocarbons	37·01				
		Fixed carbon	54·80				
		Ash	5·80				
			100·00				
Do (4th band)	do	Hydroscopic moisture	2·55	61·8	·72	1·302	Ash, buff colour; coke, firm and bright, but not much swollen.
		Volatile carbon	35·65				
		Fixed carbon	54·43				
		Ash	7·37				
			100·00				
Deep Creek		Hygroscopic moisture	1·52	52·10	8·82	1·298	Ash, strong reddish tinge.
		Volatile hydrocarbons	46·38				
		Fixed carbon	40·15				
		Ash	11·95				
			100·00				
Dubbo (Spicer's Creek.)		Hygroscopic moisture	3·60	Nil.	·576	1·479	Ash, almost white; no true coke formed, a black incoherent powder being left.
		Volatile hydrocarbons	23·05				
		Fixed carbon	54·65				
		Ash	18·70				
			100·00				
Grafton	Bituminous coal with a band of carbonaceous clay	Hygroscopic moisture	·56	66·1	·37	1·308	Ash, light grey; coke fairly bright, but not much swollen.
		Volatile hydrocarbons	33·34				
		Fixed carbon	43·80				
		Ash	22·30				
			100·00				
Gunnedah (Springfield)	Hard, splinty cannel coal	Hygroscopic moisture	1·58	Nil.	·068	1·666	Ash, almost white; no true coke formed, a dull fritted mass only being left.
		Volatile hydrocarbons	19·00				
		Fixed carbon	39·70				
		Ash	39·72				
			100·00				
Gunnedah (Black Jack)	Bright bituminous coal	Hygroscopic moisture	2·36	59·25	·79	1·298	Ash, white; coke, firm and bright.
		Volatile hydrocarbons	38·39				
		Fixed carbon	48·20				
		Ash	11·05				
			100·00				
Jamberoo	Bituminous, fairly bright, and somewhat brittle coal from top, bottom, and middle of seam	Hygroscopic moisture	2·05	73·83	...	1·382	Ash, grey; coke, swollen but brittle, breaking readily on handling.
		Volatile hydrocarbons	24·12				
		Fixed carbon	61·96				
		Ash	11·87				
			100·00				

Locality.	Description of Mineral.	Analysis.		Coke %	Sulphur %	Specific Gravity.	Remarks.
Joadja Creek ...	Bright bituminous coal ...	Hygroscopic moisture	2·17	67·65	·66	1·355	Ash, grey; will yield a fair coke.
		Volatile hydrocarbons	30·88				
		Fixed carbon	56·13				
		Ash	11·52				
			100·00				
Lismore	.....	Hygroscopic moisture	1·01	85·49	...	...	Ash, loose, grey; coke, fairly hard and swollen up with cauliflower-like excrescences.
		Volatile hydrocarbons	13·50				
		Fixed carbon	71·84				
		Ash	13·65				
			100·00				
Mittagong (6 miles from Hill Top Station) ...	Bituminous coal (*a*) coal from top (1′ 0″ of seam)	Hygroscopic moisture	1·56	70·97	·73	1·592	Ash, light grey; coke, fairly firm.
		Volatile hydrocarbons	27·47				
		Fixed carbon	47·75				
		Ash	23·22				
			100·00				
Do	Bituminous coal (*b*) from 9-ft. coal below A	Hygroscopic moisture	1·18	72·62	·73	1·474	do
		Volatile hydrocarbons	26·20				
		Fixed carbon	45·29				
		Ash	27·33				
			100·00				
Do	Bituminous coal (*c*) from 1-ft. coal below white band	Hygroscopic moisture	1·03	74·45	·56	1·572	do
		Volatile hydrocarbons	24·52				
		Fixed Carbon	38·50				
		Ash	35·95				
			100·00				
Do	Bituminous coal (*d*) from 1½-ft. coal below C.....	Hygroscopic moisture	1·66	70·20	·86	1·497	do
		Volatile hydrocarbons	28·14				
		Fixed carbon	54·80				
		Ash	15·40				
			100·00				
Do	Bituminous coal (*e*) from 1½-ft. coal below D.....	Hygroscopic moisture	1·51	72·75	·5	1·408	Ash, dirty white; coke, fairly firm.
		Volatile hydrocarbons	25·74				
		Fixed carbon	50·75				
		Ash	22·00				
			100·00				
Do	Splint coal	Hygroscopic moisture	1·50	69·42	·453	1·303	Ash, dark grey; coke, fairly bright, swollen, and firm.
		Volatile hydrocarbons	29·08				
		Fixed carbon	58·80				
		Ash	10·62				
			100·00				
Moss Vale ...	Splint coal with small layers of bituminous coal	Hygroscopic moisture	3·38	Nil.	·704	1·45	Ash, light grey.
		Volatile hydrocarbons	19·84				
		Fixed carbon	57·76				
		Ash	19·02				
			100·00				
Do	do	Hygroscopic moisture	2·67	Nil.	·693	1·44	Ash, nearly white.
		Volatile hydrocarbons	18·57				
		Fixed carbon	54·29				
		Ash	24·47				
			100·00				
Do	Bituminous coal	Hygroscopic moisture	1·34	72·04	...	...	Ash, grey; coke, firm and fairly swollen.
		Volatile hydrocarbons	26·62				
		Fixed carbon	49·91				
		Ash	22·13				
			100·00				
Wallerawang (Cullen Bullen)	Inferior splint coal	Hygroscopic moisture	4·52	Nil.	·975	1·45	Ash, grey
		Volatile hydrocarbons	24·88				
		Fixed carbon	50·45				
		Ash	20·15				
			100·00				
Do	Splint coal	Hygroscopic moisture	2·96	66·75	·838	1·36	do
		Volatile hydrocarbons	30·29				
		Fixed carbon	52·15				
		Ash	14·60				
			100·00				

Locality.	Description of Mineral.	Analysis.		Coke, %.	Sulphur %.	Specific gravity.	Remarks.
Wallerawang (Cullen Bullen).	Splint coal	Hygroscopic moisture	5·22	nil.	1·09	1·404	Ash, grey.
		Volatile hydrocarbons	28·08				
		Fixed carbon	50·35				
		Ash	16·35				
			100·00				
Do	Splint coal with layers of bright bituminous coal	Hygroscopic moisture	2·58	61·43	1·072	1·29	do
		Volatile hydrocarbons	35·99				
		Fixed carbon	53·30				
		Ash	8·13				
			100 00				
Do	Bituminous coal	Hygroscopic moisture	1·99	59·65	·79	1·329	Ash, light grey; coke, fairly swollen and firm.
		Volatile hydrocarbons	38·36				
		Fixed carbon	51·91				
		Ash	7·74				
			100 00				
Do	Splint coal with bright black bituminous bands	Hygroscopic moisture	1·14	69·23	1·1	1·45	.....
		Volatile hydrocarbons	29·63				
		Fixed carbon	50·53				
		Ash	18·70				
			100·00				

Fuller particulars concerning the composition of the coals of this Colony may be found in the Annual Report of this Department for the year 1880.

Shale.

The output of boghead mineral or petroleum oil cannel-coal, commonly called shale in 1888, being the product of two mines, was less in quantity by 5,141 tons, and in value, by £14,149, than the output for 1887. There is a probability that shale will be produced at some other mine shortly. At the Katoomba Shale Mine an adit is being driven to prove the thickness and quality of the bed of shale.

The following table shows the quantity and value of Kerosene Shale produced during the years 1865 to 1888:—

Year.	Quantity.	Average price per ton.	Total value.	Year.	Quantity.	Average price per ton.	Total value.
	Tons.	£ s. d.	£ s. d.		Tons.	£ s. d.	£ s. d.
1865	570	4 2 5·47	2,350 0 0	1878	24,371	2 6 11·40	57,211 0 0
1866	2,770	2 18 10·48	8,150 0 0	1879	32,519	2 1 1·96	66,930 10 0
1867	4,079	3 14 9·21	15,249 0 0	1880	19,201	2 6 7·03	44,724 15 0
1868	16,952	2 17 7·11	48,816 0 0	1881	27,894	1 9 2·59	40,748 0 0
1869	7,500	2 10 0·00	18,750 0 0	1882	48,065	1 15 0·00	84,114 0 0
1870	8,580	3 4 3·18	27,570 0 0	1883	49,250	1 16 10·77	90,861 10 0
1871	14,700	2 6 3·91	34,050 0 0	1884	31,618	2 5 7·86	72,176 0 0
1872	11,040	2 11 11·91	28,700 0 0	1885	27,462	2 8 11·62	67,239 0 0
1873	17,850	2 16 6·55	50,475 0 0	1886	43,563	2 5 10·79	99,976 0 0
1874	12,100	2 5 1·48	27,300 0 0	1887	40,010	2 3 10·43	87,761 0 0
1875	6,197	2 10 2·22	15,500 0 0	1888	84,869	2 2 2·66	73,612 0 0
1876	15,998	3 0 0·00	47,994 0 0				
1877	18,963	2 9 0·81	46,524 0 0		516,121	2 4 9·91	1,156,781 15 0

The average price per ton during 1888 was only £2 2s. 2·66d., being the lowest average since 1883. During the year the following tests and analyses were made in this Department:—

Locality.	Description of Mineral.	Analysis.		Sulphur %.	Specific Gravity.	Remarks.
Capertee	Kerosene shale.....	Hygroscopic moisture...	·37	...	...	Ash, grey.
		Volatile hydrocarbons...	65·77			
		Fixed carbon	13·93			
		Ash	19·93			
			100·00			
Do	do	Hygroscopic moisture...	·05	...	...	do
		Volatile hydrocarbons...	69·05			
		Fixed carbon	14·06			
		Ash	16·84			
			100·00			

Locality.	Description of Mineral.	Analysis.		Sulphur %	Specific Gravity.	Remarks.
Capertee	Inferior kerosene shale ..	Hygroscopic moisture...	1·50	...	...	Ash, light grey; no coke formed, a black powder being left.
		Volatile hydrocarbons...	42·13			
		Fixed carbon	8 09			
		Ash	48·28			
			100·00			
Do	do do ...	Hygroscopic moisture...	·72	...	...	Ash, white.
		Volatile hydrocarbons...	42·38			
		Fixed carbon	9·20			
		Ash	47·70			
			100 00			
Dungaree	do do ...	Hygroscopic moisture...	·06	...	...	Ash, grey ; no coke formed.
		Volatile hydrocarbons	61·05			
		Fixed carbon	10·39			
		Ash	28·50			
			100·00			
Marangaroo ...	do do ...	Hygroscopic moisture...	·14	·384	1·193	Ash, light grey with a yellowish tinge; no coke formed, a black powder being left.
		Volatile hydrocarbons..	61·89			
		Fixed carbon	5·62			
		Ash	32·35			
			100 00			
Mittagong	Kerosene shale.....	Hygroscopic moisture...	·15	·44	...	Ash, white and bulky; no true coke formed, a black powder being left on heating.
		Volatile hydrocarbons...	65·55			
		Fixed carbon	6·43			
		Ash	27·87			
			100·00			
Do	do	Hygroscopic moisture...	·15	·45	...	Ash, white.
		Volatile hydrocarbons...	66·58			
		Fixed carbon	5·67			
		Ash	27·60			
			100·00			
Moss Vale	do	Hygroscopic moisture...	·45	1·05	1·077	Ash, almost white.
		Volatile hydrocarbons...	75·32			
		Fixed carbon	14·45			
		Ash	9·78			
			100·00			
Mount Victoria.	do	Hygroscopic moisture...	·61	·92	1·291	Ash, white.
		Volatile hydrocarbons...	53·84			
		Fixed carbon	14·66			
		Ash	30·89			
			100·00			
Mudgee	do	Hygroscopic moisture...	·51	·81	1·111	Ash, grey, with a slight reddish tinge; no coke formed.
		Volatile hydrocarbons...	71·72			
		Fixed carbon	8.87			
		Ash	18·90			
			100·00			
Mudgee (Barragon).	do	Hygroscopic moisture...	·20	·603	1·091	Ash, almost white; no coke formed, a black powder being left.
		Volatile hydrocarbons...	76·28			
		Fixed carbon	7·87			
		Ash	15·65			
			100·00			
Warragamba ...	do	Hygroscopic moisture...	·35	·37	1·416	Ash, grey ; no coke.
		Volatile hydrocarbons...	45·23			
		Fixed carbon	7·02			
		Ash	47·40			
			100·00			

Silver and Lead.

The Inspector of Mines reports:—Silver-mining has now spread to every mining district in the Colony, but the richest and most extensive deposits are at the Barrier Ranges, in the extreme north-west corner of New South Wales. These deposits are now found to extend over 100 miles from Thackaringa, where the first discovery was made, by several miles in width. The Broken Hill Proprietary is the most important

important mine in the district. The quantity of ore treated during the year was 94,125 tons; the bullion obtained therefrom was 16,779 tons, yielding 3,924,192 oz. of silver, and 16,658 tons of lead, the gross value of which was £928,877 5s.

The Company consists of 16,000 shares, of £20 each, and the dividends paid during the year amounted to £22 per share. During the three and a half years this Company has been in existence, it had, up to the 30th November last, paid dividends to the amount of £586,000. The lode in this mine has now been proved to exist through the three 40-acre blocks, the width varying from 10 to 100 ft., with an almost unlimited supply of ore. He (the Inspector) is of opinion that Block 14 and the British Blocks will, in the near future, be dividend paying. He points out that throughout the Barrier Ranges the ore occurs in lenticular blocks or shoots, and has no doubt that the permanency of some of the mines there is now assured. In the Vegetable Creek District, at Webb's mine, the lode appears to improve in depth. Work is being carried on vigorously in the adjoining mines; but he is afraid there is no regular defined lode, but that the ore occurs in branches. At Pye's Creek there are several silver-mines being worked with varied success. The Sunny Corner mines still add their quota to the production of silver. The mines at Lewis Ponds and elsewhere in the Orange District have not realized the expectations formed concerning them. Extensive works are carried on at Captain's Flat.

The following extracts from the reports of the Wardens and Mining Registrars indicate the state of silver-mining in their respective districts:—

In the Bathurst districts the reports say:—The returns from Mitchell have been considerable, and a large number of men are constantly employed there. At Mount Costigan the smelters were in blasting five months of the year, during which time 3,000 tons of ore was smelted, yielding 9,600 oz. silver, and 300 tons lead, matte, valued at £9,700; total value, £28,000. New and improved machinery is in course of erection. There are 13,000 tons of ore at the furnace awaiting treatment. The Cordillera treated 9,300 tons of ore, yielding 82,800 oz. silver, 404 oz. of gold, 227 tons of lead, and 220 tons of copper, valued at £37,343. There are 1,500 tons of ore at the furnace ready for treatment. A great deal of prospecting was done during the year between Mount Costigan and the Cordillera mines. The Sunny Corner Co. treated 24,972 tons of ore for 201 tons of lead, 309 tons of copper, and 1,256 tons of matte, containing 319,324 oz. of silver, 2,300 oz. of gold, valued at £74,209. The Silver King Co. (Sunny Corner) produced 277 tons of matte and 2 tons of lead bullion, valued at £8,200. At the Bulga Mountain (Orange Division), the Hidden Treasure Co., who received aid out of the Prospecting Vote, at a depth of 80 feet, cut through a lode 12 feet wide, the assays from which were considered encouraging. The New Lewis Ponds Co., besides carrying on active operations in the mine, have erected costly machinery and smelting plant, but smelting did not commence till 2nd January, 1889. (It is reported that between the 3rd and 19th January 233 tons of ore smelted produced over 9 tons of bullion, containing 3,651 oz. silver, 73 oz. gold; furnace crucible contains 4½ to 5 tons bullion, of similar quartz, made 7 tons of matter containing 5,703 oz. silver and 3½ oz. gold, some lead and silver, absorbed in bricks, and run off in slag.) Tom's Lewis Ponds Co. have sunk three shafts, deepest 180 feet, average width of lode 15 feet, quantity of ore raised estimated at 500 tons, containing 30 oz. silver, 5 dwt. gold per ton, and 10 per cent. of lead. Spicer's Co. have done a great deal of work, and have a considerable quantity of ore at grass, the assays from which have been satisfactory. At Denisontown and Mount Stewart (Mudgee District) a number of leases have been applied for. Some very good samples have been obtained. At Gumble, in the Molong Division, there are two mines at work on a lode which contains silver, tin, and copper (silver predominating), and varying in width from 1 to 8 feet. A great deal of work has been done, and about 200 tons of ore is at grass, but none of it has been treated yet. On a conditional purchase, 13 miles from Grenfell, a lode, said to be 11 feet wide, was discovered. Samples from the surface assayed 13 dwt. per ton, but at a depth of 60 feet as high as 309 oz. of silver was obtained on assay. Several lodes have been discovered in the Condobolin Division, the most important, apparently, being in a small range of hills called the "Three Peaks." The lode appears to be 2 feet wide; assays from which are said to vary from 39 oz. to 800 oz. per ton.

In the Albert District the reports say:—The Thackaringa mines have been steadily developed, and in some cases with good results. There are about 4,000 miners employed on this field, of which number the Broken Hill Proprietary Co. employs 1,609. The work done on the British Blocks, block 14 South Broken Hill Junction, and Central Mines has considerably increased their value. The following figures show the declared value of minerals exported from the district:—Argentiferous lead, valued at £863,467; silver ore, £136,800; tin ore and oxide, £1,095; copper ore £304; auriferous quartz £182; total, £1,001,848. The Broken Hill Junction Co. raised 6,000 tons of ore, of which 3,000 tons, valued at £27,000, was sold. Central sold 458 tons for £1,359, leaving 988 tons ore at grass. Block 14 sold 150 tons, and has 5,000 tons at grass. Broken Hill North raised 3,100 tons of ore, sold 1,100 tons ore for £6,000,

£6,000, smelted 1,000 tons; yield, 40,000 of silver and 300 tons lead. The Proprietary Co. raised 101,610 tons of ore, sold 1,433 tons for £9,203, smelted 98,353 tons; yield, 4,077,257 oz. silver, and 17,117 tons lead; value (estimated), £713,519. The Broken Hill South raised 1,078 tons of ore, sold 978 tons for £5,868, leaving 100 tons at grass. The British Blocks raised 4,600 tons of ore. The Umberumberka sold 1,400 tons of ore for £21,000, and has 1,500 tons at grass. The Pioneer Co., Thackaringa, sold 560 tons ore for £5,400, and 2,828 tons at grass. The drought prevented the reported find of silver ore at Kallara Station being tested.

In the Tumut and Adelong District the reports say:—At Coppabella several galena lodes were found. One, 25 feet wide, consists of quartz with patches of galena. An average of the assays gives 42 oz. of silver per ton—55 per cent. Silver has been found at Nimitybelle, and gold and silver at Thoko, 15 miles from it. The Koh-i-noor Co., Captain's Flat, obtained 540½ tons of ore, 14,035 oz. of silver, 63 tons of lead, 2 tons copper, and 63½ oz. of gold. The Company also obtained silver, lead, gold, and copper, to the value of £2,700, from another smelting, the details of which have not been supplied, and they have 200 tons of ore at grass. The Vanderbilt and Commodore Co. smelted 661½ tons ore for 11,000 oz. silver, 29¾ tons lead, and they have 500 tons of ore at grass. The North Vanderbilt Co. has constructed very extensive works in opening up their mine. A lode was discovered near the Bredbo Railway Station, consisting of galena and ironstone, gossan assays from which gave 20 to 25 oz. of silver per ton. Shafts were sunk to the depth of 50 and 70 feet, when sinking had to be suspended on account of the quantity of water met with. At Big Badga River a lode was discovered, and a shaft has been sunk to a depth of 100 feet, but it is thought greater depth will have to be reached before getting into settled country. Assays from a depth of 20 feet gave 329 and 334 oz. of silver per ton, with a large percentage of lead.

In the Southern District the reports say:—The New Carrington Mine, Goulburn, has stopped smelting, and are sinking for galena ore. Preparations are being made for working some galena lodes in the Major's Creek division. On the right arm of the Yalwal Creek very promising argentiferous ore has been found. The mine at Moruya is about to recommence work.

In the Peel and Uralla District the reports say:—Quantity of silver won in the Glen Innes division, 18,160 oz. At Webb's mine an extensive crushing, roasting, and leeding plant, but the plant was unsuited or the men were inexperienced, hence the treatment was abandoned after the first trial, and the ore has been concentrated and sent to Adelaide. 400 tons of ore yielded 13,182 oz. silver, equal to 33 oz. per ton. The manager of Webb's Consols reports they have sunk five shafts each on a distinct lode. From No 1 shaft 80 tons of ore has been raised. No. 2 shaft is in a galena lode, estimated at 15 feet wide. From this shaft two parcels of ore were bagged and sent away for treatment, viz., 20 tons to Adelaide and 20 tons to Germany. The average gross returns from these parcels was 73 oz. silver per ton and 66 per cent. of lead. There is 200 tons of ore at grass. No. 3 shaft is in a lode containing mispickel, but has not yet reached galena. Yield of silver, 2,920 oz. The ores in the Pye's Creek Mine contain a larger percentage of galena. About 400 tons have been raised; 42 tons of ore sent to Adelaide for treatment. The result of a portion gave 49 oz. silver and 5 dwt. of gold per ton. Yield of silver, 2,058 oz. At the Castteray Mine the ores bear a close resemblance to those found at Sunny Corner.

In the New England District the reports say:—Fairfield division: Rich silver ore, containing a percentage of gold, has been found in the Mascotte Gold-mine. About 600 tons of ore has been raised, valued by the manager at £12 per ton. The deepest shaft is about 100 feet (the lode is 8 feet wide), and it is estimated that there is 7,000 tons of ore in sight. The works on the White Rock Proprietary Co.'s Mine are very extensive, and preparations are being made for the reception of vast machinery. A very large body of stone has been quarried out, and about 13,000 tons is awaiting treatment. The quantity of ore obtainable is practically unlimited. The greater part of the ore is low grade, but the seams, which are numerous, are rich. About 163 tons of picked ore has been sent away at various times and to various places, resulting in returns averaging £8 per ton. The mine appears to be inexhaustible, the ore now in sight, even with the large reducing works to be employed, would last for many years. The mine shows every indication of becoming richer as it is developed. Rich silver ore, containing chlorides, was discovered about 5 miles south of Boonoo Boonoo, from which remarkably rich assays have been made. Some parcels of ore sent away for treatment have given satisfactory results, the lodes consisting of quartz and gossan are well defined, but the water is troublesome, and machinery is required to work the ground. An important silver field was discovered at Rivertree, 16 miles east of Wilson's Downfall. The reefs are large and well defined, and show rich galena and carbonates of lead, assaying from 10 to 100 oz. silver per ton. Smelting furnaces are in course of erection.

Though the attempts to develop the value of our silver lodes has resulted in many disappointments, mainly the result of want of experience in the treatment of silver ores, I venture to doubt whether our

failures

failures are more numerous than have been made in other countries, or than might reasonably have been expected when entering upon (to us) an entirely new industry, and one requiring not only considerable technical knowledge but also large practical experience. It may perhaps be said that we can avail ourselves of the knowledge acquired in older countries, and that may be true, and yet we may lack the experience which enables us to apply that knowledge with profitable results. I have no doubt that, in course of time, we, like others, shall learn to turn to the best advantage the valuable deposits we possess; and there can be little question that the proposal of the Government to establish works for the treatment in bulk of our various matalliferous ores by the process best adapted to each, and to give facilities to those concerned to acquire the knowledge requisite to enable them to treat the ores in their respective mines, will materially hasten the time when we shall reap the full benefit of our recent discoveries. When we consider that it is scarcely five years since we began to recognize the existence in this Colony of extensive argentiferous deposits, and that we have already exported silver and lead to the value of two and three-quarter millions sterling; and further,—that we are gradually learning, even by our blunders, how some of our ores can be treated, we ought not to complain, because many of our silver mines are idle for want of the skill and appliances requisite to work them profitably. The value of our output for last year reached nearly one million, and there can be no doubt that will be largely increased as soon as all the mines opened are in full work. The reports show that in some of our mines there are almost unlimited deposits of low grade ores, and in view of that fact it is a matter of great importance that our attention has been directed to the methods of concentration adopted in America, because if we can work them profitably they will provide employment to a very large number of miners. The fact that so few of our silver mines are paying dividends may also, probably, be in some measure due to our lacking the experience necessary to enable us to adopt the most economical and efficient modes of treatment.

During the year 4,973 assays of silver ore were made in this Department.

QUANTITY and Value of Silver and Silver and Lead Ore exported.

Year.	Silver.		Silver and Lead Ore.			Total Value.
	Quantity.	Value.	Quantity.		Value.	
			Ore.	Metal.		
Up to	oz.	£ s. d.	Tons cwt. qr. lb.	Tons. cwt.	£ s. d.	£
1881.....	726,779·14	178,405 0 0	191 13 0 0	.....	5,025 0 0	183,430
1882.....	38,618	9,024 0 0	11 19 0 0	.....	360 0 0	9,384
1883.....	77,065·18	16,488 0 0	136 4 0 0	.....	2,075 0 0	18,563
1884.....	93,660·25	19,780 0 0	9,167 11 1 7	.....	241,940 0 0	251,720
1885	794,173·80	159,187 0 0	2,095 16 0 0	190 8	107,626 0 0	266,813
1886.....	1,015,433·10	197,544 0 0	4,802 2 0 0	.....	294,485 0 0	492,029
1887.....	177,307·75	32,458 0 0	12,529 3 2 0	.....	541,952 0 0	574,410
1888.....	375,063·70	66,668 0 0	18,102 5 0 0	.....	911,117 0 0	977,785
	3,298,100·92	679,554 0 0	47,036 13 3 7	190 8	2,104,580 0 0	2,774,134

3,316 yielded	... ...	Nil.
1,473 „	... ...	Under 20 oz. per ton.
184 „	... ...	As follows:—

Locality	Description of mineral.	Per ton.		Per cent. metallic lead.
		Silver.	Gold.	
		dwt. qr. gr.	dwt. qr. gr.	
Abercrombie River ...	Ferruginous felspathic rock, with carbonate of lead.....	21 15 13	nil.	
Aconite (parish, county Hardinge.)	Quartz, with galena and zinc-blende	23 19 2	0 10 21	
Armidale (Puddledock)	Galena and zinc-blende in felspathic lodestuff	160 12 5	0 6 12	
Armidale.....	Greisen, with a thin vein of galena	24 12 3	nil.	
„	Ferruginous porous quartz and felspathic rock, with pyrites ...	42 9 8	„	
Barney Downs	„ quartz and slate braccia	37 4 16	trace.	
Barrier Ranges (Pinnacles Mine).	Galena.....	132 2 4	nil.	56·43
Bathurst (Clear Creek)	„	134 9 13	„	
Bathurst	„ in felspathic lodestuff	31 7 4	„	
„	„ „ „	21 15 13	„	
Bellinger (Deep Creek)	Massive mispickel	27 4 10	trace.	
Black Mountain	Siliceous veinstone, with calcite, galena, and copper pyrites ...	25 15 0	nil.	
Bland (Sandy Creek)...	Galena.....	96 11 16	„	
„ „ ...	Ferruginous felspathic rock, with carbonate of lead.....	63 14 0	„	
„ „ ...	„ „ „	46 14 4	„	
„ „ ...	„ „ „	27 4 10	„	
Blayney	Ferruginous siliceous gossan.....	37 4 18	„	
„	Ferruginous felspathic rock, with brown iron ore, quartz, and barytes.	26 2 16	„	

Locality.	Description of mineral.	Per ton		Per cent metallic lead
		Silver.	Gold	
		dwt qr gr	dwt qr gr	
Boonoo Boonoo	Quartz vein-stone, with carbonate of lead	428 13 21	0 6 12	
"	Ferruginous quartz	179 4 14	nil	
"	"	136 2 5	"	
"	" with a little pyrites	124 13 12	0 3 0	
"	Ferruginous porus quartz	91 11 12	trace.	
"	Quartz and micaceous felspathic rock, with a little pyrites	30 2 3	1 1 16	
Braidwood (Limestone Hill)	Galena	179 2 10	nil.	
Braidwood	Concentrated pyrites, with free gold	25 16 0	202 0 18	
Bredbo	Gossan, with galena	44 19 9	nil	51 5
Brewongle	Porous yellow siliceous gossan	36 9 13	trace.	
Bundarra	Pyritous quartz and micaceous felspathic rock	21 19 21	nil	
Bungonia	Galena, with a little zinc-blende and copper pyrites, and traces of green carbonate of copper.	26 2 12	trace	
Burrowa	Galena and carbonate of lead	159 10 8	nil.	
Carcoar	Ferruginous carbonate of lead, with quartz	25 16 2	"	28 02
"	Galena and carbonate of lead in felspathic rock	20 2 21	"	
Cobar	Altered cement	94 5 22	0 18 10	
"	Quartz and schistose breccia	80 16 23	3 10 18	
Cobar (Billygoe)	Ferruginous quartz, with free gold and chloride of silver	413 12 4	16 11 0	
" "	Quartz vein-stone, with a little copper and iron pyrites	105 4 16	4 3 19	
" "	Ferruginous quartz	90 8 5	4 18 0	
Condobolin	Galena and ferruginous carbonate of lead	42 14 20	nil	
Cookbundoon	Earthy oxide of manganese	21 15 13	0 4 6	
"	Ferruginous carbonate of lead	21 12 19	trace.	
Copabella	Quartz, with galena and mispickel	27 5 10	nil	
Corona	Gossan	58 5 2	trace.	
Cowra	Quartz and felspathic rock, stained with arseniate of iron	51 3 13	1 14 21	
"	Ferruginous carbonate of lead	37 13 12	1 3 22	
Delegate	" quartz, with specks of galena	27 8 16	nil.	
Denisontown	Galena	22 19 12	"	
"	"	21 15 13	"	
Drake	Quartz, with galena, zinc-blende, and copper and iron pyrites	111 1 8	"	
"	" with galena, zinc-blende, and copper and iron pyrites	71 17 16	"	
"	Ferruginous quartz, with galena and mispickel	50 15 22	"	
"	" " "	45 14 16	"	
"	" "	25 6 6	"	
"	Quartz, with pyrites, specular iron, and trace of green carbonate of copper.	21 4 16	trace.	
" (Red Rock)	Galena and pyrites, with a little zinc-blende	218 17 8	0 3 6	8·5
" "		44 12 21	trace.	45 5
" (White Rock)	Quartz, with galena	255 17 19	"	
"	Felspathic quartzite, with galena, zinc-blende, and pyrites	163 6 16	"	
"	Yellowish claystone, with carbonate of lead	156 5 2	nil	
"	Quartz, with veins of galena, zinc blende, and pyrites	112 14 0	0 2 10	
"	Porous gossan	68 12 0	nil.	
Emmaville	Galena, with copper and iron pyrites, in falspathic gangue	24 7 18	"	21 07
Emu Swamp	Ferruginous siliceous gossan	42 9 8	"	
Fairfield	Quartz, with galena, zinc-blende, and pyrites	368 18 10	trace.	
"	" " "	185 13 2	"	
"	" with a little galena and pyrites	96 9 13	0 4 6	
Forbes	Galena and carbonate of lead, and felspathic lodestuff	48 14 12	trace.	
Frogmore	Quartz veins in slate	78 18 21	nil.	
"	Clayslate, with arseniate of iron	76 8 16	"	
"	Pyritous quartz, and quartz, with galena	22 15 2	trace.	
Glenburn	Carbonate of lead	23 2 18	0 4 6	65 3
Glen Innes	Felspathic lodestuff, with a little quartz, containing galena and pyrites.	93 18 12	trace.	
"	Sulphide of antimony	43 11 2	"	
"	Quartz, with galena, mispickel, and pyrites	40 7 22	nil	
"	Galena, with iron and a little copper pyrites	31 11 13	"	
Gowonglah	Micaceous felspathic vein-stone, with carbonate of lead	28 8 12	trace	16 84
Gundagai	Galena, with a little carbonate of lead and gossan	47 13 20	"	68 5
Hillgrove	Quartz, with pyrites, galena, and sulphide of antimony (part of the sample calcined, and showing globules of metallic silver)	115 7 0	2 10 2	
Jarrow Creek	Galena, mispickel, blende, and pyrites, in felspathic lodestuff.	48 9 2	trace.	
Jenolan Caves	"	79 3 5	0 4 0	72·3
Jerrara Creek	Porous ferruginous schist, with calcite	26 2 16	trace.	
Kydra	Ferruginous quartz, with galena and copper pyrites	69 0 16	1 14 21	
Lewis Ponds	Porous ferruginous quartz and brown iron ore	166 17 10	trace.	
"	Carbonate of lead, with a little carbonate of copper	152 3 10	"	
"	Ferruginous carbonate of lead	149 15 10	0 5 10	
"	" " with a little quartz	61 10 10	trace.	
"	Crushed pyrites	41 1 0	"	
"	Pyrites	37 19 11	"	
Macleay Heads	Pyritous quartz	76 17 12	"	
Marulan	Gossan, with galena	84 13 3	nil	
"	Ferruginous gossan, with galena, carbonate of lead, and a little pyrites.	52 3 2	"	
"	Ferruginous lodestuff, with galena and pyrites	41 5 8	"	34 84
"	Galena and a little zinc-blende in lodestuff	23 19 2	"	25 03
Meadow Flat	Quartz, with galena, zinc blende, and pyrites	20 13 19	"	
Melrose	Ferruginous felspathic rock, with carbonate of lead and a few copper stains.	50 17 0	"	
"	Galena and carbonate of lead	42 11 8	"	
Molong	Siliceous gossan stained, with oxide of manganese, and a little carbonate of copper, and showing free gold.	214 15 14	429 11 8	
"	Siliceous gossan, showing free gold	55 10 16	14 15 2	

Locality.	Description of Mineral.	Per Ton.		Per cent. metallic lead.
		Silver.	Gold.	
		oz. dwt. gr.	oz. dwt. gr.	
Moruya	Quartz, with massive mispickel, zinc blende, and a little galena	20 14 18	0 15 5	
Mudgee	,, stained with arseniate of iron	50 12 16	0 10 21	
,,	Ferruginous gossan	42 13 15	nil.	
,,	Quartz, with galena and mispickel	31 11 12	,,	
,,	Ferruginous quartz and gossan, with a little galena and carbonate of lead.	23 19 2	trace.	
Murrurundi	Quartz, with galena and a little carbonate of copper	137 4 0	,,	
,, (Isis)	,, with pyrites, galena, and mispickel	72 2 18	,,	
,, ,,	,, ,, and mispickel	55 10 16	,,	
,, ,,	,, ,, and galena	50 10 10	nil.	
,, ,,	,, ,,	42 3 20	,,	
,, ,,	Quartz, with pyrites	38 13 2	trace.	
,, ,,	,, ,,	38 2 5	,,	
,, ,,	,, ,, and galena	33 18 10	,,	
,, ,,	Ferruginous quartz, with galena	24 12 3	nil.	
New England	,, lodestuff, with traces of carbonate of copper	81 2 10	,,	Antimony.
,, (Stony Batta)	Sulphide of antimony, with a little quartz	44 2 0	,,	55·71
,, (Wellington Vale.)	Massive galena, with magnetic pyrites and a little copper pyrites.	40 18 21	,,	
New England (Red Range)	Quartz, with a little mispickel	36 16 1	,,	
New England (Red Range).	Ferruginous quartz, with a little galena	21 10 2	trace.	
New England (near the Border).	Massive mispickel, with copper pyrites and a few crystals of tinstone.	26 8 2	nil.	
Nine-mile (Deep Creek)	Ferruginous felspathic rock, with mispickel and a little galena	26 17 21	,,	
,, ,,	,, quartz and felspathic rock, with arseniate of iron and a little mispickel.	21 4 16	trace.	
,, (Deepwater)	Quartz and clay-stone, with pyrites and a little galena	258 12 5	nil.	
,, ,,	Galena and carbonate of lead	147 12 17	,,	
,, ,,	Galena	138 19 22	,,	
,, ,,	Ferruginous copper gossan	87 9 19	,,	
,, ,,	Galena and a little carbonate of lead in felspathic rock	71 17 8	,,	
,, ,,	Ferruginous gossan, with quartz and carbonate of lead	31 14 21	,,	
Nymagee	Galena and ferruginous carbonate of lead	81 13 8	trace.	
,,	Ferruginous quartz, with galena and a little carbonate of lead and traces of green carbonate of copper.	27 4 10	,,	
Orange (Bulga)	Porous gossan	157 7 5	0 4 0	
,, ,,	,, quartz in iron ore	67 10 5	0 8 0	
,, ,,	,, ,, ,,	31 11 3	0 3 0	
,, ,,	Earthy ironstone gossan	29 18 21	2 14 10	
,,	Gossany friable quartz	28 18 2	0 6 12	
Pindari (parish)	Ferruginous quartz, with galena and a very little mispickel	30 14 0	nil.	
Pudman's Creek	Galena	28 11 6	,,	
Purnamoota	Ironstone vein, with schist casing, galena, and pseudomorphs of limonite after chalybite.	26 2 16	trace.	
Pye's Creek	Ferruginous quartz, with pyrites	92 11 2	nil.	
,,	Quartz, with galena and a little pyrites	70 19 21	,,	
Borders of Queensland	Mispickel in quartz	41 12 23	trace.	
,, ,,	Copper pyrites and mispickel, and one piece of gossan	37 0 10	,,	
,, ,,	Mispickel in quartz	20 8 10	0 3 0	
Rivertree	Ferruginous felspathic veinstone, with carbonate of lead and quartz.	146 4 16	trace.	
,,	Galena and protoxide of lead	71 12 14	nil.	Lead.
,,	Earthy carbonate of lead, with galena	22 2 1	,,	7·4
Rockley (Back Creek)	Barytes and talcose schist, with oxide of antimony	212 2 6	5 13 5	
,, ,,	Ferruginous quartz and felspathic lodestuff, with a little oxide of antimony.	94 8 2	2 0 19	
,, ,,	Calcite, brown iron ore and pyritous felspathic rock (mixed sample).	21 15 13	nil.	
Shoalhaven	Ferruginous quartz, with galena	56 1 13	trace.	
,,	Quartz, with galena, mispickel, and pyrites	27 4 10	,,	
Silverton (Aldinga)	Ferruginous carbonate of lead, with quartz	21 15 13	,,	
,, (Mundi Mundi Ranges).	Carbonate of lead, with felspathic lodestuff and a little quartz.	38 6 11	nil.	55·67
Silverton ,,	Cellular carbonate of lead	36 13 21	,,	63·5
,, ,,	Galena and ferruginous carbonate of lead	34 9 6	,,	
,, ,,	Carbonate of lead	24 12 4	,,	
Stanborough	Ferruginous quartz and felspathic rock	38 10 21	,,	
,,	Galena in ferruginous crystallized quartz	34 16 21	,,	
Tarana	Quartz, with galena and a little zinc blende	47 9 12	,,	
Tenterfield	Porous pyritous quartz	307 2 8	0 3 6	
,,	,, ferruginous quartz	278 15 10	trace.	
,,	Ferruginous quartz	144 8 5	,,	
,,	,, ,,	140 14 21	0 4 8	
,,	Pyritous ,,	116 10 5	0 10 21	
,,	Ferruginous quartz, with a little mispickel	68 1 2	trace.	
Timor	Quartz, with galena and felspathic lodestuff	24 10 0	nil.	
,,	,, ,,	21 2 10	,,	
Tingha	Crystallized quartz, with galena	33 10 17	,,	
Tuena (Sunny Ridge)	Quartz, with pyrites and a little galena	669 2 5	0 5 10	
,,	Ferruginous quartz	33 4 5	0 4 0	
,,	,, gossan, with carbonate of lead	27 17 14	nil.	
,,	Porous ferruginous gossan	27 4 10	trace.	
Upper Murray	Quartz, with mispickel and a little pyrites	28 17 2	nil.	
Uriaria	Galena	25 0 21	,,	
Vegetable Creek	Ferruginous gossan	52 5 8	trace.	
Warrell Creek	,, quartz, with carbonate of lead	24 18 20	,,	

Locality.	Description of Mineral.	Per Ton.		Per cent. metallic lead.
		Silver.	Gold.	
		oz. dwt. gr.	oz. dwt. gr.	
Wellington	Galena and ferruginous earthy carbonate of lead	47 18 5	nil.	
„	Ferruginous crystalline quartz, with traces of green carbonate of copper.	26 7 0	„	
Yalwal	Quartz, with galena, mispickel, and pyrites	47 7 8	„	
„	„ „ and pyrites (crushed)	37 11 8	trace.	
„	Cellular quartz stained with arseniate of iron in quartz felsite	29 0 18	nil.	
Yarrahapinni	Quartz, with galena and zinc blende	28 17 2	trace.	
Yarrangobilly	Ferruginous breccia, with galena and carbonate of lead, a few specks of copper pyrites and stains of carbonate of copper.	98 10 21	„	
„	Felspathic lodestuff, with galena and carbonate of lead, and slightly stained with carbonates of copper.	29 16 16	nil.	

During the year twenty-eight samples were assayed in this Department for lead, as follows:—

Locality.	Description of Mineral.	Per cent. metallic lead.	Per Ton.	
			Silver.	Gold.
			oz. dwt. gr.	oz. dwt. gr.
Barrier Ranges (Pinnacles Mine).	Galena	56·43	132 2 4	nil.
Bega	Ferruginous quartz, with galena and pyrites	14·66	19 17 10	„
Bombala	Galena	72·5	7 10 3	„
Bredbo	Gossan, with galena	51·5	44 19 9	„
„	Galena, with a little ferruginous carbonate of lead	43·04	10 3 13	„
Carcoar	Ferruginous carbonate of lead, with quartz	28·02	25 16 2	„
Drake (Red Rock)	Galena, with pyrites	45·5	44 12 21	trace.
„ „	Galena, carbonate of lead, with quartz	40·3	14 14 0	„
„ (White Rock)	„ with pyrites and a little zinc blende	8·5	218 17 8	0 3 6
Emmaville	„ „ copper and iron pyrites in felspathic gangue	21·07	24 7 18	nil.
Glenburn	Carbonate of lead	65·3	23 2 18	0 4 6
Goulburn	Galena	84·0	6 10 16	nil.
Gowonglah	Micaceous felspathic veinstone, with carbonate of lead	30·33	19 12 9	2 3 13
„	„ „ „ „	16·84	28 8 12	trace.
Gundagai	Galena, with a little carbonate of lead and gossan	68·5	47 13 20	„
Near Jenolan Caves	Galena	72·5	79 3 5	0 4 0
Marulan	Ferruginous lodestuff, with galena and pyrites	34·84	41 5 8	nil.
„	Galena, and a little zinc blende in lodestuff	25·03	23 19 2	„
Murrurundi	Galena, with a little copper pyrites	58·6	15 2 5	„
Purnamoota	Galena (coarsely crystalline)	70·5	18 10 5	„
Rivertree	Earthy carbonate of lead, with galena	7·4	22 2 1	„
„	„ „ „ quartz	5·2	6 12 20	„
„	„ „ „ „	4·85	6 5 10	trace.
Rocky Hall	Felspar and quartz, with galena and pyrites	13·04	1 12 16	„
Silverton (Aldinga)	Altered ferruginous grit	9·56	19 16 8	nil.
„ (Mundi Mundi Ranges).	Cellular carbonate of lead	63 5	36 13 21	„
Silverton (Mundi Mundi Ranges).	Carbonate of lead in felspathic lodestuff, with a little quartz	55·67	38 6 11	„
Yarrangobilly	Galena and copper pyrites in felspathic rock, with calcite	13·57	2 17 16	„

Tin.

The Inspector of Mines reports the Basaltic Prospecting Company at Vegetable Creek have carried on vigorous prospecting operations during the year, and have at times obtained fair prospects but will have to get into more settled country before anything payable is struck. During the year they have sunk 77 feet, and have driven 680 feet, including open cutting and trenches. At Butler's lode excellent stone has been raised during the year. A new discovery of tin was made during the year in the Barmedman division, on the Mandamah Station, but the severe drought interfered with its development. The stream tin was struck at depths of from 12 to 15 feet, the wash was 1 to 4 feet thick, assays of the ore are said to have given 58 to 62 per cent. The Lady Don Co. at Poolamacca raised 500 tons of ore. Stream tin has been found at Thoko; the prospectors obtained from 2 to 5 oz. per dish. At Watson's Creek (Bendemere) Anderson and party raised 8 tons 18 cwt. of ore, sold at £75 per ton; Murray and party raised 5 tons, sold at same price; Northey and party raised 3 tons 7 cwt. sold at same price; Hetherington and party raised 2 tons, sold at £65 per ton. Inverell division.—Some 11,000 tons of ore was raised, the price averaged £68 per ton. Crushing and smelting works were erected by Mr. Bathurst, but the works are at a standstill from want of water. Glen Innes division.—1,037 tons of ore was raised at Emmaville, value £70,063; and 244 tons, value £16,470 at Glen Innes. Owing to the drought, 1888 was the most trying year that has been experienced since the opening of the tin-fields. Prospecting was carried on vigorously during the year by the Basaltic Lead Co. with a view to test the deep lead. One cross drive showed a face of coarse wash 80 feet wide, from 1 to 6 feet thick, containing

a little tin. At Big Ben Flat a large extent of land has been taken up for tin-mining, and fair prospects have been obtained. The Ottery Mine is the only one in which lode tin-mining is carried on in the division. 93½ tons of block tin was won from stone crushed at the Tent-hill battery. 573 tons of fine tin ingots was sent to Newcastle from the smelting works. In the Oban division a large area of land has been taken up by Mr. Dowel, M.P., for tin-mining, and expensive works have been constructed for conserving water. Some enterprise has been shown in opening up deep ground at Wylie Creek. The quantity of tin-ore won in the Wilson's Downfall division was 203 tons, valued on the ground at £12,180.

Notwithstanding the severe drought the output of tin ore last year was only 151 tons less than that of 1887, and the value of the tin won owing to the higher price obtained exceeded that of 1887 by £57,076.

TABLE showing the quantity and value of Tin exported from, and the produce of, the Colony of New South Wales, since the opening of the Tin-fields in 1872.

Year.	Ingots.		Ore.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons cwt.	£ s. d.	Tons cwt.	£ s. d.	Tons cwt.	£ s. d.
1872	47 0	6,482 0 0	849 0	41,337 0 0	896 0	47,819 0 0
1873	911 0	107,795 0 0	3,660 0	226,641 0 0	4,571 0	334,436 0 0
1874	4,101 0	366,189 0 0	2,118 0	118,133 0 0	6,219 0	484,322 0 0
1875	6,058 0	475,168 0 0	2,022 0	86,143 0 0	8,080 0	561,311 0 0
1876	5,449 0	379,318 0 0	1,509 0	60,320 0 0	6,958 0	439,638 0 0
1877	7,230 0	477,952 0 0	824 0	30,588 0 0	8,054 0	508,540 0 0
1878	6,085 0	362,072 0 0	1,125 0	33,750 0 0	7,210 0	395,822 0 0
1879	5,107 2	343,075 0 0	813 15	29,274 0 0	5,920 17	372,349 0 0
1880	5,476 6	440,615 0 0	682 6	30,722 9 0	6,158 12	471,337 9 0
1881	7,590 17½	686,511 0 0	609 6	37,492 0 0	8,200 3½	724,003 0 0
1882	8,059 0	800,571 0 0	611 0	32,890 0 0	8,670 0	833,461 0 0
1883	8,680 1	802,867 0 0	445 4	21,685 0 0	9,125 5	824,552 0 0
1884	6,315 16	506,726 0 0	349 13	14,861 0 0	6,665 9	521,587 0 0
1885	4,657 18	390,458 0 0	534 18	25,168 0 0	5,192 16	415,626 0 0
1886	4,640 18	449,303 0 0	326 18	18,350 0 0	4,967 16	467,653 0 0
1887	4,669 8	509,009 0 0	291 13	16,411 0 0	4,961 1	525,420 0 0
1888	4,562 2	569,182 0 0	247 8	13,314 0 0	4,809 10	582,496 0 0
	89,640 8½	7,673,293 0 0	17,019 1	837,079 9 0	106,659 9½	8,510,372 9 0

During the year 39 assays of tin ore were made in the Department as follows:—

18 yielded nil.

21 „ as follows:—

Locality.	Description of Mineral.	Per cent. metallic tin.
Armidale	Stream tin ore	66·4
Near Baldean	Quartz and felsite, with oxide of tin and fluor spar	11·4
„	Granite, with oxide of tin	2 5
Bingera	Lode tin	26·7
Emmaville (Glen Creek)	„	29·8
„	Fibrous tourmaline with oxide of tin	13·1
Kiandra	Granite, with garnets, and „	21·4
Mudgee	Iron and zircon sand, „	5·6
Nine-mile (Deepwater)	Ferruginous quartz, with tin-stone	48·4
„ „	Greisen, with tin-stone	2·8
„ „	„	2·3
„ „	„	0·49
Tamworth	Black sand, chiefly titanic iron and oxide of tin	19·2
Temora	Stream tin	54·2
Tent Hill	Chlorite rock, with oxide of tin	26·4
Tingha	Stream tin sand	39·6
„	Quartz, with tin-stone	12·1
Tumberumba	Gem sand, with resinous stream tin	40·2
Tumut	Stream tin	74·2
„	Micaceous quartz, with oxide of tin	8·1
Warialda	Lode tin in greisen	37 1

COPPER.

The following is an extract from the Reports of the Wardens and Mining Registrars:—Tuena division: The Cordillera Co. extracted 220 tons of copper from their ore. Only 24 men are employed at the Peelwood Mine. The Burraga Mine was in full work during the whole year. The yield of copper was 499 tons, valued at £36,000. The deepest shaft is 300 feet; at that depth the lode is 15 feet wide. The

New

New Burraga Co. is sinking two shafts, and it is reported they have struck 12 per cent ore at 40 feet. The Milburn Creek Mine obtained 13 tons of copper, valued at £975. On Mr. M'Killop's property, at Carcoar, some good looking copper ore has been raised from a lode discovered on the river bank. Wellington division.—Several companies have been doing good work during the year. The Wilkinson Co. were raising ore, and a smelting furnace has been erected. The Belara Mine put out 1,400 tons of ore, 840 tons of which was smelted, yielding 70 tons copper, valued at £5,250. Dubbo division.—A copper lode has been discovered near the Guerie railway station. This lode is 2 feet 6 inches wide, assays from which ranged from 18 to 30 per cent. copper. The Rose Hill Co. has raised 4 tons, and sent it to Newcastle to be smelted. Thirty-four miles north-west of Condobolin, near the gate of the Melrose run, a copper lode has been discovered, assays from which are said to have shown 27 per cent. copper, 9 per cent. lead, and 6 oz. silver per ton.

At the Nymagee mine 12,600 tons of ore was raised and smelted, yielding 1,300 tons of copper valued at £93,276. This shaft is 700 feet deep, the deepest level 618 feet; width of lode, 14 to 20 feet.

At Hermitage Plains a large quantity of ore has been brought to grass, and the Company is erecting a small furnace. The Great Cobar Co. raised 13,210 tons of ore, from which 1,005 tons of copper, valued at £60,300, was obtained. The shaft is 566 feet deep, the deepest shaft 420 feet, the width of lode from 2 to 50 feet. In the month of October a trial was made of about 12 tons of Dubbo coal in the Reverberatory furnaces blacksmiths' shop and locomotives, the result being highly satisfactory. If the railway were extended to Cobar it would not only do much to open up the coal-mines in the Dubbo district, but it would overcome the difficulty of procuring fuel to carry on the work of the Great Cobar Mine. The New Mount Hope Co. smelted 1,187 tons ore, which produced 137 tons of copper, valued at £8,900. The Great Central Mine was at work eleven months, during which time they produced 142 tons 8 cwt. of fine copper. The Frogmore Co. was engaged most of the year in sinking a new shaft, to a depth of 250 feet, and repairing or rebuilding furnaces. They raised 130 tons of ore. A rich lode of copper is now being worked in the Great Northern Mine (Fairfield). 20 tons of the ore treated at Newcastle yielded over 21 per cent. of copper (more recent assays show 18 to 26 per cent of copper). The lode, 4 feet wide, consists of carbonate and sulphide of copper, containing a little gold. There are several other good looking copper lodes in the mine.

TABLE showing the quantity and value of Copper, the produce of the Colony, exported from the Colony of New South Wales, from 1858 to 1888.

Year.	Ingots.		Ore and Regulus.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons cwt.	£	Tons cwt.	£	Tons cwt.	£
1858	.....	.....	58 0	1,400	58 0	1,400
1859	30 0	578	....	.....	30 0	578
1860	... .	.....	43 0	1,535	43 0	1,535
1861	.....	.....	144 0	3,390	144 0	3,390
1862	.....	.....	213 0	5,742	213 0	5,742
1863	23 0	1,680	114 0	420	137 0	2,100
1864	54 0	5,230	.....	.....	54 0	5,230
1865	247 0	15,820	22 0	545	269 0	16,365
1866	255 0	18,905	23 0	1,885	278 0	20,790
1867	393 0	30,189	0 2	5	393 0	30,194
1868	644 0	23,297	172 0	4,000	816 0	27,297
1869	1,980 0	74,605	104 0	2,070	2,084 0	76,675
1870	994 0	65,671	6 0	60	1,000 0	65,731
1871	1,350 0	87,579	94 0	1,297	1,444 0	88,876
1872	1,035 0	92,736	417 0	13,152	1,452 0	105,888
1873	2,795 0	237,412	51 0	1,690	2,846 0	239,102
1874	3,638 0	311,519	522 0	13,621	4,160 0	325,140
1875	3,520 0	297,334	157 0	4,356	3,677 0	301,690
1876	3,106 0	243,142	169 0	6,836	3,275 0	249,978
1877	4,153 0	307,181	360 0	17,045	4,513 0	324,226
1878	4,983 0	337,409	236 0	7,749	5,219 0	345,158
1879	4,106 15	256,437	36 7	915	4,143 2	257,352
1880	5,262 10	359,260	131 18½	4,799	5,394 8½	364,059
1881	5,361 0	350,087	132 16	4,975	5,493 16	355,062
1882	4,865 3	321,887	93 1	2,840	4,958 4	324,727
1883	8,872 17	574,497	84 10	2,704	8,957 7	577,201
1884	7,286 6	415,601	18 18	578	7,305 4	416,179
1885	5,745 5	264,905	0 15	15	5,746 0	264,920
1886	3,968 18	166,429	57 18	1,236	4,026 8	167,665
1887	4,463 19	195,752	299 8	3,350	4,763 7	199,102
1888	3,786 1	272,110	113 6	2,924	3,899 7	275,034
	82,918 14	5,327,252	3,873 19½	111,134	86,792 3½	5,438,386

The output of copper during 1888 was less than any previous year since 1876, but the value of the output exceeds that of any year since 1886. This is the result of certain arrangements in Europe for

for regulating the market price of copper, which are now understood to be at an end. Unless something be done, either to increase the present price of copper, or to reduce the cost of production, it is probable that the output of the current year will show a more serious decrease. This would be matter for serious regret, as affecting a very large amount of capital invested and the employment of a large number of miners.

During the year, 59 assays of copper ore were made by this Department, as follows:—

Locality.	Description of Mineral.	Per cent. metallic copper.	Per Ton.	
			Gold.	Silver.
			oz. dwt. gr.	oz. dwt. gr.
Bathurst	Quartz veinstone, in fine-grained trachyte, with copper glance, and carbonates of copper.	42·04	.....	.....
„	Ferruginous quartz, with sulphides of copper	20·25	trace.	7 6 22
„ (Perth)	Quartz, with copper and iron pyrites	19·6		
„ „	„ and brown iron ore, with copper pyrites, redruthite, and stains of green carbonate of copper.	15·72	nil.	2 14 8
Bingera	Iron ore, with blue and green carbonates of copper	26·1	.....	.....
„	Copper pyrites, with blue and green carbonates of copper	24·67	0 3 0	1 12 16
„ (Spring Creek.	„ with grey sulphide and stains of blue and green carbonate of copper.	32·0	nil.	nil.
„ „	Sulphide, with a little blue and green carbonate of copper	24·5	0 8 16	1 8 4
Blayney	Magnetic iron, with green carbonate of copper	20·2	0 3 0	0 10 21
Booroolong	Red oxide, with green carbonate of copper	67·77	nil.	nil.
Bourke	Lodestuff, consisting of thin veins and fragments of quartz, interlaminated with chloride schist, and stained with blue and green carbonates of copper.	15·25	trace.	0 8 16
Braidwood (Mulloon Creek).	Quartz, with earthy-blue and green carbonates of copper	22·45	trace.	nil.
Captain's Flat	Copper pyrites, and a little green carbonate of copper in quartz	32·9	nil.	nil.
Cargo	Grey sulphide, with a little copper pyrites and carbonate of copper.	3·31	„	„
Carr's Creek	Copper gossan	8·9	trace.	0 10 21
Cowra	Grey sulphide of copper	33·1	0 16 6	6 0 18
„	Ferruginous quartz and felspathic lodestuff, with green carbonate of copper.	15·9	nil.	trace
Cudgegong	Copper and iron pyrites	7·1	.....	.....
Denisontown	Blue and green carbonates, with grey sulphide of copper	32·81	trace.	10 7 5
Drake	Grey sulphide, with carbonates of copper	52·85	nil.	5 17 14
Dubbo	Ferruginous blue and green carbonates of copper	43·15	„	10 17 21
Forbes	Blue and green carbonates of copper in siliceous gangue	22·5	0 4 6	2 3 13
Gundagai	Sulphide and carbonates of copper	17·1	nil.	nil.
Katombal Mts.	Copper pyrites in diorite	16·9	„	„
Little Wiseman's Creek.	„ and green carbonate of copper in quartz	28·65	trace.	5 19 8
Molonguli (parish-county Bathurst)	Quartz veinstone, in fine-grained trachyte, with redruthite and carbonates of copper.	42·04	.....	.....
„ „	Ferruginous felspathic rock, with red oxide, grey sulphide, and stains of blue and green carbonate of copper.	9·35	trace.	trace.
Nangeribone	Green carbonate of copper in felspathic schist	39·7	„	0 10 21
Nulga (parish-county Lincoln)	Copper pyrites, with a little grey sulphide	29·9	„	trace.
„ „	„ with quartz and felspathic rock	2·3	„	trace.
Orange (Bulga)	Oxide, with a little native copper	78·24	.....	.....
„ „	„ and green carbonate of copper in felspathic rock	60·6	.....	.....
Parkes	Ferruginous quartz, with carbonate, sulphide, and oxide of copper	15·96	trace.	trace.
„	Sulphide and carbonate of copper	29·6	„	4 18 0
Ponto	Copper pyrites, with a little quartz and felspathic material	18·05	„	nil.
Rockley	Green and a little blue carbonate of copper	31·05	„	1 1 16
Silverton (Balaklava).	Sulphide, carbonate, and oxide of copper, in quartz, with a little felspathic material.	36·46	„	trace.
Solomon Group (Christonal Island).	Black trap rock, with grey sulphide and green carbonate of copper	10·5	nil.	nil.
Spicer's Creek	Ferruginous felspathic rock and quartz (crushed)	4·51	trace.	trace.
Between Spicer's Creek and Bogandora.	Red oxide, with traces of blue and green carbonates of copper and quartz.	48·8	„	„
Tumut (Bombowlee).	Copper pyrites, with a little felspathic material	27·25	.....	.....
Wellington	Grey copper ore, in diorite	50·25	0 5 10	0 9 16
„	Ferruginous copper ore	36·65	nil.	nil.
„	Grey sulphide of copper, in epidote rock	36·69	trace.	1 1 16
„	Copper gossan	27·85	„	5 19 18
„	Ferruginous copper of ore	25·24	nil.	nil.
„	„ felspathic rock, with barytes, redruthite, and stains of green carbonate of copper.	24·92	trace.	3 9 16
„	Quartz, with carbonates of grey sulphide of copper	14·33	nil.	nil.
„	Grey sulphide, with red oxide and blue and green carbonates	8·2	„	„
„	Green silicious rock, containing sulphide, red oxide, and carbonates of copper.	3·2	„	„
„	Diorite, with calcite and native copper	2·02	„	„
„	Epidote rock, with specks of native copper	1·14	„	„
Yarrangobilly	Gossan, with copper pyrites and green carbonate of copper	10·3	trace.	„
Yeoval	Lodestuff, consisting principally of magnetic iron, with traces of green carbonate of copper.	4·1	nil.	„

Iron.

During the year, 3,747 tons of bar and rail iron were made by the Eskbank Iron Co., valued at £23,721 6s. 9d.

Seven assays were made by this Department during the year with the following results:—

Locality.	Description of Mineral.	Per cent. ferric oxide Fe 2. O 3.	Remarks
Blayney (Brown's Creek.	Magnetic iron	69·77	
Kangaloon	Earthy hematite	94·67	
Marulan	Oxide of iron	14·08	
Mittagong (Hill Top)		20·48*	*Poor quality, with much insoluable matter, chiefly sand.
,, (Jellore)		31·36	
Newbridge	Brown iron ore	68·54	
Wollongong	Clay ironstone	23·04	

Cobalt.

What appears to be a most valuable lode of cobalt has been discovered on freehold land adjoining the town of Carcoar, on the south bank of the Belabula River. The lode has been traced more or less plainly for half-a-mile on the same property, where a shaft is now being sunk, and valuable ore got out, In the adjoining property a shaft is being sunk on what is considered a continuation of the lode.

During the year this Department made the following tests and analyses:—

Manganese, Cobalt, and Nickel.

3 tests were made for manganese, 6 for cobalt, and 7 for nickel.

Locality—Carcoar.
Description of mineral—
(1.) Danaite, (?) with a little erythrine and hornblende.
(2.) Danaite. (?)

Analysis—	(1.)	(2.)
Moisture	·12	2·18
Metallic arsenic	51·81	29·01
,, cobalt	10·447	13·83
,, nickel	·59	·39
,, iron	11·86	15·78
Alumina	trace.	trace.
Metallic manganese	nil.	nil.
,, copper	.....	trace.
,, antimony	.....	,,
,, gold	trace.	,,
,, silver	,,	nil.
,, calcium	nil.	·71
,, magnesium	1·48	·22
,, sulphur	1·52	11·24
,, gangue*	22·078	26·31
	99·905	99·67

* Insoluble in acids, and consisting of hornblende and silica.

Locality—Carcoar.
Description of Mineral—Molybdenite, with a little felspathic material and spots of erythrine.
Analysis—

Sesquioxide of cobalt	4·24 per cent.
Nickel	nil.
Silver	8 dwt. 4 gr. per ton.
Gold	trace (under 2 dwt. per ton).

Locality—Cooma.
Description of Mineral—Oxide of manganese.
Binoxide of manganese, 74·1 %.

Locality—Marulan District (Bungonia).

Mineral.	Cobalt sesquioxide, %.	Nickel protoxide, %.
Crushed cobaltiferous manganese oxide	3·23	·4
,, ,,	2·61	·35
,, ,,	2·14	·4

Locality—Cowra.
Description of Mineral—Green coloured mineral.
A qualitative analysis was made, with the result that nickel, arsenic, and a trace of cobalt were found present. The bulk of the mineral consists of mispickel, containing cobalt and a small percentage of nickel; also much gangue. The mineral was much decomposed in places, and the green mineral was visible where this decomposition had taken place. From the results obtained this green substance is probably nickel bloom.

Plumbago.

Plumbago exists in large quantities at Undercliff, between Wilson's Downfall and Rivertree.

During the year the following analyses were made in this Department:—

Locality—Grafton.
Description of Mineral—Felspathic graphite.
Analysis—

Moisture (at red heat)	8·77
Silica	27·96
Alumina	15·93
Oxide of iron	trace.
Lime	·96
Magnesia	nil.
Carbon	46·28
	99·90

Locality—Mudgee.
Description of Mineral—Plumbago clay.
Analysis—

Moisture	7·35
Carbon	34·40
Gangue	58·25
	100·00

Antimony.

Antimony was discovered during the year at Ford's Creek, midway between Gulgong and Mudgee. Several parties are working there, it is said, with favourable results. Near the South Arm of the Bellinger River a large reef of rich antimony ore was discovered. A shaft has been sunk to a depth of 50 feet, and about 100 tons of ore raised. Another reef was discovered on the Nambucca. The Corrangula Antimony Mines are likely soon to be worked again; the furnaces and plant are being put in order The Eleanora Company put out 133 tons of antimony ore. Furnaces were being erected for extracting the antimony from the stone before crushing for gold.

During the year six assays were made in this Department, as follows:—

Locality.	Description of Mineral.	Per cent. Antimony.	Per Ton.	
			Gold.	Silver.
				oz. dwt. gr.
Bellinger	Sulphide of antimony	66·8	nil.	nil.
Lismore	" " with a little quartz	45·5	"	10 1 12
Nambucca (west of Bowra)	" " "	64·3	"	nil.
New England (Stonybatta)	" " "	55·71	"	44 2 0
Two-mile Flat	" " in quartz	29·36	trace.	nil.

Bismuth

Has been found near Nimitybelle, in the Southern district. 47¾ tons of bismuth was raised at the Kingsgate Mine, near Glen Innes.

During the year twelve tests were made by this Department for bismuth, and two for tellurium:—

Locality.	Description of Mineral.	Per cent. metallic bismuth.	Gold.	Silver.	Per cent. metallic tellurium.
			oz. dwt. gr.	oz. dwt. gr.	
Bowen	Ferruginous quartz and felspathic rock, with carbonate of bismuth.	17·62	nil.	trace.	.....
Captain's Flat	Carbonate of bismuth with tetradymite	19·26	.....	.....	.....
"	" "	27·88	nil.	nil.	10·42
"	Clay, with carbonate of bismuth and tetradymite	16·9	trace.	2 3 13	7·04
"	Carbonate and sulphide of bismuth	60·2	nil.	nil.	.....
Glencoe	Quartz, with native, oxide, and carbonate of bismuth (concentrated).	62·0	4 11 10	1 1 16	.....
"	Quartz, with carbonate of bismuth (crushed)	5·91	nil.	nil.	.....
"	" "	1·44	trace.	"	.....
Glen Innes (Mt. Mitchell)	Oxide and carbonate of bismuth (concentrated)	66·2	nil.	"	.....
Nimitybelle	Quartz, with sulphide of bismuth	3·67	"	"	.....
Tingha	Ferruginous quartz, with native, oxide, and carbonate of bismuth.	5·36	0 13 6	trace.	.....
"	Ferruginous quartz with native bismuth	1·06	nil.	nil.	.....

Salt.

Four hundred acres of land was applied for under lease, in the Maitland district, for the purpose of working a deposit of salt.

Alum.

Alum.

The Alum Company has expended on their mine, which comprises 300 acres, a large sum of money, but they still require additional machinery, which is being procured. Refined about 20 tons, and samples have been sent to Melbourne, England, Germany, China, and other places, where they were regarded as highly satisfactory. They have 750 tons calcined awaiting the additional machinery.

During the year the following miscellaneous tests and analyses were also made by Mr. J. C. H. Mingaye, F.C.S., Assayer and Analyst in this Department:—

Chromium, Tungsten, and Uranium.

Locality—Barraba, Fairfield.

	Description of mineral.
Chromite	40·18 per cent. sesquioxide of chromium.
Black sand	No tungstic acid.
Ferruginous claystone	No uranium.
Schist	,,

Limestone, Shale, &c.

During the year ten analyses were made as follows:—

Locality—Corowa.
Description of mineral—Dolomite.
Analysis—

Carbonate of lime	53·05
,, magnesia	42·03
Insoluble in acids (sand)	3·72
Oxide of iron, with traces of alumina	1·38
	100·18

Locality—Cowra.
Description of mineral—Crystallized calcite.
Analysis—

Moisture	·57
Carbonate of lime	80·8
Oxide of iron	15·09
Alumina	·9
Silica	1·49
Phosphoric anhydride	·43
Carbonate of magnesia and undetermined	·72
	100·00

Copper Shale.

Locality—Dent's Creek, Holt-Sutherland Estate.
Description of mineral—Dark greenish and purplish grey clay shale, with a little metallic copper, from the diamond-drill bore at a depth of 1,780 feet.
Analysis—

Combined moisture	5·32
Moisture at 100° C.	3·38
Silica	56·28
Alumina	24·21
Oxide of iron	7·34
Metallic copper	·08
Magnesia	2·36
Lime	1·10
	100·07

Remarks:—Two large assays were made for gold and silver, but neither of these metals was found to be present.

Locality—Mandurama (Cliefden Station).
Description of mineral—Limestone.
Analysis—

Moisture	·07
Carbonate of lime	65·06
,, magnesia	3·95
Silica	17·83
Oxide of iron and alumina	13·32
Phosphoric anhydride (P_2O_5)	·14
	100·37

Locality—near Mudgee.
Description of mineral—White powder.
Analysis—

Moisture at 100° C.	2·70
Combined moisture	1·24
Carbonate of lime	67·97
,, magnesia	2·62
*Alumina	8·20
Silica	17.27
	100·00

* Containing a trace of oxide of iron.

Remarks:—The carbonate of lime and insoluble matter being in such a fine state of division, this mineral if mixed with the right proportion of ingredients, and burnt, should make a good cement. The insoluble in acids consists of silicate of alumina (clay).

Locality

Locality—near Mudgee (Pine Ridge).
Description of mineral—White powder.
Analysis—

Moisture at 100° C.	·18
Carbonate of lime	50·04
,, magnesia	36·08
Silica	6·21
Alumina	6·11
Oxide of iron ($Fe._2O_3$)	1·27
	99·89

Locality—Shaking Bog, near Tumut.
Description of mineral—Kaolin.
Analysis—

Moisture at 100° C.	6·10
Combined moisture	10·19
Silica	44·46
Alumina	37·85
Oxide of iron	a minute trace.
Lime	·22
Magnesia	trace.
Alkalies, &c.	1·18
	100·00

Remarks:—This is an excellent sample of clay, being white in colour, practically free from iron and grit, and containing all the constituents in proportion to the best Cornish and Chinese clays. The following table exhibits the composition of some of the more important clays used in the manufacture of porcelain. The first two are results obtained by Ebelmen and Salvetat the other from an analysis made in Richardson's laboratory, and are quoted in the second volume of the English translation of Knapp's Technological Chemistry.

	Washed Kaolin.			New South Wales—Shaking Bog, near Tumut.
	Chinese. I.	St. Yrieux. II.	Cornish. III.	
Silica	50·5	48·37	46·32	44·46
Alumina	33 7	34 95	39·74	37·85
Oxide of iron	1·8	1·26	·27	a minute trace.
Lime	.....	.....	·36	·22
Magnesia	0 8	trace.	·44	trace.
Potash	1 9	2·40	12·67	1·18
Soda				
Water	11·2	12·62		16·29

Locality—Rooty Hill.
Description of mineral—Siliceous limestone.
Remarks:—This sample contains 58·54 per cent. of silica, consisting mostly of coarse sand, and is not suitable for the manufacture of cement.

Locality—Strathbogie.
Description of mineral—Argillaceous limestone, with a little free silica.
Partial Analysis—

Silica	48·72
Carbonate of lime	22·55
Alumina	17·69
Oxide of iron	1·58

Locality—Wollongong.
Description of mineral—Grey limestone.
Analysis—

Carbonate of lime	46·41
,, magnesia	1·33
Alumina	10·02
Oxide of iron	2 92
,, manganese	trace.
Silica	36·55
Phosphoric anhydride	trace.
Moisture, organic matter and alkalies	2 77
	100·00

Water.

During the year 13 analyses were made of water, as follows:—

Broken Hill.—From Jenkin's, Kidwell's, Maiden's, and Walsh's Quarries.

The samples were received, supplied in dirty whisky bottles, corked with corks which had been previously used, some of them being in a foul state, making it impossible to determine the free and albuminoid ammonia, viz., organic impurities, so that reliance cannot be placed on the results. All these waters contain a large amount of saline matter for potable waters, which renders them very unsuitable for human consumption, and, if no other be obtainable, they should be well boiled and filtered before use, as by these means some of the salts and suspended matter would be separated. With strangers drinking a quantity of these waters, especially that from Marden's Quarry, containing 24·6 grains per gallon of sulphate of magnesia, it would tend to cause diarrhœa.

Jenkins Quarry—

Soluble solids	107·724	grains per gallon.
Insoluble solids	11·220	,,
Total solids	118·944	,,
Chlorine	37·2	,,

Analysis

Analysis of Total Solids.

Silica	1·344 grains per gallon.
Alumina	·578 ,,
Oxide of iron	trace.
Carbonate of lime	6·972 ,,
Carbonate of magnesia	2·326 ,,
Sulphate of magnesia	8·170 ,,
Sulphate of lime	trace.
Sulphate of soda	17·850 ,,
Chloride of sodium	61·300 ,,
Alkaline carbonates, &c.	20·404 ,,
Total solids	118·944 ,,

Remarks.—Water clear, with a small amount of suspended matter. On ignition, the residue darkened, giving off a foul smell somewhat resembling burnt wool, thus showing the presence of organic impurities. No poisonous metals present.

Kidwell's Quarry—

Soluble solids	144·99 grains per gallon.
Insoluble solids	15·036 ,,
Total	160·026 ,,
Chlorine	55·7 ,,

Analysis of Total Solids.

Silica	1·484 grains per gallon.
Alumina	·728 ,,
Oxide of iron	trace.
Carbonate of lime	11·172 ,,
Carbonate of magnesia	1 652 ,,
Sulphate of magnesia	11·650 ,,
Sulphate of lime	strong trace. ,,
Sulphate of soda	22·160 ,,
Chloride of sodium	91 740 ,,
Alkaline carbonates, &c.	19·440 ,,
Total solids	160 026 ,,

Remarks.—Water clear, with a small amount of suspended matter. The residue darkened on ignition, showing the presence of organic matter. No poisonous metals present. The quantity received was rather small for a thorough analysis.

Maiden's Quarry—

Soluble solids	134·596 grains per gallon.
Insoluble solids	19·460 ,,
Total	154 056 ,,
Chlorine	55·8 ,,

Analysis of Total Solids.

Silica	1·274 grains per gallon.
Alumina	·882 ,,
Oxide of iron	trace.
Carbonate of lime	16·520 ,,
Carbonate of magnesia	·784 ,,
Sulphate of magnesia	24·600 ,,
Sulphate of lime	2·470 ,,
Sulphide of soda	8·530 ,,
Chloride of sodium	91 780 ,,
Alkaline carbonates, &c.	7·216 ,,
Total solids	154·056 ,,

Remarks.—Water clear, with a small amount of suspended matter. On uncorking the bottle, the water had a strong odour, due to sulphuretted hydrogen. The quantity received was rather small for a thorough analysis. No poisonous metals present.

Walsh's Quarry—

Soluble solids	112·412 grains per gallon.
Insoluble solids	11·880 ,,
Total	124·292 ,,
Chlorine	38 8 ,,

Analysis of Total Solids.

Silica	1 148 grains per gallon.
Alumina	·672 ,,
Oxide of iron	trace.
Carbonate of lime	6 300 ,,
Carbonate of magnesia	3·760 ,,
Sulphate of magnesia	7·550 ,,
Sulphate of lime	trace. ,,
Sulphate of soda	23 950 ,,
Chloride of sodium	63 930 ,,
Alkaline carbonates, &c.	16·982 ,,
Total solids	124 292 ,,

Remarks.—Water clear, with a small amount of suspended matter. No poisonous metals present.

BROKEN HILL.—From Broken Hill, Brewery, Silverthorne's Well, and Stephen s Creek Stone Dam.

The manner in which these samples are taken, viz., bottling in dirty spirit bottles and corked with dirty corks which had been previously used, renders the estimation of the organic impurities, *i.e.*, free and albuminoid ammonia, of little value, as from the corks alone sufficient contamination might be given to the waters to condemn them for drinking purposes. The total solids in the first two samples are high for potable waters. The amount of free ammonia found in the water from Stephen's Creek and Silverthorne's Well condemns them for drinking purposes; but, as before stated, part of the organic contamination may have been derived from the careless way in which the samples were put up. I am of opinion, however, that from the foul odour given off from the samples on evaporation and the darkening of the residues on ignition, that not all is due to the corks alone, also, that they are not desirable waters, by any means, for human consumption. With reference to the sample taken from a soakage hole in Stephen's Creek, it is a very impure sample of water. On opening the bottle, stinking, and, on evaporating some down to dryness, it gave a residue which had a very foul odour, darkening strongly on ignition, thus showing the presence of much organic matter. The quantity of albuminoid ammonia found in this sample utterly condemns the water for drinking purposes, the analysis pointing out contamination from sewage matter, or some organic matter such as decomposed animal matter.

Brewery—

Soluble solids	123·526	grains per gallon.
Insoluble solids	19·246	,, ,,
Total solids	142·772	,, ,,
Free ammonia	·0026	parts per 100,000.
Albuminoid ammonia	·0260	,, ,,
Chlorine	54	grains per gallon.

Analysis of Total Solids.

Silica	·656	grains per gallon.
Alumina	·308	,, ,,
Oxide of iron	trace.	
Carbonate of lime	15·036	,, ,,
Carbonate of magnesia	3·146	,, ,,
Sulphate of magnesia	15·950	,, ,,
Sulphate of lime	trace.	
Sulphate of soda	6·111	,, ,,
Chloride of sodium	89·810	,, ,,
Alkaline carbonates, &c.	11·755	,, ,,
Total solids	142·772	,, ,,

Remarks.—Water cloudy, with a small amount of matter in suspension. The water gave off a very foul odour on opening the bottles. No poisonous metals detected.

Silverthorne's Well—

Soluble solids	101·92	grains per gallon.
Insoluble solids	16·548	,, ,,
Total solids	118·468	,, ,,
Free ammonia	·01	parts for 100,000.
Albuminoid ammonia	·032	,, ,,
Chlorine	45·2	grains per gallon.

Analysis of Total Solids.

Silica	·630	grains per gallon.
Alumina	·210	,, ,,
Oxide of iron	.....	,, ,,
Carbonate of lime	11·256	,, ,,
Carbonate of magnesia	4·452	,, ,,
Sulphate of magnesia	4·250	,, ,,
Sulphate of lime	2·172	,, ,,
Sulphate of soda	11·180	,, ,,
Chloride of sodium	74·400	,, ,,
Alkaline carbonates, &c.	9·918	,, ,,
Total solids	118·468	,, ,,

Remarks.—Water cloudy, with a small amount of matter in suspension. It had a very bad odour on opening the bottle, and the residue darkened strongly on ignition, thus showing the presence of organic matter.

Stephen's Creek—

Soluble solids	6·496	grains per gallon.
Insoluble solids	11·284	,, ,,
Loss on ignition	3·640	,, ,,
Total solids	21· 42	,, ,,
Free ammonia	Nil.	
Albuminoid ammonia	·066	parts per 100,000.
Chlorine	3· 8	grains per gallon.

Remarks.—Water cloudy with a fine reddish coloured clay in suspension. On opening the bottles the water had a foul odour, and on evaporating some down to dryness it gave a residue which stank, and on ignition strongly darkened, thereby showing the presence of much organic matter. The insoluble solids were found to consist of a fine reddish clay, carbonates of lime and magnesia. The soluble of chlorides of sodium, with traces of sulphates of lime, magnesia, and alkaline nitrates and nitrites. No poisonous metals detected.

Broken Hill, from portion 86. Water taken from a bore in Limestone Quarry—

Soluble solids	136·360	grains per gallon.
Insoluble solids	13·916	,, ,,
Total solids	150·276	,, ,,
Free ammonia	·002	parts per 100,000.
Albuminoid ammonia	trace.	
Chlorine	48· 8	grains per gallon.

Analysis

Analysis of Total Solids

Silica	·120	grains per	gallon
Alumina	028	,,	,,
Oxide of iron	trace		
Carbonate of lime	8 632	,,	,,
Carbonate of magnesia	4 000	,,	,,
Sulphate of magnesia	6 005	,,	,,
Sulphate of lime	trace		
Sulphate of soda	30 803	,,	,,
Chloride of sodium	80 410	,,	,,
Alkaline carbonates, &c	19 278	,,	,,
Total solids	150 276	,,	,,

Remarks —Sample received sealed, water clear and free from sediment No smell observed on heating some in a closed flask at 100 F. No poisonous metals detected The analysis shows the water to be high in saline matter, as is the case with most of the samples hitherto examined from the Broken Hill District As regards organic impurities, it is exceptionally free. This water will exert no injurious effect on human beings or stock, but at the same time it should be used for domestic purposes only when no other better supply is obtainable

Myall Creek—

Soluble solids	189 8	grains per	gallon
Insoluble solids	16	,,	,,
Total solids	205 8	,,	,,
Chlorine	54 5	,,	,,

The soluble solids consist of chlorides of sodium and magnesian alkaline carbonates, organic matter, &c ; the insoluble of carbonates of lime and magnesia, alumina, &c

No instructions were received with this water, the sample being sent in a spirit bottle corked with a dirty cork, and was much too small for a proper examination

Nyngan— WATER FOR STOCK PURPOSES.

Soluble solids	1473 92	grains per	gallon
Insoluble solids	79 38	,,	,,
Total solids	1553 3	,,	,,
Chlorine	77 2	,,	,,

The soluble solids were found to consist chiefly of chlorides of magnesia and sodium, sulphates of lime and soda, nitrates, organic matter, &c The insoluble of silica, alumina, trace of iron, carbonates of lime, and magnesia

Remarks —Water turbid, with a small quantity of suspended matter On heating in a closed flask the water gave off a strong aromatic smell, somewhat resembling one of the oils yielded from the Eucalypti, as also a foul smell on first opening the bottle On tasting the water, it had a strong saline taste, and on ignition the residue darkened considerably, thereby showing the presence of much organic matter With the large amount of saline matter, consisting as it does of chlorides of magnesium and sodium and sulphates of lime and soda, it is not desirable that this water be used for watering stock, as also it is totally unfit for human consumption There is no way of completely purifying this water except by distillation.

Rylstone—

Soluble solids	652 40	grains per	gallon.
Insoluble solids	30 24	,,	,,
Total solids	682 64	,,	,,
Sulphuric anhydride (SO_3)	310 807	,,	,,
Chlorine	95 2	,,	,,

The soluble solids were found to consist of chiefly sulphate of magnesia, chloride of sodium, sulphate of lime, &c. the insoluble of carbonates of lime and magnesia, with a small quantity of alumina, silica, &c

Remarks —May be classed as a mineral water, being strongly impregnated with a large proportion of salts, and should possess medicinal qualities The water had a peculiar harsh taste, due to Epsom salts in solution, a large proportion of the sulphuric acid present being combined with magnesia The quantity sent was much too small for a thorough analysis.

Wilcannia—Water from Tarella Total solids, 233 24 grains per gallon—

Analysis of Total Solids

Silica	1 526	grains per	gallon.
Alumina	·448	,,	,,
Oxide of iron	trace		
Carbonate of lime	23 576	,,	,,
Carbonate of magnesia	6 37	,,	,,
Sulphate of magnesia	42 391	,,	,,
Sulphate of lime	1 941	,,	,,
Chloride of magnesium	6 994	,,	,,
Chloride of sodium	140 986	,,	,,
Alkaline carbonates, &c	9 008	,,	,,
Total solids	233 24	,,	,,

Remarks —Water free from odour, and clear, with a small amount of sediment at the bottom of the jar. This water contains a large amount of saline matter, which renders it unsuitable for human consumption, and it should not be used for watering stock if better water is obtainable No poisonous metals detected

Wilcannia—

Soluble solids	876 22	grains per	gallon.
Insoluble solids	20 48	,,	,,
Total solids	896 7	,,	,,

Soluble solids consisted chiefly of sulphate of magnesium, sulphate of lime, chloride of sodium, &c ; the insoluble of clay, &c.

Remarks —The water had a very foul smell, due to sulphuretted hydrogen With the large amount of sulphate magnesium present, it is not advisable to use this water for watering stock. The action it has on cattle is not stated, but it is no doubt due to the quantity of sulphate of magnesium, which will tend to produce purging and diarrhœa. The quantity received was too small for a thorough analysis.

Miscellaneous.

Locality—Temora.

Description of mineral—White crystalline mineral, stained blue and green in places.

On submitting same to qualitative analysis the mineral was found to be silicate of zinc, probably willemite. The colour is due to copper stains.

Mineral for qualitative analysis and said to occur in New South Wales.

Found to consist of sulphides of antimony and nickel, very similar in appearance to a specimen found in South Australia, and presented to the Mining and Geological Museum some five years ago.

Locality—Capertee, near Mudgee.

Description of mineral—A white crystalline mineral.

Found to be an impure sulphate of alumina (alum), containing the following impurities:—Sand, sulphate of lime, magnesia, and a small quantity of alkaline salts.

Two samples of supposed natural dyes:—

(1.) Of a blue colour, slightly soluble in water. On examination this blue colouring matter was found to be ultramarine, a compound of sodium and aluminium silicates, with sodium pentasulphide.

(2.) Of a rose colour, largely soluble in water. On examination this rose colouring matter was found to be rose aniline, arsenic being found present, it being one of the ingredients used in the manufacture of this dye. There was also a large amount of alumina present, which probably owes its presence in the sample to the dye having been mixed up with the ordinary alumina mordant.

The samples are evidently artificial.

Mount Morgan.

(1.) Mineral. On applying the tongue to this mineral it had a slightly acid taste, and on treating some of the mineral with water and filtering, the solution gave a slightly acid reaction to litmus paper. The soluble matter was found to be alum and sulphate of magnesia (Epsom salts).

(2.) Light green-coloured mineral. Colour was found to be due to a silicate of iron and alumina. Mineral insoluble in nitric and hydrochloric acid.

(3.) Pieces of wood taken from the timber used for supports in the Mount Morgan Mine, Queensland, tested for the presence of gold deposited from solution on the wood. The sample was submitted to a careful qualitative test, with the result that no trace of gold was found present. The wood was blackened, the stain in places having soaked through the pieces. This is no doubt due to the action of a salt of iron on the tannin of the wood.

(4.) Ferruginous clay-stone. Examination of colouring material:—A basic sulphate of iron of a yellow colour, nsoluble in water, soluble in hydrochloric acid. On exposing some of the mineral in a glass tube to a low red heat, it acquired the colour of rouge, and sulphurous and sulphuric oxides, together with a large amount of moisture, were given off.

Garnets from Silverton.

Silica	37·41
Alumina	26·81
Protoxide of Iron (Fe O)	33·33
Peroxide of Iron (Fe_2 O_3)	.....
Protoxide of manganese (Mn. O)	2·14
Oxide of Chromium	.. ...
Lime	.. ...
Magnesia	.....
	99·69

Many determinations of the specific gravity of these stones were made, which in every case were found to vary—no two determinations agreeing. Specific gravity from 3·887 to 4·32.

In conclusion, it affords me very great pleasure to submit the following summary of the mineral products up to the end of 1888, the value of which has reached nearly seventy-seven (77) millions sterling:—

Summary.

	Quantity.	Value.	Total Value.
		£ s. d.	£ s. d.
Quantity and value of gold prior to 1st January, 1888	9,885,094·25 oz.	36,863,717 9 1	
Quantity and value of gold raised in 1888	87,503·24 ,,	317,099 12 0	
Totals	9,972,597·49 oz.	37,180,817 1 1	37,180,817 1 1
Quantity and value of silver raised prior to 1st January, 1888	2,923,037·22 oz.	612,886 0 0	
Quantity and value of silver raised in 1888	375,063·70 ,,	66,668 0 0	
Totals	3,298,100·92 oz.	679,554 0 0	679,554 0 0
Quantity and value of coal raised prior to 1st January, 1888	39,892,861·97 tons.	19,699,108 19 5	
Quantity and value of coal raised in 1888	3,203,443·18 ,,	1,455,198 4 1	
Totals	43,096,305·15 tons.	21,154,307 3 6	21,154,307 3 6
Quantity and value of shale raised prior to 1st January, 1888	481,252 tons.	1,083,174 5 0	
Quantity and value of shale raised in 1888	34,869 ,,	73,612 0 0	
Totals	516,121 tons.	1,156,786 5 0	1,156,786 5 0
Quantity and value of copper exported prior to 1st January, 1888	tons cwt. Ingots 79,131 18 Ore and Regulus... 3,760 4½	5,163,352 0 0	
Quantity and value of copper exported in 1888	Ingots 3,786 1 Ore and Regulus... 113 6	275,034 0 0	
Totals	....	5,438,386 0 0	5,438,386 0 0

	Quantity		Value	Total Value
Quantity and value of tin exported prior to 1st January, 1888	Ingots	tons cwt 85,078 6	7,927,876 0 0	
	Ore and Regulus	16,771 13		
Quantity and value of tin exported in 1888	Ingots	4,562 2	382,496 0 0	
	Ore	247 8		
Totals			8,510,372 0 0	8,510,372 0 0
Quantity and value of iron made prior to 1st January, 1888	36,228 tons 15 cwt 0 qrs 6 lb		265,464 14 6	
Quantity and value of iron made during 1888	3,747 ,, 2 ,, 0 ,, 17 ,,		23,721 6 9	
Totals	39,975 tons 17 cwt. 0 qrs. 23 lb.		289,186 1 3	289,186 1 3
Quantity and value of antimony exported prior to 1st January, 1888	Metal	tons cwt. 473 13¼	67,239 0 0	
	Ore and Regulus	3,222 4		
Quantity and value of antimony exported in 1888	Metal	19 4	2,918 0 0	
	Ore	171 3		
Totals			70,157 0 0	70,157 0 0
Quantity and value of asbestos exported prior to 1st January, 1888	25 tons 18 cwt		488 0 0	
Quantity and value of asbestos exported in 1888				
Totals	25 tons 18 cwt		488 0 0	488 0 0
Quantity and value of bismuth exported prior to 1st January, 1888	104 tons 18 cwt.		20,575 14 0	
Quantity and value of bismuth exported in 1888	18 ,, 1½ ,,		3,911 0 0	
Totals	122 tons 19½ cwt.		24,486 14 0	24,486 14 0
Quantity and value of silver lead exported prior to 1st January, 1888	Metal	tons cwt. qrs lb. 13,231 2 1 0	1,193,463 0 0	
	Ore	15,894 14 2 7		
Quantity and value of silver-lead exported in 1888	Metal	18,102 5 0 0	1,075,737 0 0	
	Ore	11,739 7 0 0		
Totals			2,269,200 0 0	2,269,200 0 0
Value of sundry minerals exported prior to 1st January, 1888			41,057 0 0	
Value of sundry minerals exported in 1888			3,438 0 0	
Totals			44,495 0 0	44,495 0 0
				76,818,235 4 10

TABLE showing approximately the number of Miners employed in Gold-mining, the quantity of Gold won, the area of ground worked, and the value of Machinery in the Colony of New South Wales

District and Division	Alluvial Miners		Quartz Miners		Total Miners	Quantity of Gold			Price of Gold per oz		Value of Gold won	Auriferous ground worked	Quartz reefs proved to be auriferous	Value of Machinery.
	Europeans	Chinese	Europeans	Chinese		Alluvial	Quartz	Total	From	To				
	No	No	No	No	No	oz dwt gr	oz dwt gr	oz dwt gr	s	s	£ s d	sq miles	No	£
PEEL AND URALLA DISTRICT—														
Armidale Division					60			11,500 0 0		75/	43 122 10 0			....
Walcha ,,								100 0 0		73/3	366 5 0			
Bingera ,,	100	6	50		156	900 0 0	300 0 0	1,200 0 0		71/4½	4,282 10 0			2,200
Tamworth ,,			14		14									
Uralla ,,	225	25			250	820 0 0		800 0 0	75/	76/	3,145 10 0	10		3,500
Scone ,,			250		250		2,400 0 0	2,400 0 0	70/	72/	8,400 0 0			2,000
Glen Innes ,,	40				40	400 0 0		400 0 0		75	1,500 0 0			.
Nundle ,,	221		100		321									
	586	31	414		1,091	2,120 0 0	2,700 0 0	16,400 0 0	70/	76/	60,816 15 0	10		7,700
MUDGEE DISTRICT—														
Gulgong Division	228				228	1,258 15 16		1,258 15 16		77/	4,884 8 0			....
Mudgee ,,					300			5,943 0 0		77/6	20,057 12 6			
Tomingley ,,	120		10		130		767 13 0	767 13 0		77/10	2,987 13 11	3	2	3,000
Hargraves ,,	147	53	66		266		302 10 0	302 10 0	72/	77/6	1,134 7 6	20	10	10,600
	495	53	76		924	1,258 15 16	1,070 3 0	8,271 18 16	72/	77/10	29,064 1 11	23	12	13,600

District and Division	Alluvial Miners		Quartz Miners		Total Miners	Quantity of Gold.			Price of Gold per oz		Value of Gold won	Auriferous ground worked	Quartz reefs proved to be Auriferous	Value of Machinery.
	Europeans	Chinese.	Europeans	Chinese		Alluvial	Quartz	Total.	From	To				
	No	No.	No	No	No	oz dwt gr	oz dwt gr	oz dwt gr	s	s	£ s d	sq miles	No	£
Bathurst District—														
Blayney Division	76		56		132	276 12 18	733 0 0	1,009 12 18	60/	72/6	3,165 0 0	5	3	11,000
Carcoar ,,					100			2,890 0 0	65/	79/	10,115 0 0			
Mount McDonald Division	12		45		57		1,130 1 3	1,130 1 3	70/	78/6	4,237 0 0		10	3,250
Trunkey Division	159	10	36		205	298 4 1	43 10 0	341 14 1	75/6	79/6	1,322 6 8	20	27	14,350
Mitchell ,,	65	10	49		124	1,015 0 0	455 0 0	1 470 0 0	65/	75/	5,145 0 0	4	3	43,860
Tuena ,,	30	20	40		90	1,010 0 0	170 0 0	1,180 0 0	72/6	77/6	4,200 0 0	12	2	3,500
Oberon ,,	5	8	37		50		15 0 0	15 0 0	75/	80/0	55 0 0		2	4,500
Rockley ,,	38	2			40	196 4 2		196 4 2		78/6½	735 17 10			225
Burraga ,,	26	1			27	133 12 0		133 12 0		75/	501 0 0	40		
Cowra North Division	6		20		26	40 0 0	11 10 0	51 10 0	77/6	80/	196 0 0			2,000
Bathurst ,,	15	6	25		46	435 4 14	300 0 0	735 4 14	75/		2,760 0 0			1,500
Orange ,,					500			2,588 7 10	59/6		7,702 6 5			28,000
Cowra ,,	12		3		15	30 0 0	60 0 0	90 0 0	80/	82/6	360 0 0	4	1	400
	444	57	311		1,412	3,434 17 11	2,908 1 3	11,821 6 0	59/6	82/6	40,494 10 11	85	48	112,585
Lachlan District—														
Cudal Division			20		20		165 0 0	165 0 0		77/	635 5 0			100
Murrumburrah Division	20		130		150	218 5 18	1,718 5 12	1,936 11 6	70/	77/	7,866 4 0		1	25,000
Grenfell Division	50		66		116	102 15 0	63 16 0	166 11 0	76/6	77/	641 4 5	20		3,810
Barmedman Division			52		52		989 4 15	989 4 15			3,833 5 5	3	13	9,950
Temora ,,	55		100		155			1,771 0 0		77/6	5,862 12 6			3,000
Parkes ,,	70		96		166	582 12 2	3,756 13 22	4,339 7 0		75/	16,272 11 3	50	26	3,000
Young ,,					48			705 11 0		78/	2,747 16 2			
Forbes ,,	70		24		94	549 11 1	402 18 14	952 9 15	40/	78/	3,120 16 0	2	7	11,550
Molong ,,	50				50		50 0 0	50 0 0		80/	200 0 0	4	1	1,000
Canowindra ,,	6		80		86	30 0 0	1,838 12 0	1,868 12 0	55/	80/	7,382 7 0			8,200
Junee ,,	12		35		47	27 0 10	205 1 20	232 2 6	70/	77/6	835 17 6		9	2,300
	333		603		984	1 510 5 7	9 189 12 11	13,176 8 18	55/	80/	49,397 15 7	79	57	67,910
Tumut and Adelong District														
Tumut Division	99	1	8		108	138 15 0		138 15 0	72/6	75/	517 10 0			
Gundagai Division	10		150		160									3,000
Tarcutta ,,			4		4		20 0 0	20 0 0	77/10	80 6	82 10 0			1,850
Adelong ,,	81	7	100		188	350 0 0	1,007 7 23	1,357 7 23	75/	81/	5,259 18 4	40	53	40,000
Albury ,,	3	6	45		54	25 0 0	400 0 0	425 0 0	75/	81/10	1 625 12 6	12	20	1,500
Reedy Flat ,,	56	2	12		70	453 0 0		453 0 0	76/6	80/	1,756 0 0	20	21	500
Kiandra ,,	106	13			119	586 0 0		586 0 0	70/	77/	2,153 11 0			
Nimitybelle ,,			69	1	70									1,500
Queanbeyan ,,	60		20		80							1	3	
Captain's Flat Division														10,000
Cootamundra ,,	7		6		13									
Narrandera ,,			49		49		170 0 0	170 0 0			650 0 0			1,500
Cooma ,,	15	6	150		171	195 2 0		195 2 0	75/	76/	733 1 0	½	10	
	437	35	613	1	1,086	1,747 17 0	1,597 7 23	3,345 4 23	70/	81/10	12,778 2 10	73½	107	59,850
Southern District—														
Bombala Division	39	28			67	501 19 0		501 19 0		77/6	1,940 10 0		..	.. .
Braidwood ,,	94	9			103	727 0 0		727 0 0	73/6	77/6	2,708 1 1	6	.	
Major's Creek Division	57	6	15		78	459 10 15	95 8 0	554 18 15	70/	75/	2,011 7 8		15	4 400
Little River ,,	45	40	50	3	138	650 0 0	335 10 0	985 10 0	77/6	82/	3,894 6 0		13	2,260
Cobargo ,,	7				7	45 18 9		45 18 9	75/	77/	169 3 2			
Araluen ,,	230	34	8		272	4,100 0 0	28 0 0	4,128 0 0	70/	76/6	15,892 16 0			20,830
Nerriga ,,	40	6	25		71	450 0 0		450 0 0		77/6	1,743 15 0		6	5,700
Bega ,,	60		4		64	20 0 0		20 0 0	76/	80/	80 0 0			
Wagonga ,,	7		49		56								10	4,800
Merrigundah ,,	50	60	200		310	568 0 4	328 10 0	896 10 4	78/6	83/6	3,575 12 0	12	12	17,000
Moruya ,,	20		26		46	1,100 3 17		1,100 3 17	78/	80/	4,296 12 5	4	1	2,850
	659	183	377	3	1,212	8,622 11 21	787 8 0	9,409 19 21	70/	83/6	36,312 3 4	22	57	57,840
Clarence and Richmond District—														
Grafton Division	12		6		18	30 0 0	370 0 2	400 0 2	68/6	77/10	1,427 11 4			
Nana Creek Division	2		21		23		159 7 12	165 19 8	70/	72/6	577 12 10	255	53	717
Dalmorton ,,	21		85		106	120 0 0	157 19 12	277 19 12	70/		972 18 3	308	71	4,200
Ballina ,,	6				6				75 6	80/		7		300
	41		112		153	150 0 0	687 7 2	837 7 2	68/6	80/	2,978 2 5	570	124	5,217
New England District—														
Solferino Division	30		14		44	189 7 4	154 0 0	343 7 4	67/	73/	1,202 12 0	10		
Tenterfield ,,					60									3,500
Fairfield ,,	64	4	245		313	484 4 5	1,229 13 16	1,713 17 21	55/	77/6	5,570 3 1			15,300
	94	4	259		417	673 11 9	1,383 13 16	2,057 5 1	55/	77/6	6,772 15 1	10		18,800
Tambaroora and Turon District—														
Sofala Division	110	70	200		380			3,054 5 15	63/	76/	11,495 19 4	30	28	5,100
Ironbarks Division	120	40	80		240	1,300 0 0	700 0 0	2,000 0 0	60/	77/6	7,182 10 0	12	22	11,500
Hill End ,,	50	70	205		325		207 0 0	207 0 0	74/	80/	796 19 0	20	7	18,500
Wellington ,,	20	4	6		30	595 5 6	27 12 12	622 17 18		75/	2,314 0 0			5,000
	300	184	491		975	1,895 5 6	934 12 12	5,884 3 9	60/	80/	21,789 8 4	62	57	40,100
Albert District—														
Tibooburra Division	60	12			12	380 0 0		380 0 0	70/	78/	1,406 0 0	40		15,000
Wilcannia ,,	39				39									
Mount Browne ,,								1,120 0 0	78/	79/	4,396 0 0			
	99	12			111	380 0 0		1,500 0 0	70/	79/	5,802 0 0	40		15,000
Hunter and Macleay District—														
Copeland Division	10		50		60	130 0 0	200 0 0	330 0 0	68/	75/	1,188 0 0			3,250
Dungog ,,	10				10		112 12 0	112 12 0	65/	70/	376 18 10	4	1	2,015
Bulladelah ,,	25				25		167 17 0	167 17 0	70/	75/	547 10 0	20	10	1,200
	45		50		95	130 0 0	480 9 0	610 9 0	65/	75/	2,112 8 10	24	11	6,465
Cobar District														
Cobar								21 3 0		80/	84 12 0			
								21 3 0		80/	84 12 0			

Summary.

(Compiled from Mining Registrars' Reports.)

TABLE showing approximately the number of Miners employed in Gold-mining, the quantity of Gold won, the area of ground worked, and the value of machinery, in the Colony of New South Wales during 1887.

District.	Alluvial Miners.		Quartz Miners		Total Miners.	Quantity of Gold.			Price of Gold per oz		Value of Gold won	Auriferous ground worked	Quartz reefs proved to be auriferous	Value of Machinery.
	Europeans	Chinese.	Europeans	Chinese		Alluvial	Quartz	Total	From	To				
						oz dwt gr	oz dwt gr	oz dwt gr	s	s	£ s d	sq miles	No	£
Peel and Uralla	536	31	414		1,091*	2,120 0 0	2,700 0 0	16,400 0 0	70/	76/	60,816 15 0	10	.	7,700
Mudgee	495	53	76		934†	1,258 15 16	1 070 3 0	8,271 18 16‖	72/	77/10	29,064 1 11	23	12	13,600
Bathurst	444	57	311		1,412‡	3,434 17 11	2,908 1 3	11 821 6 0**	59/6	82/6	40,494 10 11	85	48	112,585
Lachlan	333	.	603		984	1,510 5 7	9,189 12 11	13 176 8 18	55/	80/	49,397 15 7	79	57	67,910
Tumut and Adelong	437	35	613	1	1,086	1,747 17 0	1,597 7 23	3 345 4 23	70/	81/10	12,778 2 10	73½	107	59,850
Southern	659	183	377	3	1,212	8,622 11 21	787 8 0	9,409 19 21	70/	83/6	36,312 3 4	22	57	57,840
Clarence and Richmond	41		112		153	150 0 0	687 7 2	837 7 2	68 6	80/	2,978 2 5	570	124	5,217
New England	94	4	259		417	673 11 9	1,383 13 16	2 057 5 1	55/	77/6	6,772 15 1	10	.	18,800
Tambaroora and Turon	300	184	491		975	1,895 5 6	934 12 12	5 884 3 9	60/	80/	21,789 8 4	62	57	40,100
Albert	99	12			111	380 0 0		1 500 0 0††	70/	79/	5,802 0 0	40		15,000
Hunter and Macleay	45		50		95	130 0 0	480 9 0	610 9 0	65/	75/	2,112 8 10	24	11	6,465
Cobar								21 3 0		80/	84 12 0			
	3,533	559	3,306	4	8,460	21,923 3 22	21,738 14 19	73,335 5 18	55/	83/6	268,402 16 3	998½	473	405,067

* Including 60 miners at Armidale, not stated whether alluvial or quartz
† Including 300 miners at Mudgee, not stated whether alluvial or quartz
‡ Including 100 men at Cabcoar, not stated whether alluvial or quartz
§ Including 11,500 oz from Armidale, not stated whether alluvial or quartz
‖ Including 5,942 oz from Mudgee, not stated whether alluvial or quartz
¶ Including 1,770 oz from Temora, 705 oz 11 dwt from Young, not stated whether alluvial or quartz
* Including 2,800 oz from Cabcoar, not stated whether alluvial or quartz
†† Including 1,120 oz from Mount Browne not stated whether alluvial or quartz.

TABLE showing approximately the number of Miners employed in mining for minerals other than Gold, Coal, or Shale, at some of the principal mines, the quantity of minerals won during the year 1888, and the value of same, and the value of Plant.

Locality.	Miners employed	Quantities						Value.	Value of Machinery.
		Copper	Tin	Bismuth	Iron	Silver	Silver lead		
		Tons	Tons. cwt.	Tns. cwt. qr. lb	Tons cwt.	Oz.	Tons.	£ s. d.	£ s. d.
Cobar	400	1,500	..	... . .	. ..	320	...	60,356 8 4	80,000 0 0
Burraga	170	500	. . . ..	.	...	. ...	..	36,000 0 0	7,000 0 0
Nymagee	400	1,300	... . .	... .	..	. . ....		93,276 0 0	82,000 0 0
	970	2,805	...	. . .	... ..	320	.	189,632 8 4	169,000 0 0
Glen Innes	110	.	244 0	47 15 0 0	..	... .	.	16,460 0 0*	....
Emmaville	1,494	.....	1,037 13	.....	... .	18,160	...	73,270 16 4	11,250 0 0
Wilson's Downfall	320	. . . .	203 0	.. .	.	. . .	...	12,180 0 0	1,000 0 0
Bendemeer	24		19 5	..	...	...		1,025 0 0	800 0 0
Tingha	1,200	...	1,007 0	.. . ..	... ..	..	..	69,683 0 0	6,900 0 0
	3,178	..	2,510 18	47 15 0 0	. ..	18,160	.	172,618 16 4	19,950 0 0
Lithgow	110		. .	... . .	3,147 2		.. ...	23,721 6 9	... .
Mitchell	555	309	.....	.	... ...	319,541	203	78,462 9 6	43,860 0 0
Silverton	2,543	25	55 16	... . .	. . ..	4,117,257	17,417	1,001,666 0 0	125,650 0 0
Rockley	15	...	.. ..	... ..	.	.. ..	77	577 10 0	....
	3,223	334	55 16	....	3,147 2	4,436,798	17,697	1,104,427 6 3	169,510 0 0

* Value of Bismuth could not be ascertained

TABLE showing approximately the Machinery employed in Gold and Tin Mining during 1888.

District and Division.	Quartz.								Alluvial.														
	Steam-engines employed in winding, crushing, &c.		Crushing machines.	Stamp-heads.	Whims and pulleys.	Water-wheels.	Pumps.	Whips.	Steam-engines employed in winding, pumping, &c.		Puddling-machines.	Whims and pulleys.	Whips.	Percussion tables.	Oscillating tables.	Water-wheels.	Hydraulic-hoses.	Pumps.	Sluice-boxes.	Derricks.	Stamp-heads.	Boring-machines.	Chilian mills.	Turbines.
	No.	Aggregate horse-power.							No.	Aggregate horse-power.														
BATHURST DISTRICT—																								
Bathurst Division	3	28	3	20	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rockley ,,	1	6	1	...	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Carcoar ,,	...	.....	...	...	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	..	...
Mount M'Donald Division	...	....	..	..	...	...	...	...	...	... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tuena Division	3	.....	3	14	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Trunkey ,,	4	46	4	...	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mitchell ,,	4	82	4	...	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Oberon ,,	3	32	3	17	...	...	...	...	..	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Blayney ,,	2	36	2	49	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
TAMBAROORA AND TURON DISTRICT—																								
Ironbarks Division	4	82	4	39	...	...	...	...	1	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sofala ,,	9	116	7	38	...	...	...	...	1	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hill End ,,	6	58	6	...	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wellington ,,	1	35	1	...	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
LACHLAN DISTRICT—																								
Parkes Division	3	72	3	...	...	...	...	...	3	32	3	...	...	...	...	...	...	...	...	...	...	...	...	...
Canowindra Division	...	.....	...	..	...	...	...	...	2	35	...	...	..	...	...	...	...	...	...	...	...	...	...	...
Murrumburrah ,,	8	100	...	...	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
SOUTHERN DISTRICT—																								
Major's Creek Division	2	12	2	25	...	...	...	...	...	.....	10	...	...	...	...	...	...	...	...	...	...	...	...	...
Araluen ,,	1	12	1	10	...	...	...	...	6	.57	..	...	...	...	...	9	4	18	20	...	...	...	...	...
Little River ,,	2	.....	..	...	1	1	1	...	...	.....	...	...	...	...	...	4	...	4	..	...	...	...	...	1
Wagonga ,,	3	28	3	28	...	...	...	...	...	.. ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
TUMUT AND ADELONG DISTRICT—																								
Adelong Division	10	105	2	...	...	...	...	...	2	30	...	...	...	...	...	...	...	6	...	...	...	...	...	...
Albury ,,	5	59	5	32	..	..	..	...	...	.. ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tarcutta ,,	2	8	2	...	...	.	...	..	...	.....	..	...	...	...	...	...	...	...	...	...	...	...	...	...
Nimitybelle Division	1	8	1	...	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
PEEL AND URALLA DISTRICT—																								
Bingera Division	3	30	....	5	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Scone ,,	2	30	...	...	...	...	..	...	...	.....	..	...	...	...	...	...	...	...	...	...	...	...	...	...
Glen Innes ,,	..	.....	...	...	...	...	...	...	3	30	...	...	...	..	...	...	...	...	...	...	...	...	...	...
NEW ENGLAND DISTRICT—																								
Tenterfield Division	2	28	2	...	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fairfield ,,	8	98	8	75	...	...	..	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
HUNTER AND MACLEAY DISTRICT—																								
Copeland Division	5	68	5	45	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bulladellah ,,	3	37	3	17	...	...	...	...	...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
CLARENCE AND RICHMOND DISTRICT—																								
Nana Creek Division	3	16	3	...	...	...	...	...	...	. ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
MUDGEE DISTRICT—																								
Mudgee Division	1	20	1	10	...	...	...	..	...	.. ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hargraves ,,	7	111	...	..	...	...	...	..	..	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Department of Mines,
Sydney, 24th May, 1889.

HARRIE WOOD,
Under Secretary for Mines.

WARDENS' AND MINING REGISTRARS' REPORTS.

BATHURST DISTRICT—Trunkey Division.

(*T. A. Smith, Warden.*)

I have the honor to forward my report for the year 1888.

Alluvial mining suffered greatly, many claims being idle for months on account of the want of water. There has been no sluicing at all during the year; the rainfall was only 15·21 inches. On the banks of the Abercrombie sluicing has been attempted by means of powerful pumping machinery, but the speculators have not been at work sufficient time to estimate the value of the properties operated upon.

At Grabbine and Junction Point, the proprietors of large freehold properties threw several thousand acres of their land open to the miners, but disappointment has followed; the gold was only found in small quantities.

The returns for quartz-mining have not been very encouraging at Mount M'Donald, Trunkey, Tuena, Oberon, and Mitchell. A considerable quantity of stone has been crushed, but the work has only progressed in a half-hearted manner. Ten times the amount of stone should have been treated with a corresponding increase in the returns. Silver, copper, and lead mines have worked on fairly well for the year. The returns from Mitchell have been considerable, where a large number of men has been in constant work. Cordillera has turned out a large quantity of bullion. Mount Costigan Mine has been in work all the year, but the smelters have only been in blast five months. New and improved machinery is in course of erection, from which much is expected. Burraga, which is a copper-mine, has been in full work all the year. The output could be increased considerably if the proprietary thought fit to extend the works. This mine must be paying as well as any in the Western District.

I think it my duty in this report to call the attention of the Department to the damage done to all rivers and creeks by the diggers washing the sludge into the natural water-courses; for years the water-holes have been destroyed in the creeks, and the rivers are filling up very fast. A drought of a few months duration would not, years back have been felt, as far as scarcity of water was concerned, but now as soon as the rain is over the creeks become dry, the beds having been silted up, and where holes 10 and 12 feet deep used to be found full of water nothing remains but sand and shingle.

A considerable sum from the prospecting vote has been granted for prospecting in this district. I do not anticipate any benefits from the vote. If a discovery is made to benefit the miners it will be at Mountain Run and Swallow's Nest. I would like to see miners paid liberally by the Department when they made discoveries from which permanent benefits are derived. I think M'Guire, who discovered Mount Costigan Mine, and from which discovery thousands of persons have derived benefit, should be liberally rewarded, and every other person who makes similar discoveries; but I do not think any benefit will be derived from the portion of the prospecting vote expended in this district unless in the two instances mentioned above. I am sorry that £1,000 out of this vote has not been given to the Bathurst Gold-mining Company to enable them to put their shaft down 800 feet. This mine was originally worked to a depth of 520 feet, and abandoned. The present proprietors must have spent £4,000 on this mine in sinking a vertical shaft 10 feet by 3 feet, intending to go down 800 feet. This reef was payable from the grass to 520 feet, but was abandoned when expensive pumping machinery became necessary.

I will now endeavour to give you a detailed account from the various mining centres in this district, and attach a schedule by way of recapitulation.

Trunkey.

The Bathurst Gold-mining Company, and the Mount Gray Company are the only two now working the reefs. The former is sinking a vertical shaft to cut the reef formerly worked. £4,000 have been expended by the proprietors who hope to get down 800 feet. The Mount Gray Company, whose property is on the east bank of Grove Creek, a mile below the Abercrombie Caves, is being prospected, and a mill erected on the lease; but returns have not been satisfactory.

Alluvial mining has been a failure, there being no water; only 15 inches of rain for the whole year. Alluvial gold won during 1888 was of the value of about £1,000.

Tuena.

£4,500 worth of gold has been obtained here, all being alluvial.

Mount Costigan.

At Mount Costigan Silver Mine the furnaces only ran for 5 months. During this time silver and lead were obtained to the value of £28,000 from 3,000 tons of ore smelted. The yield of silver being 96,600 oz., and 300 tons of lead. The Company was not satisfied with the furnaces and decided upon erecting fresh ones, which will be completed in about 2 months from this date. The mine worked continuously during the whole year; 13,000 tons of ore are at the furnace waiting treatment, the value being by assay about £32,000.

Cordillera.

Cordillera is also in Tuena district 7 miles south of Mount Costigan. This mine has worked pretty well all the year, 9,000 tons of ore have been treated, yielding 82,800 oz., of silver, 404 oz. of gold, 227 tons of lead, and 220 tons of copper, valued at £37,343. There are 1,500 tons of ore at the furnace ready for treatment, valued at £9,375. Total value of out-put from the mine, £46,718 for 1888. A great deal of prospecting has been done between the Costigan and Cordillera Mines, but up to date no defined lode has been reported; rich leaders have been found in many places.

Peelwood.

I thought when I last reported that this mine would have been in full work months ago; only 24 men are, however, employed.

Burraga.

The Burraga Copper Mine has been in full work during the whole year. The total yield of copper was 499 tons valued at £36,000. The deepest shaft is 300 feet; the lode at this depth is 15 feet wide.

The New Burraga Mining Company is sinking two shafts, and, I have just heard, struck 12 % ore at 40 feet. Although a large area of ground is leased for silver mining, little has yet been found. In gold only £501 worth has been sold locally, and that was obtained at the Isabella River.

Bathurst.

Mining within this division is limited.

Rockley.

Rockley.

A large area of land has been applied for as leases this year, but little work done in prospecting upon the leased land, which is now locked up as securely as if it were freehold; only about 50 men are working. Labour should be enforced for the first year of the lease, so that the ground would be prospected. After that some honest cause might be assigned when seeking exemption from the labour covenants of the leases.

Oberon.

Several gold leases are being worked in this division. The Welcome Home, Luck's All, and Homeward Bound are the principal mines. Valuable machinery has been erected, and I hope good returns will reward the proprietors. At Diamond Hill, near Sidmouth Valley, 50 acres of land have been secured for minerals other than gold. Good returns have been obtained by the proprietors, Wilson and M'Cauley, from large parcels submitted for treatment. I have, however, not obtained a copy of the returns.

Mitchell.

This mining centre has taken a fresh start, with every prospect of permanence. The Sunny Corner and Silver King silver mines have been giving satisfactory returns. The former for the year treated 24,972 tons of ore for 201 tons lead, 309 tons copper, and 1,256 tons matte, which contained 319,324 ounces of silver and 2,300 ounces of gold; total value, £74,209. The Silver King produced 277 tons of matte and 2 tons of lead; bullion valued at £8,200. Gold to the value of about £5,161 has also been obtained here during the year.

Lithgow.

Six gold leases, 3 silver leases, and 36 coal and shale leases were applied for during 1888, the total area applied for being 10,523 acres. Several new coal and shale seams have been opened at Ben Bullen during 1888; this is near the Mudgee railway line and not far from Mitchell. I am informed that coking ovens are being erected at one of these new mines by Wilson, Massey, & Co. I hope the venture succeeds, for if it does coke for smelting the silver ores will recede in price. At Lawson, Gallacher & Co. secured three blocks of 640 acres each to prospect for coal. A bore was put down 1,620 feet without success. The company, however, has started another bore. I hope this time they will be more fortunate.

Mount M'Donald.

Mining on this field has not been very encouraging. A considerable area of land was secured by leasing, viz., 48 gold leases, area 307 acres; and 35 mineral lease applications, the area being 1,760 acres. Fourteen tons of copper were sent from the Old Milburn Creek Mine, which is upon this field. The total quantity of gold obtained at Mount M'Donald during 1888 was only 1,130 ounces, valued at £4,378 15s. Detailed statistics attached hereto.

RETROSPECTIVE RETURN of Mining in those portions of the Bathurst District as given below for the Year 1888.

Division.	Miners' rights.	Business licenses.	Mineral licenses.	Gold lease applications.	Areas of gold lease applications.	Mineral lease applications	Areas of mineral lease applications.	No. men employed.	Rainfall.	Gold.		Silver.	
										Quantities.	Value.	Quantity.	Value.
					acres.		acres.			oz. dwt. gr.	£ s. d.	oz.	£
Trunkey Creek	149	26	30	23	337	32	1,240	205	15·021	341 14 1	1,322 6 8	.....	
Bathurst	176	3	35	20	156	6	140	214	.....	245 0 0	949 7 6	.....	
Burraga	17	21	20	...	.....	40	1,300	170	.....	133 12 0	501 0 0	.....	
Mount M'Donald	129	19	22	48	307	35	1,760	170	.....	1,130 1 3	4,378 15 0	.....	
Rockley	59	53	12	2	25	51	1,620	124	.....	250 0 0	956 0 0	.....	
Oberon	43	2	20	8	115	8	270	65	.....	153 8 12	592 17 6	.....	
Tuena	382	123	109	68	413	232	8,120	514	.....	1,180 0 0	4,497 10 0	.....	
Costigan	.....	...	...	...	.....	...	.....	.....	.....	.....	.....	96,600	15,600
Cordillera	.....	...	...	...	.....	...	.....	.....	.....	404 0 0	1,575 10 0	82,800	18,122
Mitchell	236	79	24	22	296	38	1,192	761	.....	1,345 0 0	5,211 15 0	.....	
Lithgow *	.....	...	...	6	64	39	10,559	3,000*	.....	.....	.....	.....	
Total	1,181	326	272	197	1,713	481	26,201	5,223	.....	5,182 15 16	19,985 1 8	179,400	33,722

Division.	Lead.		Matte.		Copper.		Revenue, miners' rights, business, and mineral licenses.	Revenue, gold lease, and mineral applications.	Total revenue for divisions.	Grand total value of all minerals, including gold.
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.				
	tons.	£		£	tons.	£	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Trunkey Creek	.....	.....	.....	.....	.....	.....	130 10 0	647 0 0	677 10 0	1,322 6 8
Bathurst	.....	.....	.....	.....	.....	.....	126 0 0	191 0 0	292 0 0	949 7 6
Burraga	.....	.....	.....	.....	499	36,000	48 0 0	325 0 0	373 0 0	36,501 0 0
Mount M'Donald	.....	.....	.....	.....	13	975	103 10 0	747 0 0	850 10 0	5,353 15 0
Rockley	.....	.....	.....	.....	.....	.....	94 10 0	430 0 0	524 10 0	956 0 0
Oberon	.....	.....	.....	.....	.....	.....	44 10 0	143 0 0	187 10 0	592 17 6
Tuena	.....	.....	.....	.....	.....	.....	423 0 0	2,443 0 0	2,866 0 0	4,497 10 0
Costigan	300	2,700	.....	9,700	.....	.....	.....	.....	.....	28,000 0 0
Cordillera	227	2,043	.....	.....	220	16,500	.....	.....	.....	38,237 10 0
Mitchell	201	1,809	1,533	82,490	309	23,175	221 0 0	594 0 0	815 0 0	112,685 15 0
Lithgow*	.....	.....	.....	.....	.....	.....	33 15 0	1,008 11 6	1,042 6 6	Value of coal not obtainable
Total	728	6,552	1,533	92,170	1,041	76,650	1,124 15 0	6,530 11 6	7,628 6 6	229,096 1 8

* Approximate.

BATHURST DISTRICT—ORANGE DIVISION.

(J. T. Lane, Warden.)

FOR the past twelve months there has been more excitement in connection with gold and silver mining than we have had for many years. For some time the mania raged at fever height; nearly every one who could manage by any means to raise a few pounds went into taking up leases or buying shares at Lewis Ponds. Had nothing arisen to damp the ardour evinced in favour of silver-mining, the most hazardous speculations would have been gone into, and in all probability there would have been no end to the perpetration of swindles. The gullibility of the people was so intense that the mere mention of Williams Lewis Ponds in connection with any portion of land being spoken of was deemed sufficient to determine any point at issue touching it. The prestige of this claim, now known as New Lewis Ponds, was fully maintained by the result of the smelting operations commenced on the 3rd instant. The machinery worked beautifully, and not a hitch, that I am aware of, has occurred since. By the second evening some thirty bars of bullion were turned out, weighing 85 lb. each. The operations are still going on most satisfactorily. It is said there is sufficient gold in the silver ores of this mine to pay for the cost of working. If this be so our mines in this locality may reasonably be expected to take a fair place in comparison with Broken Hill, &c. The recent reports *re* Spicers, Toms, and South Lewis Ponds are satisfactory, and I have no doubt the Lily and others are also promising good results, but I have heard nothing of their operations lately. I never attributed the recent depression in the share market to any falling off in the indications presented by the mines which had been fairly tested, but to causes bearing upon the hasty manner in which so many rushed into buying shares, and the natural and subsequent effects resulting therefrom. Everyone who could raise a few pounds bought shares without one due consideration beyond the act. When repayments had to be made, business claims became pressing, and the banks began to put the screw a little tighter, scrip was forced into the market to that extent that it became glutted. And this state of things, through the want of more capital, has continued. We may hope for a more prosperous time; things at any rate will be more stable, and the whole system on a more healthy basis in all its ramifications. "Once bitten twice shy."

Gold-mining operations have not been very successful. At Byng some promising reefs or leads have been discovered on Dr. Codringtons' land, and on the adjoining portions south and east, all of which have been taken up during the past few months. To say more than the above at present would be premature. A short time ago 3 tons from Carangara (Dr. Codrington's) were crushed, yielding 33 oz., equal to 11 oz. per ton.

Ophir.—The Amalgamated Bluff Company which sprung into life out of the ashes of the Company which has kept Ophir in existence for years past, is carrying on operations in accordance with the intentions of its predecessor. The tunnel from near the battery into the mountain to connect the different leases which have or are to be amalgamated, is a great and costly undertaking, and it is to be hoped the spirited enterprise will be rewarded by success in proportion to its magnitude.

There is an inadequate supply of water for extensive operations of any kind just now. Some 50 tons of quartz are "to grass" awaiting the maturity of certain matters. About fifty miners are working an alluvial spot up Lewis Ponds with a fair show of success. Ophir will some day spring into new life and vigour.

Calmla.—Several promising reefs, and some alluvial workings, are attracting some attention here, but in the absence of a fuller development we can only hope that the anticipations will be fully realised.

Forest Reefs.—Nothing is being done here at the present time save at the Grand Junction. The basaltic rock has been penetrated, and the Company purpose going 36 feet deeper before starting to drive. The dip is 4 in 9. The headings or sediment of the old river bed is about 4 feet thick. The timber and portions of the ancient forest are interesting features in connection with these workings. No gold seen as yet.

The Lumpy Company is being re-organized.

The Band of Hope has collapsed after sinking 230 feet, and driving 300 feet at a cost of some £3,000, for want of adequate means to carry on, leaving the claim untried. There is some talk of forming a new Company.

The Great Extended seems to be finally closed after expending about £50,000. The shaft is 236 feet, one drive 2,000 feet, and the main one 2,416. The end of this drive is lower than the bottom of the shaft, hence arose the difficulty of keeping the water under. At this point payable gold was procured, but as it came under private property, and no satisfactory arrangement could be made with the owner, there was no alternative but to close the mine.

Cadia.—Prospecting is still being continued, but with what result I am not in a position to say. No important find has been discovered.

Four Mile.—Here too all hope has not vanished, for some few persons continue to persevere in face of repeated discouragements.

Mr. Murphy will go into figures showing some interesting facts. Nothing doing in copper.

BATHURST DISTRICT—CARCOAR DIVISION.

(Mr. N. Connelly, P.M., Warden.)

I HAVE the honor to forward my annual report of the Carcoar portion of the Bathurst Mining Division.

The yield of gold, as per escort returns, shows, I regret to say, a large decrease upon that of the previous year, 1887.

This is accounted for in a large measure by the stoppage of work for the greater portion of last year at the Brown's Creek Mine, the annual yield from which has seldom been less than 3,000 ounces. The cessation of work has not arisen from any falling off in the quality of the stone, but is understood to have resulted from some disagreement amongst the shareholders, which is likely to be shortly terminated and the mine again placed in full work.

Another reason for the falling off arises in the fact that several of the most valuable and productive mining properties in this district have passed into the hands of syndicates, who mostly reside at Orange, to which town the gold obtained has been conveyed by private hands, and will consequently go to swell the returns of that district.

The

The tremendous season of drought which has not yet terminated here has also been an important factor in the decrease, by causing the almost total suspension of work on many known properties of great value until a sufficient rainfall occurs, notably amongst these is the Old Junction, now known as the Mandurama Gold-mining Company, on whose property water power having been substituted for steam, from this cause work has been almost entirely suspended. This is much to be regretted, as the Company having added at considerable cost to their plant, valuable new machinery, for gold saving purposes would otherwise, no doubt, be reaping the reward of their enterprise.

On a recent visit to Galley Swamp one of the oldest and best proved gold-bearing localities in this district.

I found that work was being prosecuted on the Homeward Bound Company's property with great energy by the local Mining Manager, and that at a depth of 140 feet lodes of a much more permanent and valuable character have been cut, which are said to increase in richness and width as the mine goes down. About 2 tons of stone from this level were at grass, which examined microscopically gives promise of an unusually rich yield, 120 tons of stone taken from this claim before reaching the present levels, and which included 50 tons surface stone, gave the handsome return of 200 oz. The Company's plant consists of a fine new 10-horse power engine, driving the pumping and winding machinery attached most efficiently, and it may be reasonably anticipated that when the new battery is erected for crushing purposes the prospects of this Company will be excellent.

On the next property known as the Great Western Gold-mining Company, late Lam & Co.'s, I found a fine shaft in three compartments securely timbered, had been sunk to a depth of 163 feet, but the pumping machinery, although driven by a 12-horse power engine, owing to its unsuitable character altogether unable to keep the water out of the shaft, so that work may be prosecuted at this lower level. I was informed, however, that it is intended at once to get fresh pumping-gear and commence raising stone as soon as the water is got under. This property is one of the oldest on the field, and has given rich yields before the water level was reached.

At Rowe and Company's which has also been a very rich claim, and one of the earliest worked on the field, the water has also become troublesome, and it is impossible to raise stone until the Tangye pump is replaced by more powerful and suitable pumping-gear, which I was informed will be shortly erected. The battery owned by this Company is the only one on the swamp at present serviceable for crushing.

I think it my duty to call attention to the discovery of what appears to be a most valuable lode of cobalt on the freehold land of Mr. J. A. M'Killop, adjoining the town of Carcoar on the south bank of the Belubala River.

The lode was first discovered on two spurs of the hills which rise abruptly from the river banks, about a ½ mile distant, and some fine samples of this mineral have been raised from two trenches cut to expose the lodes which are distinct and well defined, and have been traced more or less plainly for a ½ mile further south on the same property, where a shaft is now being sunk and valuable ore got out. A trench about 60 feet in length at this outcrop, reveals what appears to be a rich lode of cobalt, ½ a ton of which has been sent to the Melbourne Exhibition, and these pronounced to be of superior quality. In an adjacent paddock the property of Mr. J. O. Dodd, a shaft is now being sunk on what is considered to be a continuation of this cobalt lode.

Mr. M'Killop is also taking out some good looking copper ore from a lode discovered on the river bank, 2 tons of which will shortly be despatched for smelting with a view to test its quality.

The recent Act authorizing mining on Church and School lands, on permit from the Minister, will as soon as a plentiful rainfall occurs, give a great stimulus to mining in this district, as the whole of these lands in the vicinity of Carcoar are more or less auriferous.

BATHURST DISTRICT—Mitchell Division.

(T. G. Wright, Warden's Clerk.)

During the past year there has been a decided improvement in mining at Sunny Corner, in fact the place appears firmer now than ever it has since it first started. The only mines at work are Sunny Corner, which employ 425 men; the Silver King which employ 77 men; the St. George Gold-mining Company employ 29 men; the Bana and Albion Gold-mining Company employ 18 men; the Paddy Lackey employ 6 men. There is also quartz-mining being carried on by F. T. Wolesley on private property, which gives employment to 12 men, and as for any of the other leases which are held no work whatever has been done during the past twelve months.

Sunny Corner Mine is still doing good work, the output from that mine during the past twelve months was,—Sulphide ores raised 13,147 tons; sulphide ores and gossan smelted, 11,826 tons, producing 201 tons of lead, 309 tons of copper, and 1,256 tons of matte, containing 319,324 oz. of silver, 2,300 oz. of gold; total value, £74,209.

The Silver King Mine has been running well for the past three months, doing good work with the water jacket furnaces having treated 2,331 tons of ores, producing 277 tons of matte, valued at £7,940 17s. 6d.; 2 tons of lead bullion valued £183 16s., and 217 oz. of silver valued £32 10s. There has been a deal of land taken up at Dark Corner, no doubt on account of the fine reef that was cut in the Paddy Lackey claim at a depth of 265 ft., 80 tons of stone was crushed out of this claim which yielded 145 oz. of gold.

The Old Homeward Bound has been taken up and formed into a company, known as the St. George, who have erected a crushing plant at a cost of £2,500, 9 tons of stone was crushed which yielded 18 oz. of gold.

Johnson and Shephard, lessees of the Big Hill, have floated it into a company, known as the Bana and Albion, on which they are erecting a large crushing plant.

During the year there was 38 applications for mineral leases, in all 1,112 acres; 22 applications for gold-mining leases, in all 296 acres; there was 236 miners' rights; 79 business licenses, and 24 mineral licenses sold at this office during the year.

Total value of mining plant in the division, £43,860

BATHURST DISTRICT—Bathurst Division.

(W. G. B. Smith, Mining Registrar.)

Turner's battery of 10 stampers on Clear Creek has not been used for over six months, the last crushing of 100 tons yielded about 4 dwt. per ton. The owner is endeavouring to form a company to take same over and provide the most reliable machinery for saving gold.

Grist's battery, 5 stampers, on Clear Creek has not been working lately, principally for the want of water.

Coombes' battery, at Napoleon Reef, 5 stampers, has not been used for the past three years—out of repair.

Percival and party have been working on the old Flat Reef, near Napoleon Reef, for twelve months; they have a large quantity of stone which looks well; they intend sending same away to a machine.

Lynch and party are down about 80 feet on a portion of Old Napoleon Reef; they have a large body of stone with a thick reef, very little gold to be seen in the stone. Thompson and party at Cheshires Creek have been at work continually for the past fifteen months, they are down about 70 feet with a good body of stone, about 2 feet wide, and have about 20 tons ready for crushing; they had two trial crushings of about 5 tons each, which yielded ½ oz. to the ton.

Several parties are prospecting in the Bathurst Division, viz., at the Old Fontana Reef, Napoleon Reef, Bon Ridge, Winbundale, and Clear Creek.

Total value of mining plant in the division, £1,500.

BATHURST DISTRICT—Orange Division.

(Mr. Stephen Murphy, Mining Registrar.)

I have the honor to submit my report for the year 1888.

My collections for that period have been as follows:—

	£	s.	d.
372 miners' rights	158	15	0
9 business licenses	6	0	0
168 mineral licenses	168	0	0
Gold mining leases	172	10	0
Mineral leases	1,944	5	0
Deed fees and stamp duty	80	5	0
Revenue proper	2,529	15	0
Survey fees, &c.,	1,096	10	0
Total	3,626	5	0

It will be at once apparent that there has been a great increase of business during the year, the collections exceeding those of 1887 by £3,037 10s. Quite a rush for taking up land took place in February, March, and April, during which months I was almost constantly employed in receiving applications for leases. During the year 25 applications for gold mining leases have been lodged, representing an area of 224 acres; also 250 applications for mineral leases, representing an area of 7,777 acres, excluding in both cases the area of reapplications for the same portions. The land applied for is situated in the following localities, viz.:—Lewis Ponds, Ophir, Cadia, Byng, Calenla, Summer Hill Creek, Emu Swamp, Mount M'Cann, and the Bulga Mountains.

Bulga Mountains.

In this locality the owners of the Hidden Treasure claim, who have been in receipt of assistance from the Prospecting Vote, have gone to a depth of 120 feet. At the 80 feet level they cut through a lode 12 feet wide consisting of slate, gossan, quartz, and galena, the assays from which were considered encouraging. The claim has, for the present, ceased working, owing to the want of water and to allow time to raise further capital. I may state that the protracted drought has seriously interfered with mining operations throughout the district, water for drinking purposes being very scarce, and no ground sluicing of any moment has been carried on for many months past. Several other shafts have been sunk in this locality, but up to the present nothing payable has been obtained. The general opinion is that the lodes are at a much greater depth than any yet reached.

Lewis Ponds.

The New Lewis Ponds Gold and Silver Mining Company (limited) has been carrying on operations for the greater part of the year. In addition to sinking shafts and raising large quantities of ore, the Directors have expended a large sum of money in erecting costly machinery, including a smelting plant. Smelting commenced at this mine on the 2nd instant, and I am informed that everything is going on satisfactorily. Up to the present, however, I have not been able to ascertain the correct yield. Since writing the foregoing I observed the following report in the *Sydney Morning Herald*:—

The New Lewis Ponds Gold and Silver Mining Company, January 19.—The plat at the 232 feet is completed, and crosscut east driven 20 feet from plat; country intermixed with veins of galena, pyrites, and quartz. A quantity of water making in end of crosscut. The north drive out of eastern winze at 232 feet extended 4 feet; total 38 feet; water heavier, and on account of air being continually bad in this winze, have ceased work until crosscut at the 232 feet breaks through to this level. The north drive at the 157 feet has been extended 14 feet, or 120 feet from eastern winze. No. 2 shaft: The level south has been extended 5 feet; total, 15 feet from crosscut. Machinery working well. Smelting report: From blowing in of furnace, 3rd January to 19th January, smelted 233 tons of ore, producing 9 tonf 2 cwt. 2 qrs. 7lb. of bullion, containing 3,651 oz. silver and 73 oz. gold. Furnace crucible contains 4½ to 5 tons bullion of similar quality. Made 7 tons matte, containing 560 oz. silver and 3½ oz. gold. Shortage in lead and silver largely due to absorption of these metals by the bricks of the furnace, and also to some rich slags run ere the ores thoroughly fluxed, which slags will be gradually resmelted.

The Toms Lewis Ponds Gold and Silver Mining Company (limited) have sunk three shafts, the deepest being 180 feet, and the lode averages 15 feet in width. The estimated quantity of ore raised is 500 tons, and the average yield per ton is 30 oz. silver, 5 dwt. gold, and 10 per cent. lead. Number of men employed, thirty-five.

The Spicers Gold and Silver Mining Company have done a large amount of work during the year, and have a considerable quantity of ore at grass, the assays from which have been satisfactory. The Company is employing seventeen men.

Lucknow.

Lucknow.

Mr. H. W. Newman informs me that in the New Reform Gold-mining Company, a depth of 525 feet has now been reached, the lode varying from 1 foot to 20 feet in width. About 3,000 tons of ore have been raised during the past year, valued at £6,484. The plant is valued at £10,000, and number of men employed 50. The ore after being locally treated and the free gold extracted, is sent to Germany to be further dealt with.

The New Reform Pups under the same experienced management is still carrying on operations. A depth of 225 feet has been reached with a lode 3 feet wide, and about 250 tons of ore have been raised; value of plant £5,000 and number of men employed twenty-five

Forest Reefs.

At this field the Band of Hope Gold-mining Company has for the present ceased work and steps are being taken to raise more capital. The Grand Junction Gold-mining Company (no Liability) is still carrying on operations. At a depth of 205 feet the trap rock has been pierced, and the sinking is now much easier being through a mixture of clay and, what appears to be, volcanic mud. Within a comparatively short time the Directors expect to reach the wash dirt, but the progress of the work is considerably retarded by the constant inflow of water.

Byng.

Work is still being carried on upon the Carangara Estate, owned by Dr. J. F. Codrington, and to which I referred in my last report. The Carangara Gold-mining Company, which leased a large portion of the estate, has been steadily at work during the year, and the deepest shaft is down about 140 feet. At that depth very rich stone with pyrites and carbonate of lime was found, but the shaft had to be abandoned for the time on account of bad air. A new shaft was then commenced, which is now 40 feet deep and said to carry payable gold from the surface. Messrs. Wright and Party have also leased 25 acres on the same estate, and a short time ago they had about 3 tons of stone crushed which gave the very satisfactory return of over 13 oz. of gold to the ton. The whole line of reef dips to the east and this party cut the reef at 30 feet, they then went a few feet deeper and are now driving east to cut the reef again. A large area of Government land has also been taken up in this locality, both for gold and copper.

At Rosedale, about 6 miles from Orange, on the Ophir Road, considerable capital has been expended in testing three mineral leases held by Messrs. Windred, Aaron's and others, and which it is proposed to amalgamate for convenience of working. One main shaft 118 feet and three others respectively 22 feet, 24 feet and 30 feet have been sunk and timbered, various crosscuts have been put in at different levels and two monkey shafts have also been sunk in the main one. At the 116 feet level they are driving north and have penetrated 16 feet in that direction. I understand that the proprietors have had the advice of an expert and that this has guided their operations. For the sake of the plucky owners, and of the district generally, it is hoped that success may reward their efforts.

Cadia.

In this locality the Scottish Australian Mining Company is still carrying on operations, having eighteen men at work, but I have been unable to obtain any further details. At Digger's Creek, near Cadia, Messrs. Spiers and Cross now own the property formerly held by the old Canoblas Gold-mining Company, upon which only two men are at present employed, the want of water has prevented any crushing for some time past.

Ophir.

At this old diggings the protracted drought has seriously affected mining operations. A number of men have taken out miners' rights and I hear that, occasionally, a satisfactory deposit of the precious metal is obtained by one of these fossickers. I regret that I have not been furnished with any particulars respecting the Bluff Gold-mining Company, though I asked for them some time back.

The managers of the local Banks have kindly supplied me with particulars of gold which has passed through their hands during the year, the total being 2,588 oz. 7 dwt. 10 gr. of the value of £7,702 6s. 5d. This does not, of course, represent the whole of the gold produced in the district, a large quantity is no doubt sent to Sydney direct.

The gross value of machinery in the district is valued at £28,000, and the total number of men employed is estimated at fully 500.

I regret that my report is not, in some respects, more complete, but several persons with whom I have communicated have failed to furnish me with particulars.

BATHURST DISTRICT—Blayney Division.

(W. Roche, Mining Registrar.)

I have the honor to submit my annual report of the Blayney portion of the Bathurst Mining District for the year 1888.

The Brown's Creek Gold-mining Company have sunk their main shaft a depth of 50 feet, and after having worked for 3 or 4 months, the water became so troublesome and came in in such large quantities that it flooded the mine and consequently it had to be abandoned; the machinery on the ground not being sufficient to keep the water down. The mine at the time was looking better than it ever had previously.

It is the intention to again work this mine as soon as the legal manager returns from England.

Several other prospecting areas have been taken up on Church and School lands, at Brown's Creek, but very little has been done on them.

The Confidence Gold-mining Company.

The Confidence Gold-mining Company, at King's Plains, have ceased work on their 20-acre lease. The manager states it was on account of the poor returns obtained from the ground, which only averaged 2½ dwt. to the ton.

The plant was sold last month, at Orange, for £1,025. The purchaser intends working this mine as soon as he obtains a transfer from the old Company.

M'Phillamy's Hill Gold-mining Company.

M'Phillamy's Hill Mine is situated at King's Plains. A Sydney Company having leased 200 acres of the property, have sunk two shafts which are respectively 116 and 98 feet deep, and have driven in an easterly direction 114 feet, and in a westerly direction, 98 feet. There are twenty-one gold-bearing veins. They do not know the extent of the lode, they have driven 114 feet, and have not yet gone through it. They are making preparations to erect two batteries and three puddling machines. They intend treating the stuff first with the puddling machines, and what they cannot treat with the puddling machine they intend to crush. The manager states that if the lode only gives 2½ dwt. to the ton, it will be one of the best claims in New South Wales. About ½ a mile from these workings on the flat, they are sinking a shaft which is now down 66 feet, and is 9 by 4 in the clear.

Close to this shaft, some years ago, very rich alluvial was obtained, and has been abandoned through not being able to keep the water down.

This Company intend working the alluvial by means of this shaft and also to use it as a water-shaft, to convey water to the batteries and puddling machines which are situated some ½ mile further up the hill. The water will be conveyed by means of pipes. At present there are twelve men employed, but when the batteries are completed they intend putting on fifty men. A pumping engine will be stationed at the shaft to force the water to the other workings.

Flannagan's Gully.

At Flannagan's Gully nothing has been done for some time owing to the scarcity of water, which is so scarce that there is hardly enough to supply the ordinary necessaries of life.

There have been 132 miners' rights issued and four gold mining leases applied for during the year.

Nothing has been done at the *Annandale Copper Mine* which is situated about ½ mile from Blayney and about 300 yards from the Southern Railway Line.

A small syndicate has been formed to work it, they intend erecting two smelting furnaces if the price of copper keeps up, they believe this mine will pay well as the facilities for working it are so easy.

BATHURST DISTRICT—Oberon Division.

(*J. S. Hayes, Mining Registrar.*)

I have the honor to herewith forward my report of mining operations in the Oberon portion of the Bathurst Mining District for the year ending 31st December, 1888, and in doing so I regret that my anticipations of last year has not been realized. The Homeward Bound Mine was idle during the early part of the year, the proprietors having obtained suspension of labour from the Warden on two occasions. This was owing to the want of proper pumping machinery to enable them to cope successfully with the influx of water to the mine. They afterwards made arrangements to have the mine floated into a Company, which was done. Splendid pumping machinery was very soon erected, but through some unexplained cause the mine is now again at a standstill. This Company hold about 22 acres of land. Mitchell and Party has a 5-acre lease upon the same line of reef, and has 2 shafts down to a depth of 90 feet; but their progress is retarded by the Homeward Bound Company's Mine being idle, thereby keeping these men continually bailing water. The Lucks All Gold Mining Company holds 30 acres on the Lucks All line of reef, about 7 miles from Oberon, and bids fair to go ahead. The Company has recently erected a magnificent Huntingdon Mill with all modern improvements for gold-saving, and pumping upon one of their leases. The stone will be conveyed to the mine by means of a tramway, scales for weighing the stone and hoppers for crushing the same being now complete. Should this Company be successful in striking payable gold, it will give an impetus to mining in this locality. Several persons has been getting small parcels of alluvial gold upon private property, but I have been unable to obtain the result. There has been eight gold leases taken up during the year, representing 115 acres leased; eight mineral leases representing 270 acres leased.

Miners' rights issued, forty-three: mineral licenses issued, twenty; business licenses issued, two.

Total value of mining plant in the division, £4,500.

BATHURST DISTRICT—Mt. M'Donald Division.

(*J. Gunning, Mining Registrar.*)

I have the honor to submit my annual report for the year 1888, and, in doing so, regret that it is not as complete as I would wish, owing to the difficulty in obtaining the results of the crushings from the various claim holders, although I communicated with the principal claim holders, with a view of obtaining the result of their years crushings, only one has favoured me with the necessary information.

I have again to thank Mr. C. H. Forwood, manager of Oliver's Battery, for the valuable assistance he has afforded me, by placing the books of the battery at my disposal from which I have gained all the particulars of crushings.

It will be seen that in some cases the tonnage is not given, this is owing to the fact that the stone was treated at so much per hour instead of per ton as is more frequently done.

The total yield of gold for the year is 1,130oz. 1dwt. 3gr., which is a marked falling off as compared with previous years, but I think may be accounted for by the absence of a crushing from the Caledonian and temporary suspension work on the Balmoral towards the close of the year. The output of gold for the year is made up as follows :—

	tons	oz.	dwt.	gr.
Butcher's claim	86	180	15	23
Balmoral	211	317	17	4
Mathesons	65	83	4	1
Grants	19	43	8	14
Woman's lease	13	14	13	18
Corder's Tribute	44	37	12	11
	438	677	11	23
Oliver Co. (Recrushing sand &c.)		270	10	1
Sundry Crushings (without tonnage)		181	19	3
		1,130	1	3

By

By the above it will be seen that 438 tons yielded 677 oz. 11 dwt. 23 gr. at the rate of 1 oz. 10 dwt. per ton. It is, therefore, gratifying to find that although there is a large falling off in the yield of gold there is no perceptable change in the average quality of stone, and I feel sure that the coming year will see a change for the better. I have issued during the year 129 miners' rights, 19 business licenses, and 22 mineral licenses, representing in value £93 15s. I also received 48 gold lease applications embracing an area of 307 acres, and 35 mineral lease applications covering 1,760 acres. I received in deposits on gold leases and mineral lease application the sum of £316 and £340 respectively, and the total amount received by me during the year is £1,018 10s.

Work was resumed (by Mr. C. J. Campbell, of Sydney,) upon the old Milburn Creek Copper Mine, and although there are not many men employed, the proprietor informs me he has obtained 13 tons 3 qrs. 13 lb. of copper, valued at £975, from the mine. I am also given to understand that a change is likely to be made with a view of further developing the mine.

The proprietors of the Caledonian Mine have disposed of an interest in their mine to some gentleman in Orange, and it is now their intention to erect a 10 head battery with all the latest gold saving appliances near the claim.

At present the Balmoral is being worked by a party of tributors who are raising splendid stone.

In December a party of miners obtained permission from Mr. Stimpson, of Carcoar, to mine upon the old Grabine Estate (freehold) near the Lachlan River, and about 4 miles from Mount M'Donald. The prospectors bottomed at a depth of 14 feet upon what is considered three grains to the dish. No. 1 South is also on same quality of dirt, but the sinking is a little deeper. No. 1 East has bottomed at about 45 feet on three to six grains to dish of dirt—two feet of wash.

The miners are paying £1 per month to the proprietors for the right to mine.

Water is plentiful.

Copper.—13 tons 0 cwt. 3 qrs. 13 lb.; value £975.

Total value of mining plant in the division, £3,250.

BATHURST DISTRICT—Trunkey Division.

(*H. T. Lee, Mining Registrar.*)

The past has been a most disastrous year for mining in this division by reason of the scarcity of water and so much attention having been given to silver and other minerals. In quartz mining at the New Bathurst Company's Mine, Wilson's reef, more satisfactory progress has been made, the shaft, previously too small, had to be enlarged by cutting down. It is now to a depth of 370 feet; size, 10 feet 6 inches by 3 feet 6 inches, timbered in three divisions. It is expected to gain the depth of the old workings at 550 feet, when it is hoped rich gold will again be struck. At Mount Gray, on Grove Creek, the Huntingdon mill does not appear to have been the most suitable for the class of quartz. It is said other machinery is to be erected in the meantime. Shafts and drives are being made so as to explore and test the lode. At Pine Ridge works are suspended for readjustment.

During the year the rainfall, as supplied by Mr. Licensed Surveyor Ryan, was only 15·04 inches.

Miners' rights issued, 149; business licenses, 26; mineral licenses, 30; total, 205.

Twenty-three gold and thirty-two mineral lease applications were issued for an area of 1,577 acres.

Total revenue for year, £925 15s.

Total value of mining plant in the division, £14,350.

BATHURST DISTRICT—Carcoar Division.

(*W. B. Harner, Mining Registrar.*)

The year 1888 was a trying one for the gold-miners in this district. The winter was one of the driest ever known, and the spring and summer have been characterized by extreme drought, thus putting an end for the greater part of the year to all sluicing for alluvial gold. The crushing plants have also been short of water, particularly that at the old Junction claim, which is driven by a turbine wheel. The Brown's Creek Gold Mine has suffered from too much water for some months past, a spring having broken into the workings, completely flooding them. It is feared that it will be some months before the mine will again be in working order. All this has tended to reduce the yield of gold very materially. For 1887 the amount of gold sent down from Carcoar by escort was 8,238 oz.; for 1888, 2,890 oz., thus showing an apparent fall of 5,348 oz. in the yield of gold for the year. This decrease is, however, I am happy to say, more apparent than real, and can be explained thus: The Burnt Yards and the Gally Swamp have been for years (omitting Brown's Creek), the principal gold producing localities in this division, but as I mentioned in my last annual report, the claims in the places have been purchased by syndicates promoted by speculators mostly residing in Orange. The gold now produced is taken charge of by the management, and instead of being brought to the banks in Carcoar, goes to Orange probably to swell the returns of the Orange division, although every ounce of it is raised within about 8 or 10 miles of the town of Carcoar.

During the year twenty-two applications for gold-mining leases were made to me, and six for silver. None of these silver leases are being worked, and very few of the gold. Most of these claims were taken up during the mining excitement with a view to selling out at a profit to syndicates. No fresh finds of gold have been reported during the year, but a very important and extensive lode of cobalt has been discovered within a few hundred yards of the Municipal boundary of the town of Carcoar. The first discovery was made on freehold land, the property of Mr. John A. M'Killop, manager of the Commercial Bank, Carcoar, who had a couple of men prospecting for a copper lode not far from the town. The discovery was accidental, and was made by one of the men when leaving off work. He broke with his pick a weather-beaten piece of rock protruding above the surface of the ground, and noticed that it was quite different from any stone he had yet found. The ground was cleared away from the surface, and in a short time the top of the lode of cobalt was exposed, well defined, between two walls of slatey rock for about 20 yards. Half a ton of this cobalt ore was sent to the Melbourne Exhibition, where it is now on view. Since the first discovery the lode has been opened out in two other places on Mr. M'Killop's land, the last find being more than ½ a mile from the first discovery. In all the places the cobalt lode has been exposed to view clear and well defined. In each the lode seems to run almost due north and south. Following in the same direction but a little further south, Mr. Dodd has discovered the lode on his freehold. A Melbourne firm of merchants, who have examined the ore on view in the Exhibition, have offered

to take 200 tons a month of this ore in its raw state at £45 per ton, but this is believed to be considerably under the present market value. In making the roads on this property to work the cobalt, a copper lode has been discovered, and ore is now being raised and dressed to be smelted at Newcastle. The sinking is close to the Belubula River, and at present is about 25 feet deep. This is the only copper now being worked in my division.

During the year I sold 132 miners' rights, one business license, and thirty-two mineral licenses.

BATHURST DISTRICT—Burraga Division.

(William Ritchie, Mining Registrar.)

Gold.—Owing partly to the very dry season and partly to the demand for miners at the Burraga Copper Mine, the attention has not been paid to gold-mining that the auriferous nature of the district warrants.

Silver.—During the year I have received 31 applications, embracing an area of 1,100 acres, for silver-mining purposes; but up to the present no work has been done on the land applied for.

Copper.—During the year Mr. Lewis Lloyd, the proprietor of Burraga Mine, has given employment to 170 men, who have treated 4,991 tons of ore, yielding 500 tons of fine copper, value £36,000. Eight men are prospecting on Brownlow & Co.'s lease, north of Mr. Lloyd's, and have struck two nice veins of ore, which I understand will be treated by Mr. Lloyd, who is erecting two new furnaces. I have also received 10 applications for leases of land for copper-mining purposes, embracing an area of 200 acres. Of this, 160 acres have been applied for by the New Burraga Copper-mining Syndicate, who have three men prospecting on one of their leases about 2 miles north of Burraga, where they have struck a nice lode of black and yellow copper ore and native copper.

The future prospects for mining in this district are very bright indeed.

Copper, 500 tons; value, £36,000.

Total value of mining plant in the division, £7,000.

BATHURST DISTRICT—Cowra Division.

(B. P. P. Kemp, Warden's Clerk.)

There was a large demand for miners' rights and mineral licenses during the year, and a larger area than usual taken up under mineral lease; but up to the present time it does not appear that anything beyond a few specimens of minerals have been unearthed, and matters now are very quiet again, as far as I am aware of.

BATHURST DISTRICT—Tuena Division.

(Fred. Bell, Warden's Clerk.)

I have the honor to forward herewith my annual report upon the mining industry of the Tuena Division of the Bathurst Mining District for the year 1888.

During the year 382 miners' rights were issued, equivalent to £150; 109 mineral licenses, equivalent to £109; and 123 business licenses, equivalent to £75. 232 mineral leases were applied for, representing 8,120 acres, equivalent to £3,190, and 68 gold leases, 413 acres, equivalent to £520. About 500 men are employed on the different mines in this division, the silver mines giving out more than three-quarters of the labour. The results of the smelting at the Mount Costigan Lead and Silver Mine, and the Cordillera Hill Silver Mining Company will be found on the attached forms. On the whole, the mines of this division are in a flourishing state.

BATHURST DISTRICT—Cowra North Division.

(Wm. Cook, Mining Registrar.)

There is really nothing to report for this division as through the severe drought, the Gospel Oak Battery although erected twelve months have not been able to start crushing, they are now engaged in pumping water to the dam from a spring ½ a mile distant, so that crushing will soon commence which it is believed will give a great impetus to mining around Stockyard Gully.

There has been a few men engaged in the alluvial ground about, a true estimate of the quantity of gold won cannot be obtained, but about 40 oz. is probably near the amount.

The only quartz crushed from this division was a parcel of 30 tons from the Southern Cross, Hogan's Gully, the yield from which 10 oz. 10 dwt. also a small parcel from Sullivan's of 4 tons, which yielded 1 oz. of gold.

What is reported to be a rich copper lode has been discovered at Copper Creek, in the parish of Malongulli, a number of assays have been made, which are stated to have been favourable. A 40-acre lease has been taken up by the finders.

During the year 114 acres have been applied for under gold-mining lease regulations and forty mineral leases.

Total value of mining plant in the division £2,000.

BATHURST DISTRICT—Lithgow Division.

(H. Lumsdaine, Warden's Clerk.)

I do myself the honor to report for the information of the Minister for Mines that there has been continued activity in mining operations throughout the Lithgow division of the Bathurst Mining District during the year 1888.

Prospecting for silver and for coal and shale has been carried on with success and has resulted in the opening of new seams of coal at two localities, namely, two in close proximity to the Great Western Zigzag and two at Cullen Bullen.

The miners' strike which occurred in the Newcastle district during the year gave a short impetus to the trade of the collieries in and around Lithgow; but at the close of the year that impetus was followed by considerable depression.

As

As regards the number of gold and mineral leases applied for during the year and the amount of revenue collected, I have to state that full particulars were supplied to the Warden of the district on the 16th ultimo. The labour conditions, as far as I am aware have been well observed.

On the whole, I believe the state and prospects of mining in this district may be pronounced satisfactory. My inability to leave the office, in consequence of other duties of my position in the public service requiring my daily attention, prevents me from visiting the mines, and so precludes me from furnishing any specific information as to particular indications of ores or as to particular localities in this metalliferous district.

TAMBAROORA AND TURON DISTRICT—Hill End Division.

(W. A. Steel, Warden.)

I have the honor to submit my annual report of the various divisions in the Turon and Tambaroora Mining Districts, under my charge for the year 1888, and I am glad to state that a perceptible improvement in mining matters has taken place during the year.

At Hargraves, the Eureka reef (late Bonds) now owned by the Hargraves Gold-mining Co., valuable machinery, consisting of crushing plant and battery, costing several thousand pounds have been erected under the able managemant of Mr. M'Lellan, from Adelong, and the first trial crushing of stone is about being raised at the Big Nugget reef (within a few yards of where the historic 100-cwt. was found in the early days) owned by a Mudgee syndicate, a large plant and battery has been erected and several crushings have been made, but the result has not been made known. Considerable excitement has recently been caused by the discovery of valuable reefs at Tucker's Hill, about three miles from Hargraves, on the Mudgee road, a number of leases have been applied for, and a company formed to work the Luck's All lease. Sixty gold lease applications have been received at Hargraves during the year, comprising an area of 443 acres, and three hundred miners rights and business licenses have been issued during the same period. Mining has been retarded by the scarcity of water.

Hill End Division—Nothing in alluvial workings has been done worth noting, the Cornelian Gold-mining Co. have continued on with varying success, with the exception of a short interval for want of water. A few nuggets have been unearthed, one weighing 28 oz. pure gold by Ackerman and Myers, in their sluicing claim, Hawkins Hill. The chief and most noteworthy event is the success of the Red Hill Gold-mining Co., Tambaroora, owned by Newton Bros., which has been worked for several years with poor success, partly owing to the great influx of water; the enterprising proprietors however having procured more powerful machinery, they, three months since, were rewarded by striking the reef at a greater depth, and stone has been crushed yielding 7 oz. to the ton, which continues to improve.

Three hundred and twenty-seven licenses and miners' rights, and 33 gold-mining leases have been issued, being an increase on the previous year.

Sofala Division—Considerable activity has been going on in this part of my district, through the discovery of several valuable reefs at Wattle Flat and Spring Creek. At the former owned by a Bathurst syndicate, extensive machinery and plant is in course of erection, and the stone already raised is said to be very rich.

The Queenslander Mine—A valuable discovery has been made by Mr. Morgan, a gentleman of large experience in mining, at Spring Creek, near Sofala, in alluvial workings, which the owners are satisfied will pay well when machinery is erected for specially treating the ore, which is found in unlimited quantities on the surface.

The Tara Mine, which caused some excitement at the time of its discovery, is closed for the present, owing to some disagreement between the owners and lessees.

TAMBAROORA AND TURON DISTRICT—Sofala Division.

(M. Fagan, Mining Registrar.)

I have the honor to forward my report on the mining interest in this division for the year 1888. The scarcity of water, which has been increasingly felt during the past five or six years, has prevailed during the past year, thereby entirely suspending sluicing operations throughout this division.

Notwithstanding the continned dry weather a marked change for the better has taken place in quartz reefing, owing principally to a valuable discovery made by Mr. Thomas Morgan, late of Mount Morgan, at the head of Spring Creek, about 3 miles south-west of Sofala, now known as the Queensland Gold-mining Company's Mine. This mine is undoubtedly a vast mass of auriferous rocks, the extent of which has not yet been ascertained. The face of the hill, comprising the claim, has been opened up by two excavations, one near the road, the other about 100 feet higher up, both of which show a great number of gold-bearing quartz veins, running in every direction, and that is the character of the rock wherever it crops out in any part of the property. The area is about 22 acres, which includes machine site, dam and water rights, &c. A good supply of water is obtained from an old shaft near the battery. The engine in connection with the mine is 25 horse-power, and the boiler 30 horse-power. Both are in first class order, but at present only work ten head of stampers, although capable of doing much more. Intermediate gear and concentrating machinery are now being erected, and as the gold won by the battery pays current expenses, the directors are confident that by the use of these improved appliances upon the large quantity of stone to be treated, the mine will soon become one of the best dividend paying and permanent properties in the Colony. Twenty men are employed on the mine. 500 tons of quartz have been raised, which yielded 120 oz. of gold, value £470 3s. 3d.

Owing to the aid obtained from the Prospecting Vote, the prospector, Mr. George Williams, discovered a payable reef at a depth of 82 feet, on Camey's line of reef, about 1½ miles south-west of Sofala. Great excitement was caused by this discovery and several leases were at once applied for, in consequence of which a considerable increase has been made in the amount of revenue received by me during the year. The prospector applied for a 6-acre lease of the land which he has since sold to a gentleman from Sydney, who has secured an engine site close to the mine, upon which he is going to erect an engine and battery.

Wattle Flat.

Big Oakey Gold-mining Company—Work has been carried on continuously by this company during the year. A shaft, 9 feet by 3 feet, has been sunk from surface to a depth of 200 feet, from the bottom of which a tunnel has been driven 100 feet west and 96 feet east. A vein, 6 inches thick, showing gold freely, has just been cut in the eastern drive. There is a 10-horse power boiler and engine together with complete winding gear on this mine, and £2,000 have been expended in prospecting the Company's ground (15 acres) during the year.

The

The old Caledonian Reef has always been a favourite, and at no time has it been quite deserted; yet, through want of machinery, &c., on the ground, the expenses attending crushing were so great that all the profits have been swallowed up.

In the month of May last, the lease upon which the mine is situated was declared forfeited owing to the fact that the labour conditions had not been complied with. So soon as the forfeiture became known some of the old miners who knew the valuable returns which had been received in olden days, determined to try the mine. Amongst these were Messrs. Roberts and West. So certain of success were they that they applied for a 10-acre lease of the land, and purchased a crushing plant at Crescent Hill, about 16 miles from Tambaroora. The plant is complete and consists of a 20-horse power engine and boiler, 10 head of stampers, all of which are in good order. While the machinery was being removed work at the reef was going on, and the dams have been formed, which, when once filled with water, will contain a sufficient supply for several months. A large quantity of stone is at grass, so that as soon as rain comes no time will be lost in testing the value of the mine.

Solitary Reef, Webb & Co., prospecting party.—The old shaft has been enlarged and timbered a depth of 170 feet, and further sunk a depth of 80 feet, on a vein averaging 1 foot in width. So far the mine has been non-paying, as it scarcely averages 7 dwt. per ton.

Whalen's Hill.—Some very rich specimens were discovered on this well-known hill, by John Holmes, in May last, who has since sold his interest in a 12-acre lease for £1,000.

Quartz Ridge Gold-mining Company.—This is a private company prospecting old ground area 25 acres leased; machinery, 12 horse power engine working a suck pump, winding gear, and ten head of stampers, and wet shaft pipes and pump down to a depth of 180 feet; still sinking; vein at present narrow and non-payable, hard diorite rock; 10 hands employed, also dray and three horses.

Lord Nelson Claim.—This is an extended quartz claim 1,200 feet by 1,100 feet along line of reef prospecting sinking a shaft 120 feet. Motive power, a whip worked by one horse, had several trial crushings of over 200 tons, not payable; now trying for a better run of stone—vein about 8 inches wide. Both of these claims are on the one line of reef, which in olden times returned large quantities of gold, was the first reef worked in New South Wales in 1852. The Honorable G. A. Lloyd having been the Sydney manager for an English Company. The reef was worked to the water level and then abandoned. At one time it supported a large population—two public houses, stores, &c.

Bells and Party, Bullock Flat, have erected an 8-horse power and battery of 5 head of stampers, but, owing to the scarcity of water, have been unable to do any effectual work.

Palmer's Oakey Franks line of Reef.—An extended quartz claim has been taken up on this line of reef by Messrs. Buckland and Franks, in connection with which a small engine and battery has been erected. 18 tons of quartz crushed from this claim yielded 6 oz. of gold. Work has been suspended.

At the Upper Turon, O'Farrell and party and McDonnell and party, have made good wages in their ordinary alluvial claims, on old and abandoned ground.

Razorback Gold and Antimony Company.—This mine is owned by a Sydney Syndicate, and comprises 42 acres of land formerly, worked by M. A. Oppenheimer. The mine is situated about 10 miles east of Sofala. The course of the lode or reef is north and south, and it has a uniform underlay of 1 foot in 2 to the west. The foot wall is a greenish brown diorite; the hanging wall is composed of a hard black slate, much shattered. The lode or reef is composed of quartz and sulphide of antimony with some iron pyrites; the latter lying between the walls and the lode. The gold lies, as usual in all reefs, principally along one wall, and in this case is associated chiefly with the antimony. The reef is very irregular in thickness, varying from 12 to 18 inches in places and opening out to 5 feet. At present engaged in cutting down shaft for the purpose of erecting winding and pumping gear. 10 men employed during the month of December last.

Applications received for gold-mining leases during the year, 84; for mineral leases, 8; business licenses issued, 24; miners' rights issued, 527; mineral leases issued, 13.

The following amount of gold was transmitted per gold escort during the year, viz.:—2,715 oz. 5 dwt. 7 gr.; by other means, 339 oz. 8 gr.—Total, 3,054 oz. 5 dwt. 15 gr. Value of same £11,495 19s. 4d.

Total value of mining plant in the division, £5,100—a return of which is herewith attached.

The following shows the owners of several parcels of quartz obtained from various veins in the division, and treated at Mr. Webb's Mill, Wattle Flat:—

	Tons.	oz.	dwt.	gr.
Joseph Gittens	2	1	18	0
J. Bonfield	10	9	11	0
F. Dowling	2	1	13	0
H. Ellis	4	1	18	0
T. Webb	14	15	16	0
J. Waddle	10	4	13	0
S. Beath	22	19	4	0
T. Crawford	3	0	0	5
T. Webb	17	4	3	0
J. Lloyd	1	1	9	0
H. Ellis	21	17	2	0
J. Reilly	4	1	19	0
D. M'Cudden	9	4	3	0
J. Webb	16	4	3	0
J. Wilde	2	0	4	0
H. Ellis	24	17	17	12
J. Holmes	5	1	15	12
F. Dowling	17	7	10	0
C. Vassalla	2	2	3	0
H. Gice	6	18	0	0
S. Beath	5	3	4	0
C. Bennett	12	11	6	0
F. Bennett	5	2	16	0
J. Bagnall	2	0	0	10
S. Beath	27	25	10	6
H. Ellis	20	12	16	0
H. Gice and others	30	22	2	0
Total	292	212	17	1

Aid

Aid from the Prospecting Vote of 1888 has been granted to the following parties in this division:—

Thomas Crawford and party, Allendale, to continue the old 40-foot shaft a further depth of 160 feet.

Dowling, Lee, and party, Magenta Reef, to continue their present 60 feet shaft to a further depth of 100 feet.

Louis Balsom and party, Dead Horse Reef, to sink a shaft from surface to a depth of 100 feet.

Webb and party, Magenta Reef, to drive 50 feet each way from the bottom of their 250 feet shaft.

Wm. Heagney and party, Bullock Flat, to sink a perpendicular shaft at a point one chain westerly from the last vein, to a depth of 200 feet.

H. Brees and party, Swedes Hill, to sink on the north-eastern reef to the depth of 150 feet.

Stephen Swain and party, Caledonian Reef, at Big Oakey Creek, driving into the hill for a distance of 150 feet.

Hendrick, Ellis, and party, Butcher's line of reef, to drive a tunnel for a distance of 250 feet.

The Big Oakey Gold Mining Company, Surface Hill, to drive an additional 200 feet from the bottom of their 200 feet shaft.

Elliott and party, Cemetery Hill, to sink from surface on the underlay to a depth of 50 feet.

Foskett and party, Nuggetty Hill, to sink a shaft from the surface to a depth of 100 feet.

Hyland and party, Trappett's Hill, to sink a shaft on the underlay of the reef.

TAMBAROORA AND TURON DISTRICT—Ironbarks Division.

(J. Shillington, Mining Registrar.)

I have the honor herewith to submit my annual report for the Ironbarks Division of the Tambaroora and Turon Mining District for the year 1888.

At the commencement of the year several reefs were being vigorously prospected, some with encouraging prospects, but the limited rainfall during the year has caused work to be suspended in several mines. Two batteries of 20 stamp-heads and one of 5 stamp-heads have been erected during the year, also large dams for conserving water for quartz-crushing, but at only one dam is there any water. At several reefs considerable quantities of quartz await crushing (until sufficient rain falls to put water in the dams) the yield of which will determine whether the quartz contain gold in payable quantities, which result is looked forward to with considerable interest. Some of the reefs have been prospected to a much lower level than formerly, but as yet only one shaft (at Specimen Hill) has reached a depth of 200 feet.

During the year 65 application for gold-leases were received for land aggregating 498 acres and 6 applications for mineral leases were received for land aggregating 240 acres.

407 miners' rights, 27 business licenses and 36 mineral licenses were issued during 1888.

TAMBAROORA AND TURON DISTRICT—Hill End Division.

(T. Purcell, Mining Registrar.)

I beg to report for your information on mining operations in my division during the past year, and I am sorry to say it is still on the decline, although the revenue is larger than the previous year. On Hawkins Hill, the Cornelian Gold-mining Company are still at work, although they had to knock off for some months for want of water, the season has been so extremely dry. Mr. J. W. Marshall, the manager, has kindly supplied me with all information in his power. They have crushed during the year 1,400 tons of quartz for a trifle over 207 oz. of gold; this has been taken from a blow of quartz ranging from 15 to 50 feet wide. There are only three or four other parties working on Hawkins Hill, none of which, I am informed, are making wages. Messrs. Newton Bros., Red Hill, Tambaroora Mine, has been constantly at work during the year, but has had great difficulties in contending with water, principally, I am informed, through the machinery not being powerful enough. They struck very good stone two or three months ago, but I have not been able to get the particulars, as Mr. E. Charlton, the manager, declines to give any information to the department. The few other quartz claims worked by the miners on their own account have not been payable.

A considerable quantity of land has been applied for under lease at the Root Hog, Macquarie River, by Messrs. Barclay and Carrington, of Sydney, and others, who have put on from fifteen to twenty men at once to work the ground. They have had two or three crushings, but I am informed it was not payable. Mr. H. F. Wilkinson, the manager, informs me they are going to put up a battery of their own on the ground.

In alluvial there has nothing new been found, and, as a matter of course, the old ground is getting poorer every year.

I have issued 315 miners' rights, as against 302 the previous year; 12 business' licenses same as previous year; 7 mineral licenses, none previous year; and 33 gold-mining leases, as against 15 the previous year. The revenue collected from all sources under the Mining Act at this office was £481 2s. 6d. for the year.

I am sorry to say none of the parties to whom aid was granted out of the Prospecting Vote struck payable gold during the year. I have not been able to get the returns of gold sent from here during the year. Since the gold escort was abolished it goes through various sources to the Mint, and is kept for obvious reasons very quiet.

Total value of mining plant in the division, £18,500

MUDGEE DISTRICT—Dubbo Division.

(Mr. W. S. Caswell, P.M., Warden.)

I have the honor to make the eighth annual mining report for this subdivision of the Mudgee District for the year 1888.

The mining interest at Tomingley and Myall, owing to the want of water, has received a check. The gold won from the year 1884 had increased from about £4,000 per annum to £10,000 in the year 1887. For 1888 it had fallen as low as £3,000; the total won, so far as I can ascertain, being about 767 oz.

The

The population at Tomingley and Myall remains about the same, 250; but 8 miles south, at the new rush in Madden's selections, there are about another 100 persons. The Public School attendance and business establishments continue the same as last year.

The water supply has been deficient for all purposes, the new Government tank has never yielded any. The residents depend on the Springs near Tomingley.

Crushing machines.—The 3 crushing machines are thus distributed:—1 at Tomingley, 1 at Myall; the third has been removed from Tomingley to Ten-mile Ridge. The last has not been at work since its removal.

Miners' rights issued at Tomingley:—Miners' rights for 1887, 52; for 1888, 149. Business licenses, for 1887, 7; for 1888, 8.

Miners' rights issued at Dubbo:—Miners' rights for 1887, 63; for 1888, 86. Business licenses for 1887, 1; for 1888, 1. Mineral licenses for 1887, 7; for 1888, 42.

Tomingley Reef.

Prospecting Claim, late Tattersall and Hayes, has been abandoned since last report.

No. 1 *North.*—Croft, Reakes, and party crushed during the year 60 tons of quartz for 17 oz. 8 dwt. They have 25 tons of stone at grass. Reef looking well at 190 ft. deep, and at lowest level 5 ft. wide.

No. 2 *North.*—Crowhurst and party crushed 43 tons for 18 oz. 5 dwt. They have 130 tons at grass, estimated to yield ½ oz. per ton. Shaft lowered from 140 ft. to 175 ft., with width of vein at that depth of 3 ft. 6 in.

No. 3 *North.*—Late Richmond and party—now Centennary Company, of Orange—crushed 150 tons of stone for 25 oz. of gold. They have 150 tons of poor stone at grass. The depth of working is 70 ft.; width of reef, 10 ft.

There is only one battery now in Tomingley—the Centennary Co.'s—the other crushing plant having been removed to Ten-mile Ridge.

The want of water has completely paralysed mining on this reef, only one claim having been worked for nearly five months.

Myall Reefs.

Spare ground.—Mooney and party have raised 70 tons of stone for 81 oz. of gold. The depth of shaft has been increased from 120 ft. to 140 ft.; the reef being 12 ft. wide. They have 25 tons of stone at grass.

No. 1 *North.*—Mooney and party have crushed 498 tons of stone for 626 oz. of gold. The shaft is 140 ft. deep, with width of reef 12 ft.

These two claims have been on suspension of work for five months for want of water. The owners have been particularly unfortunate, for, although the appearance of the reef is even better than it showed last year, they only raised 568 tons in 1888, as against 2,000 tons in 1887, being little more than quarter of the last-mentioned year's raising.

The proprietors have sent to England for treatment 75 tons of stone, and 25 tons of tailings, as a sample to induce the formation of a large Company, and should their hopes be gratified, the venture must tend to develop the mining interest of the district generally.

Ten-mile Ridge.

There has been some prospecting in this direction, but owing to want of water, no mining of any consequence. The crushing machinery, owned by Martin Moore, purchased from the United Star Co., and removed from Tomingley to the Ridge, has been idle since its removal for the same reason.

The New Rush.

This rush, which commenced on the 5th of last November, owing to the discovery of alluvial gold by Mooney and party on Madden's conditional leasehold, No. 9, situated about 9 miles south of Tomingley, and 3 miles west of the Parkes Road, and 11 miles north-west of Ten-mile Ridge, has caused considerable excitement in the neighbouring gold-mining districts. There were at one time as many as 500 people on the ground. Most of these, the majority of whom were not *bona fide* miners have left—very few having ever worked. There are still 100 persons on the ground. No washing has been effected owing to want of water. Twelve claims have bottomed on apparently good stuff. The nearest water is at least 4 miles distant on the Bogan River, and even there it is not sufficient for mining purposes. Water carts supply water to the miners from the Bogan and Tomingley at 3d. per bucket. The depth of sinking varies considerably; it is through tenacious red and greyish clay, from 40 ft. to 140 ft. The wash is from 1 foot to 3 feet, and very heavy; driving is safe and easy.

Most of the claims are on Madden's leasehold on conditional purchase. He has demanded payment, and in some cases obtained it from the miners for occupation of his land; and as he has appealed to the Dubbo Court in some instances for trespass, I have deemed it my duty to suggest the cancellation of his holdings. The field cannot be thoroughly tried until there has been a fall of rain. There are several reefs on Madden's property, on one of which a claim has been worked, and 30 tons of stone, supposed to contain 1 oz. of gold per ton, placed at grass.

Copper.

The works at Girilambone Mine are still suspended.

What appears to be a valuable lode has been discovered near Geurie Railway Station, between Wellington and Dubbo, Mr. Rowles, one of the proprietors, has favoured me with a report hereto attached.

Rose Hill Copper Mine.—Consists of 50 acres and is situated on a conditional purchase in the Parish of Muketa Mulga, County of Lincoln, about four miles south of Geurie Railway Station, on the Western Line. Three shafts have been sunk of the respective depths of 25, 40, and 90 feet. The two first show blue carbonate stains very freely. The 90-ft. shaft follows the lode which is well defined. The proprietors have for the present stopped work until they receive a report of the smelting of 4 tons of ore at Newcastle. The lode is 2 ft. 6 in. thick, consisting principally of yellow sulphide of copper ore, which, in various assays, has ranged from 18 to 30 per cent. of metallic copper with traces of gold and silver. As soon as the result of the smelting is known work will be resumed and a new shaft put down perpendicularly, as at present, owing to the shaft following the dip of the lode, there is great difficulty in bringing ore to the surface. The proprietors resident in Dubbo are Messrs. Nancarrow and Rowles.

Coal-mining

Coal-mining.

I attach reports hereunder of the progress and development of the coal-mining interest.

The Managers of the Great Western Coal-mining Co, the Dubbo Coal-mining Co., and the Spicer's Creek Coal-mining Co. have all favoured me with reports which I attach as part of my annual report.

Great Western Coal-mining Company (No Liability).

This Company is divided into 24,000 shares, held by about 30 shareholders principally resident in the District of Dubbo. The Company's property consists of 1,280 acres of minerally conditionally purchased land at Ballimore, on the Talbragar River, about 23 miles from Dubbo, and the Company have expended £3,000 in boring for coal with a Government Diamond Drill. Two bores have been put down.

In the first a seam of good coal, 5 ft. 2 in., was found at a depth of about 550 feet, and under this a very valuable artesian mineral spring was tapped to which the Company have put down 3 inch piping, and the water is now running away through a reduced pipe at the rate of 1,000 gallons an hour. The overflow is very beneficial to the stock, and perceptibly increases the volume of water in the small river Talbragar.

The water has been analysed by the Government analyst and others, and is said to contain many valuable ingredients, some of which are sodium potassium and traces of lithia. Experts have pronounced the water to be very like the Vitchy, French water, and equal to many continental waters. The Company contemplate erecting a large hotel with a view to establishing the spring as a permanent watering place.

Smaller seams of coal have been met with in both bores. The second bore was put down to a depth of 1,100 ft. when discontinued, but the shareholders are sanguine that at greater depth they will meet with more success.

Report of Mining Manager of Dubbo Coal-mining Company.

The Dubbo Coal Mines are situated on the Talbragar River east of Dubbo, about 20 miles, and about 14 miles from the nearest point of the Great Western Railway, three shafts have been sunk on the property, in all 420 feet. Tunnelling about 120 feet.

About 50 tons of coal have been raised, part of which was given to the railway as a trial, which proved very successful, several seams of coal have been cut in the sinking, ranging from 1 ft. 6 in. to 5 ft. 10 in. At present the mine is laying idle, awaiting the inspectors' report as to the improvements, the inspectors have just reported, and the Land Board have recommended the approval of the inspectors' report, which is as follows:— On 980 acres of land, the amount expended is £2,107 10s., over £2 per acre, the Company will recommence operations on the mine as soon as the certificates of conformity have been issued; on the Company's property there is 15 ft. of fire-clay running through the mountain, the fire-clay is of a superior quality, the property is on the bank of the Talbragar River with a never failing supply of water. The above land was taken up in 1883, the land is well timbered with ironbark, box, and pine."

Although mining has not been as profitable in 1888 as in the previous year, there is nothing to make miners despond, there is no deterioration in the value of mining properties. The mining interest, like the grazing, has suffered chiefly from the dry season; with a favourable change of weather, gold-miners have nothing to fear.

MUDGEE DISTRICT—Wellington Division.

(*F. Marsh, Warden.*)

I have the honor now to forward the accompanying reports from the mining registrars of the Wellington Division of the Mudgee and the Ironbarks Division of the Tambaroora and Turon Mining District, with detailed particulars of the several workings, &c., in both divisions for the year 1888.

Many of the remarks contained in my report of the 18th January last, for the year 1887, referring to the extent and value of the copper and gold-fields surrounding Wellington and Ironbarks, are of course applicable on the present occasion. But, unfortunately, there is no ignoring the fact that the prolonged and very severe drought now prevailing has materially interfered with the prosperity of the mining interests generally.

With a thorough (and what would be hailed with joy by all) change in the weather, and a rainfall that would be sufficient to allow of mining operations being carried on continuously, I am sure that very much more valuable results would ensue than what appears in the enclosed papers, as both the divisions named are rich in mineral resources.

The details, as I have remarked, are shown in the accompanying return, and, considering the severe nature of the drought, show that, notwithstanding such adverse circumstances, a fair amount of gold, copper, &c., has been won during the year.

In passing, I may note that the powers conferred under the Crown Lands Act of 1884, to dig and search for gold on alienated lands within proclaimed gold-fields, and to remove minerals, &c., are being better understood by the mining public, and advantage is being taken accordingly of the privilege.

In closing, and irrespective of my special report on the subject, I may remark that my inspection of the Buckinbah Yeoval Gold-field in October last, where a rich discovery of alluvial gold was reported to have been found, proved that the report had no justification whatever, and I may now say that the appearance of such a report was very severely criticised and condemned by several of the western newspapers.

MUDGEE DISTRICT—Hargraves Division.

(*T. O'Brien, Warden's Clerk.*)

In submitting my annual report I have the honor to inform you, that, during the year ending 31st December, 1888, I received sixty applications for gold-mining leases, all of which were surveyed within the last three months.

The Big Nugget Gold-mining Company, to which a grant of £527 10s. has been sanctioned from the Prospecting Vote, enlarged their prospecting shaft from the surface to its present depth, 172 feet. This shaft is not 189 feet deep, as was at first represented. The machinery attached to the Big Nugget consists of an 8-stamper battery, a winding and a pumping engine, the whole being valued at £5,000. No quartz have been raised from this shaft, and the labour conditions have not been fulfilled since the 2nd December last. The Company should be compelled to comply with the labour conditions, or show cause why their leases should not be cancelled.

365 tons of quartz, averaging 8 dwt. to the ton, were crushed for various persons by the battery attached to the Big Nugget shaft.

The Hargraves Gold-mining Company Limited formerly known by the name of Eureka, has 15 men employed in sinking a shaft and in erecting machinery thereon. The machinery is valued at £1,600. The shaft is now 100 feet deep, and the shareholders express their intention of having it continued to a further depth of 500 feet.

The Queen of Shebah, situated near Maitland Bar, and owned by Wilton and party, has been sunk to the depth of 95 feet. The last 3 tons of quartz raised and crushed from this claim yielded 2½ oz. per ton.

The proprietors of the Clarke's Creek Claims, Catherine and Crystal Palace had a considerable amount of work done in the early part of the year. The Catherine crushed 50 tons with a result of 18 dwt. to the ton. The Crystal Palace crushed 8 tons, which yielded half an ounce to the ton. The machinery, belonging to the proprietors of the Catherine and Crystal Palace Claims consists of a 10-stamper battery, iron frame, a wheeler pan, two concentrators, copper-plates, 24 ft. blanket tables, with pumps for supplying water to the battery from the dam built in the creek, also a 6-inch cylinder Tangye pump, and a 14 horse-power engine and boiler. The whole is valued at £4,000. 100 tons of quartz, yielding from 12 to 25 dwt. per ton, were crushed for various small holders in the vicinity of Clarke's Creek.

Alluvial.

Many of those miners who have been engaged for years in alluvial mining in this locality were obliged to seek other employment on account of the scarcity of water occasioned by the drought. The pug-mills and sluicing claims had also to be abandoned through the same cause.

266 miners' rights, 24 business licenses, and one mineral license were issued by me during the year. Taking into consideration the number of leases for which application has been made, and the amount of capital which the applicants state they will expend on their holdings, I believe that mining matters will be in a flourishing state during the year 1889, and hope, therefore, to have the pleasure of furnishing a better account of this locality in my next yearly report.

MUDGEE DISTRICT—Mudgee Division.

(R. H. Acheson, Mining Registrar.)

I have the honor to submit in the following my report for the year 1888 on the mining industry of the Mudgee Division of the Mudgee Mining District.

Generally, mining has improved on its condition in 1887, as instanced in the number of leases, principally mineral, taken up here in 1888 as compared with 1887. These leases are mostly in the region of Boobolar in the county of Phillip, and were taken up for silver-mining. From the first they proved well, but as the lessees intend developing them with outside capital, not much, so as to judge of their value, has been done on them as yet.

Gold-mining in the division has been greatly retarded by the want of water. Limestone Creek still maintains a small mining population on its alluvial workings, where, during the year, several small nuggets of from 4 to 10 oz. were found.

Roberts and party are still working their lease on and adjoining hill, but pending the erection of crushing machinery, no reliable estimate of the yield can be obtained.

At Merrendee, Crossing and party are in possession of some ground worked in earlier days, but not much has come of it yet, but they are sanguine of ultimate success. This party is in receipt of aid from the Prospecting Vote.

Mullamuddy and Apple-tree Flat yet retain their mining inhabitants, who, during the year, have done fairly well.

In 1888, I sold 309 miners' rights, 59 mineral licenses, and 5 business licenses.

The local banks purchased 3,943 oz. of gold during the year, and I understand that quite 2,000 oz were sent from the district by private purchasers.

MUDGEE DISTRICT—Wellington Division.

(A. G. Chiplin, Warden's Clerk and Mining Registrar.)

I have the honor to herewith submit my annual report for the year 1888.

Since my last report mining in this division shows some signs of improvement; copper being the mineral most sought after.

Portions of the Wellington Temporary and Permanent Common, situate to the east and south of, and overlooking the town, were some years ago pegged out, and applications made for leases of same.

These applications were refused, and the ground in consequence was abandoned. Some eight or nine months ago the land was again pegged out, and rich assays resulting from test of the ore found, a good portion of the common was soon taken up under mineral lease and mineral license regulations, 780 acres being applied for under mineral lease regulation during 1888. None of these mineral lease applications have yet been approved of, but a good deal of work has been done in some of the claims in the matter of raising ore. The principal claims are, the Syndicate Claim, Lindberg & Co. Claim, and the Apsley, all of which are doing good work.

The Wilkinson Mine, situate near the Caves, is also raising ore. A smelting furnace has been erected by a Company at a cost of £450, and the ore from the Lindberg and Apsley claims has been tested, with very poor results, only very little copper being obtained from several tons put through the furnace, and that obtained being mixed with slag. The prevailing opinion is that the furnace is defective. However, operations, which had been somewhat retarded by these unsatisfactory tests, have again commenced, and fresh tests will shortly be made, with, it is anticipated, better results.

The Belara Mines, situate at Goolma, where no smelting was done in 1887, have this year raised 1,400 tons of ore, 840 tons of which have been smelted, giving a return of 70 tons of copper, valued at £5,250.

At Sugarloaf, in the parish of Galwadgere, the leases formerly held by Backes and others, have again been applied for. In

In gold-mining the principal work done has been in alluvial mining, as will be seen from the gold returns, and has been carried on in the beds of the Macquarie and Mudgee Rivers and their tributaries.

The gold returns, kindly supplied by the managers of the Bank of New South Wales and Commercial Bank, show that 595 oz. 5 dwt. 16 gr. were obtained during the year from alluviums and 27 oz. 12 dwt. 12 gr. from quartz.

The old Mitchell's Creek Mine, which has been idle for some years, is to commence work almost immediately, and, as there is said to be plenty of payable quartz obtainable in the neighbourhood, a revival in quartz-mining may be looked for.

During the year 29 mineral leases were applied for and 4 gold leases.

Miners' rights issued during the year, 97; business licenses, 1; mineral licenses, 72.

MUDGEE DISTRICT—Tomingley Division.

(*R. Bell, Mining Registrar.*)

Tomingley.

During the past year mining has been almost at a standstill at Tomingley and the Myall in consequence of the great scarcity of water, there only being sufficient for domestic purposes.

At the beginning of the year there were two good crushings at the Myall, viz., No. 498 tons for 626 oz. gold, and the spare ground, 70 tons for 81 oz. All work at the Myall has been suspended for the last five months.

At Tomingley the quantity of gold won has been very small, viz.:—

No. 1—Croft and party crushed 60 tons for 17 oz. 8 dwt.

No. 2—Crowhurst and party crushed 43 tons for 18 oz. 5 dwt.

No. 3—Contencry Company, of Orange, crushed 150 tons for 25 oz.

Total—60 oz. 13 dwt.

There are two batteries, one at Tomingley and one at the Myall.

There has been little or no mining at the Ten-mile Ridges during the last year, but Mr. M. Moore purchased the battery formerly owned by the United Star Company, Tomingley, and had it erected at the ridges, but in consequence of the drought has not been able to do any crushing yet, but about 50 tons of very fair stone is now at grass. A rush set in on the 5th November last on a conditional lease owned by Geo. Madden, about 9 miles south of Tomingley, but up to the present nothing of any importance has been found, and with the exception of the prospecting claim no other claim is on payable gold. There are at present about 100 men on the field, and it will not be properly tested until heavy rain falls.

The population of Tomingley is about the same as in 1887, namely, 200 persons, and with the new rush and the ridges would be about 350 persons. The average school attendence is 38; hotels, 2; stores, 2; butcher, 1; baker, 1; blacksmith, 1.

The number of miners' rights issued for 1888 was 149; business licenses, 8; mineral licenses, 4.

Total value of mining plant in this division, £3,000.

MUDGEE DISTRICT.—Gulgong Division.

Mining matters in the Gulgong portion of the Mudgee District have been very dull during the last twelve months. The prolonged drought prevailing over this part of the country has had a most depressing influence both on mining and agriculture; and should there be no rain within the next week or two, the outlook for the coming winter will be very gloomy indeed. In regard to gold-mining, little has been done during the past year. None of the prospecting parties receiving aid from the Prospecting Vote have been successful in finding gold. Some of the localities prospected looked very promising and merit a further trial, when more money is available for the purpose.

At Scully's claim, on the Black Lead, work has been carried on during the greater part of the year. The plant is very complete and in good working order. It is the only claim at present being worked by machinery in the Gulgong District.

The old White Horse claim on the Nil Desperandum, has ceased working. This claim was worked for some time by a party of miners with very good results, who received from the late Company the sum of £2,000 as the price of the mine. The Company erected machinery, and have been working for the last three or four years, but have at last given it up in consequence of the difficulty and expense of sinking through the limestone. The machinery has been taken down and sold, the slabs drawn from the shaft, and the ground is now deserted—never, in all probability, to be worked again.

At Tallawang, near Clough's Gully, Chappell and party have taken up a lease for the purpose of working the cement. Mr. Chappell has erected machinery for crushing the cement, but owing to the want of water, he has been unable to treat the material on the ground, and he is now waiting for a good downpour of rain to fill his dams and enable him to prove whether his undertaking will be as successful as it deserves to be.

At Canadian, Home Rule, Cooyal, Two-mile Flat, Slashers Flat and the rest of the Gulgong Goldfield, there is no work of any importance going on at present; but there are a number of miners scattered over the country, who all manage to make a living, and some of them appear to be in fairly prosperous circumstances.

At Ford's Creek, about half way between Mudgee and Gulgong, several leases have been taken up for the purpose of working the antimony which was lately discovered in this neighbourhood. Several parties are at work, and, I am told with very favourable results.

At Denisontown a number of leases for silver-mining have been applied for during the past year. Great hopes are entertained by the parties concerned that this will turn out a successful undertaking, and if so, it may possibly have the effect of reviving the mining industries of this district. At the present time the Mount Stewart Mine is the only one working. Some very good samples of ore have been obtained, and the shareholders seem to be well satisfied with their prospects.

There has been 228 miners' rights, 40 mineral licenses, and 12 business licenses, issued from this office during the year 1888, and 53 applications for leases have been received during the same period.

The amount of gold purchased by the banks for the year ending the 31st December last is 1,268 oz. 15 dwt. 16 gr.

MUDGEE DISTRICT—Dubbo Division.

(W. J. Martin, Mining Registrar.)

I have the honor to submit my annual report for the Dubbo Mining District for the year ending the 31st December, 1888.

19 mineral lease applications have been lodged in this office during the past twelve months principally for permission to mine for silver and coal. The land is situated at Spicer's and Mitchell's Creeks about 30 miles along the Mudgee Road and north-east of Dubbo, but as far as I can ascertain no men have been employed thereon. Two of these applications have been for permission to mine for hematite ore, but, as is the case with those before mentioned, no men have been employed. At Black Hill, situated about 20 miles south-east from Dubbo, and near Ponto, about 14 men are now mining for silver, these I believe are the only miners actually at work in my district.

I have sold during the year 86 miners' rights, 42 mineral licenses, and 1 business license, which were principally supplied to men going to the late rush at Tomingley just outside my district.

LACHLAN DISTRICT—Forbes, Parkes, Molong, Grenfell, Cudal, Canowindra, and Condobolin Divisions.

(E. A. Sharpe, Warden.)

I have the honour to submit for the information of the Honorable, the Minister for Mines, my annual report for the year 1888.

Forbes.

After being abandoned for many years, the Britannia Reef, which is about half a mile from the town of Forbes, and in close proximity to the once famous South Lead, has been taken up; and a considerable area, about 30 acres, leased by the new company—who are mostly local men, and well acquainted with the reef they are working. A good crushing plant and gear has been erected on the mine, and the last crushing lately cleared up gave a yield of nearly 1½oz. to the ton. As the reef seems to improve with depth, a shaft is now being sunk to cut the underlay at about 150 feet. At the present rate of sinking, one foot per day, that depth will be reached early in February, and I am informed that the next crushing is expected to give a return of 2oz. per ton. The Britannia has well defined walls, and is about 2 feet wide. I have seen some of the stone, and if in quantity, the return should be very handsome.

The Pinnacle Reefs, situate about 20 miles from Forbes, between that town and Grenfell, are being worked by Messrs. Nicholas, Raymond, and party. They have been working their extended quartz claim for I think about 2½ years, and although the stone is poor, there is plenty of it. The reef is, I am informed, 11 feet wide in places, and has averaged half an ounce per ton. A good battery has been erected close to the claim, and when I last saw it a large quantity of stone was ready for crushing, I think over 600 tons, but the dams were all dry, and have unfortunately been in that condition for many months past. Stone is still being raised, and the quartz mill will be kept busy for a long time when once the dams have a sufficient supply of water. I am informed that it was proposed to float this mine into 30,000 shares of £1 each. This seems a large sum, but I think with such a large body of stone, which seems to improve with depth, a larger battery, and the mine properly opened out, the returns, judging by those obtained by Nicholas and party, should soon yield the shareholders a handsome profit. A trial crushing of a large number of tons was offered, but the attempt to float was not successful, and perhaps it was a fortunate thing for the present shareholders that it was not, as the stone seems much improved in quality. I saw some very rich stone taken from below the water level, gold showing freely all over the honeycombed face, and apparently right through the heart of the stone.

At Stricklands Reef, a company called the Metropolitan put up a valuable crushing plant called I think, a Huntingdon battery, erected a valuable dam, and it was expected a very large blow of stone would prove payable; but it did not, and I am informed the battery is for sale. The Eldorado Company whose mine is about 2 miles from the battery, have, I believe, the plant under offer, and it will be a good thing for the district if the sale takes place. The truth is, the Metropolitan Company's reef was not properly proved, and this should have been done before the expense of a battery was incurred, and then the shareholders might have had some return for their money, instead of probably a heavy loss. If the battery remains where it is, I have no doubt claims will be taken up on the old reef, and its value proved beyond a doubt. Before the company came the return from various places on the line showed a yield averaging half an ounce. It would be a curious thing if this stone cannot be found again. A lot of 80 tons, mostly rubble stone from the surface, has just been put through the machine by the Eldorado Company, the yield from this was about 10·oz. They are now raising stone from the solid reef, which is said to show gold freely. The crushing battery I have mentioned as having been erected by the Metropolitan Gold-mining Company differs entirely from the ordinary stamper battery, and perhaps a short description of it will not be out of place in a report of this kind. The stone to be crushed is thrown into a stone-crusher where it is broken to the size of road metal or smaller if required. It then passes through a shoot into a round barrel containing four revolving crushing wheels, these crush the stone very fine, and it has to pass through a very fine grating with oblong instead of round holes, I think about 250 to the inch. The tailings then pass over tables with blankets and copper-plates. And below this again there are shaking tables with india-rubber belts to save the pyrites. It is called "Freres' Ore Concentrator." Perhaps the working of the battery is not sufficiently understood, but it seemed to me that the quantity of stone put through in a week was small. I was informed that from 50 to 60 tons of stone could be treated, but not more. I should think the gold is extracted or most of it, and probably more is saved, than with the ordinary stampers, but a small stamper battery would work quicker, and would, I think, probably be preferred to the Huntington machine which costs a great deal more money. As this is the only battery of the kind erected in the district, it cannot be said to have had a fair trial, but that it is sure to get, if the Eldorado Company purchase, which I am informed they are likely to do. I may remark that it is probable the Frere Ore Concentrator would be of great use for concentrating ores of silver, lead, or copper—after stamp, or pulverizers.

Alluvial.

On the Old South Lead a large amount of ground is held under lease by the Crinoline and the Forbes Alluvial Gold-mining Companies, the former are not at present working owing to the main shaft having

having caved in. The ground is difficult to work, there being a depth of drift sand to pass through and water to contend against. The Forbes Alluvial Company are carrying on work with less men than usual pending the decision of the shareholders as to the purchase of a second engine and plant, the one engine on the mine not being powerful enough for the purpose. The manager states that the prospects from the north end and the south end of the Company's mine are encouraging, but up to the present time the yield of gold has not paid wages, but a large number of men were employed.

At the north end of the town of Forbes Shanks and party are working a claim on the Victoria Lead, the wash yields half an ounce to the load, and this would pay handsomely if the conditions of working were different. On Thompson's Lead, 1 mile north of Forbes, some claims have been taken up, and work will shortly be commenced.

At the Bald Hills, about 4 miles north of Forbes, one claim only is at work, from which half an ounce to the load has been obtained. In this claim at a considerable depth a quartz reef has been discovered 4 feet wide showing gold. From this I am informed the shareholders are about to get out a trial crushing of some 20 tons. Should this reef prove payable, doubtless many others in the neighbourhood will be taken up and worked.

Parkes.

At Parkes, which is the chief mining centre of this division of the Lachlan mining district, a good deal of reefing is being done with satisfactory results. The claims I mentioned in my last report, as producing a large amount of gold. Hazlehurst and Drummond and party are still at work, and from the last mentioned during the past year 860 oz. 10 dwt. of gold was won. Hazlehursts yielded 740 oz. for the same period. I am sorry to have to report that up to the present time none of the prospecting parties, with Government aid or without, have made any discoveries of payable gold. Parties are working on the Dayspring and the Currajong, near Parkes, and on the Eldorado, 13 miles south of Parkes, but whether they will get payable stone or not remains to be seen. The New Sandhurst Gold-mining Company have taken up claims or leases on four different old and abandoned reefs, viz., the Young Australian, the Homeward Bound, the Native Cat, the Batchelors, and the Stockman's. The mining operations of this Company are principally confined to the Young Australian and Homeward Bound, which in times past have yielded some very good stone. A large tank for crushing purposes has been excavated, and a portion of the crushing battery is on the ground and will be erected with as little delay as possible. This Company is also carrying on prospecting at the Bushman's Reef, at present employing nine men. They have completed a large tank at Happy Valley, and machinery is about to be erected.

The small reefs at Oppossum Gully, near Parkes, continue to pay well. There are as nearly as I can ascertain about 450 miners working in this division, and the gold purchased by the banks for the past year amounted to 4,269 oz. 7 dwt. and 8 gr., of this 512 oz. 13 dwt. 2 gr. was alluvial gold.

Molong.

At Gumble—about 10 miles south westerly from Molong—4 leases have been taken up for tin, three of these are held by Messrs. Hill and party. A lode containing tin, copper, and silver, and varying in width from 1 to 8 feet has been discovered here, and silver appears to be the predominant metal. On Messrs. Kelly and Moore's leases a good deal of work has been done in sinking and driving. The shafts are of various depths from 150 to 30 feet, the aggregate number of feet sunk is 415 and the extent of drives is 450. I am informed that upwards of £1,700 has been expended on the mine. Kelly and Moore have about 200 tons of ore at grass. On Hill and party's lease a shaft has been sunk 32 feet and a drive put in for 10 feet, but the lode has not been found. No mining is going on in this locality at present as there is no water even for drinking purposes. I observe the Geological Surveyor in his report for 1886 remarks of this lode that it is impossible to form an opinion as to whether it is payable or not, until average bulk samples have been operated on. The ore raised at this mine showed both oxide of tin and blue and green carbonates of copper, as also red oxide of copper.

On the 31st August, 1887, 4 leases of 4 acres each were taken up at a place called Delaney's Dyke, it is situated about 15 miles in a north-westerly direction from Molong; on these leases a lode was found on the surface by Messrs. Delaney Bros., and in what is known as the prospecting lease; it varies in width from 6 to 12 feet. The mine, I am informed, now belongs to a company with a capital of £80,000. The manager supplies the following information:—The lode showed on the surface for a distance of about 80 yards, and was from 12 to 26 ft. wide. Three shafts have been sunk on the lease and are connected by drives at the 60-ft. level. The shafts all cut the lode at 30 feet and then follow the underlay at an angle of 45 degrees. The south shaft has been sunk 145 feet and there is a large lode visible all the way down, averaging 6 feet, this shaft is still working, and drives, north and south are being put in. At the 130-foot level, the lode widening as the drive progresses. In driving at right angles to the lode at the 60-foot level, another lode was found 7 feet wide. Work has been continuously carried on on this lease with an average number of 9 men, there is now from 1,500 to 1,800 tons of the lode stuff at grass which contains silver and gold. 70 tons from this lode was crushed in March last, which I am informed yielded 15 dwt. of gold and 5 dwt. of silver per ton. Since then there has been no water to crush with and hence the large quantity of ore at grass. On the Company's lease a battery of 10 stamps has been erected, with 2 dams to supply water. The ore is soft and of a sandy nature and is easily and cheaply raised, but there appears to be a difficulty in treating the amalgam, in order to separate the two metals. This country is terribly dry, and since March last, water for domestic use has had to be carted a distance of 1½ miles. There are 4 leases north and 4 south of the Company's mine, but in none of them has the lode been found although a great deal of work has been done.

Grenfell.

In this division an important discovery of reef gold was reported on the 4th of May last by Brenner and party, the place is known as Sandy Creek, and is about 35 miles south-east of Forbes and 25 miles west of Grenfell. The prospectors found the reef containing gold on the surface, their trial crushing of 16 tons gave 16 oz. 12 dwt. per ton, the reef in places is 2 feet wide in smooth vertical slate walls. This auriferous belt seems to be a continuance of that at the Pinnacle, and the character of the stone seems the same. At the date of my visit in May last, 4 claims had crushed, viz.:—The prospectors, No. 1 and No. 2 north, and No. 1 south. No. 1 south got 16 dwt. 20 gr. per ton for 12 tons, No. 2 north, 1 oz. per ton for 14 tons; No. 1 north, 14 dwt. per ton for 72 tons. Since my visit a good deal of work has been done on this line of reefs, but want of water has simply stopped all mining operations, or the value

value of most of these claims would have been proved long ago. Messrs. Gough & Co. have erected a dam and quartz-crushing plant in a gully close to the reefs at a cost, it is said, of £1,500. The number of ordinary claims registered at Sandy Creek is about eighteen, but no work is being done at present, as there is no water, even for domestic purposes. The average width of these reefs is about 20 inches, the ground is hard and requires powder from the surface. As nearly as I can tell there is about 600 tons of stone ready for the stampers. It is difficult to form an opinion about these reefs, but I am inclined to think some of the claims will prove payable, and this opinion is shared by miners of experience who have seen the stone. At Grenfell, mining has almost ceased, and the battery has been idle all the year, and only one or two of the mines are raising stone. During the year, machinery for treating quartz tailings has been erected in Star Gully, near the town; the cost of this machinery was I am informed about £2,000, but owing to want of water, the proprietor has not been able to make a start. In alluvial mining there is, I am sorry to have to report, very little doing. At the Quandong, a few miles from Grenfell, seven claims are at work, and five, I am informed, are raising payable wash; want of water has been the drawback in this locality as in all other parts of the district. Only 90 tons of washdirt has been puddled during the year, which gave 1 oz. of gold per ton.

At One-mile Gulley, near Grenfell, O'Brien and party have 60 tons of wash, but cannot treat it for want of water. In July last, an important discovery was made on Aramagong Run, about 13 miles from Grenfell, on a conditional purchase taken up by D. Anderson, on the 9th September, 1875. The lode was discovered on the surface by W. Randle, a miner, and he came to an arrangement with some moneyed men in Grenfell to prove the mine. Specimens were sent for assay, and returns which began with 13 dwt. per ton at the surface, have now, at a depth of 60 feet, got as high as 309 oz. of silver per ton. The lode is, I am imformed, 11 feet wide, when I saw it at a depth of 17 feet it was 7 feet wide, in smooth granite walls. Some of the ore (a small parcel) I took myself from the heap, and sent to the Department for assay; it proved to be galena, carbonate of lead, and fellspathic lodestuff, which yielded of silver 48 oz. 14 dwt. per ton, and of gold a trace. During the year 11 silver-mining leases and 10 gold-mining leases have been applied for at the Grenfell mining office, 381 miners' rights were issued and 27 mineral licenses. The return of gold has, however, been very small, and no doubt want of water has a great deal to do with this. Only 166 oz. 11 gr. having been obtained in this division during the year 1888. A good deal of prospecting is being done in this division for both gold and silver, and it is likely that some important discoveries will be made. I think it is a great pity that so much land has been alienated when it was known to be auriferous. I have been surprised several times to find old workings, and some of them pretty extensive, on lands that had been selected; of course, permits can be obtained, but the miner likes to take up his claim when and where he pleases, he cannot abide delay, and does not often wait for the permit, especially on reserves. It is greatly to be regretted that where lines of reefs have been apparently abandoned, although known to contain gold, a certain quantity of land was not left open to holders of miners' rights.

Cudal.

At Boney's Rocks about sixteen miners have been employed during the year, the quantity of stone crushed was about 66 tons for a yield of 101 oz. of gold. The reefs in this locality have yielded some very rich stone, and on account of a dispute, what is supposed to be a very rich claim or lease has been idle for many months. This dispute has now, I believe, been settled, and instead of being in the hands of some Sydney gentlemen it is to be worked by miners, some of whom were originally interested in the lease. At the Paling-yards, 8 miles from Cudal, Court and party crushed from their mining tenement 80 tons of lodestuff for a yield of 40 oz. If this lode is extensive, it should give employment to a large number of men. Several parties have taken up claims or leases on the supposed line.

Canowindra.

The reef known as the Blue Jacket still continues to be the principal gold producer, having yielded 1,242 oz. from 1,237 tons of stone. The owners are now working at a depth of 220 feet. The reef is from two to four feet wide and averages over an ounce per ton. The proprietors intend erecting two additional 5 head of stamps to the battery as the supply of stone is very large.

Hayes' Reef.—This party crushed 45 tons of stone for 49 oz. of gold. This mine is now let on tribute. A good many applications for permits to mine on conditional purchases have been made in this division of my District and the localities are usually old and abandoned reefs.

At Cargo the reef known as the Ironclad is in the hands of an English Company, and has been floated in England for £150,000, and it is to be hoped the venture will be successful. A very great outlay has been incurred in expensive machinery, for treating refractory ores. The manager is an experienced miner, having been employed in India in mines where the ore is of a similar kind to that found in the Ironclad Mine. The Company hold 12 acres of leased land, and 10 acres of freehold.

Condobolin.

In this division a few parties are working—some in the immediate neighbourhood of the township for silver and copper, others at a place called Melrose, about forty miles north-west of Condobolin. Another party have discovered a lode containing silver at Mount Tindah, which is about seven miles from Melrose station. In May last year I had occasion to visit this locality to report on a lode containing silver, discovered by Messrs. Byrum and party, who have been prospecting in this out of the way place for some years past. The difficulties they have had to contend against must have been very great, and it is to be hoped their present venture will prove a valuable one. This mine is on a mineral selection taken up on a small range of hills called "Three Peak." Byrum and party, who have been prospecting in this locality for the last three years, found the lode showing on the side of a steep hill, and excavated under it for a considerable distance. The lode is in slate walls—well defined where it is visible—but the country is much disturbed. The lode appears to be over 2 ft. wide, and runs north and south, underlying to the east. I was shown a report of some assays obtained from ore sent to Sydney. The lowest assay gave 44 oz. of silver per ton, the highest 800 oz. I took a parcel of the ore and sent it to the Department for assay, and got a return of 39 oz. of silver per ton. Byrum and party were preparing to sink a shaft to catch the lode at a depth. The formation on one side of the lode—next and near slate—is conglomerate or "pudding stone," and granite rocks occur close to the other slate wall.

Prospectors

Prospectors in this locality labour under great disadvantages, as water and feed is very scarce at any time of the year. Near the boundary gate of the Melrose and Boonah runs, 34 miles north-west of Condobolin, a copper lode has been discovered, and a company was, I believe, formed to work it; but I have not heard whether the mine is at work or not. Assays of ore from this lode gave 27 per cent. copper, 9 per cent. lead, and 6 oz. of silver per ton. The mine is, I am informed, principally in the hands of some miners at Nymagee.

In conclusion, I am glad to be able to state that during the past year the mining industry in this district has greatly improved. More miners are employed. A good deal of new mining machinery has been erected. A great deal of land has been taken up for mining purposes, and some valuable discoveries have been made, which may reasonably be expected to give handsome returns when the mines are properly developed. Prospecting parties are working, with and without Government aid, and in places hitherto untried; and although they have had to contend against a very severe drought, and consequent difficulty in obtaining provisions of any description, the work is still being carried on. A good deal of prospecting has been done for silver, and in one or two instances what appear to be valuable deposits of this metal have been discovered, notably near Melrose and near Grenfell, on the Aramajong run. These mines I have described in a previous part of this report. I may be permitted to remark that very little is known about silver-mining, at any rate in this part of New South Wales; and when miners who have had experience in this kind of mining find their way into this district, probably lodes abandoned as valueless will be found to contain the mineral in payable quantities. Silver is usually found in combination with other metals, and the ores are so varied in appearance and value that only a miner of experience and skill would be able to determine whether a discovery was of importance or not. I may here remark that frequent inquiries are made at this office by miners to be allowed to see ores of silver, of which I have a few specimens; and I would submit that it would be a great advantage to miners if I could be supplied with a small collection of specimens of silver ores generally found in this and the adjoining colonies, so that prospectors could compare their specimens with them and be able to form an idea of their value, and identify any ores they have found in connection with this class of mining. I may remark that few miners accustomed to work quartz reefs for gold can form any idea of the difficulties and great expense attending the treatment of silver ores; still, there is no doubt these difficulties will be got over, and silver-mining become a valuable industry. A writer in one of the daily papers makes these remarks, and I think they are worthy of note:—"Although one-half of the silver-mining companies floated during the last mania will never be heard of again, except in liquidation, there are a considerable number of valuable properties scattered throughout New South Wales, which will hereafter become lastingly payable mines when the initial difficulty of management and treatment of refractory ores is overcome; but there are certainly many improvements to be made, both in machinery and appliances, and many wants to be supplied before this can be effected. Such as want of fuel, want of flux, want of inland carrying, and want of skill and experience in providing for these wants, and, I may add, want of patience on the part of shareholders who have entered into mining ventures to wait until the potential riches of the mines can be developed. Still, New South Wales, with its wonderful coal measures, its admirable timber for manufacturing charcoal, its deposits of lime and oxides of iron for flux, its numerous seaports with deep water up to the very shores, to say nothing of geographical position with regard to other colonies,—should be, and is, capable of working its silver deposits to immense advantage and profit in years to come; but it seems very probable that experience will show that it will pay the owners of large mines better to carefully concentrate their ores of silver on the ground, and send them for treatment to smelting furnaces erected on the best and most approved principle, situate on the seaboards of Sydney or Newcastle, where fuel, flux, and all other appliances are plentiful and cheap; where skilled labour is more largely obtainable, and where ultimately the residual products of the ores will become of value. The capital spent in the expensive erection of smelting works would be saved and at command to erect efficient concentrating machinery, and the providing of a good and copious supply of water, properly opening out the mine, and the erection of good winding machinery." In this district, two small rushes took place, one of which I have already described, at Sandy Creek, and another at Boyd Station. This place was the scene of a rush about sixteen years ago, which was a failure, except in one or two claims which yielded wages. The prospectors at Boyd, in June last, bottomed at 121 feet, and reported 13 gr. for five dishes of dirt, which would yield at the rate of 8 dwt. per load. About eighty or ninety miners came on the ground, sank a few shafts, and then left. The place is now quite deserted; but it is quite possible a run of gold may be found in this locality yet. Gold-bearing reefs are in the immediate neighbourhood, and some of the miners think the lead has been missed. Colours can be obtained over a large extent of country, but nothing payable.

LACHLAN DISTRICT—Young Division.

(*S. Robinson, Warden.*)

I HAVE the honor to report that 2,642 oz. 9 dwt. 11 gr. of gold was won in this division during 1888, of the value of £10,611 17s. 7d., showing an increase on the previous year amounting to £4,398 0s. 1d. Our issue of miners' rights was 574, including 118 taken at Murrumburrah. Business and mineral licenses disposed of stand at 32 and 33 respectively. Applications have been sent in for 6 gold-mining leases, comprising 59 acres.

My last report foreshadowed results for 1888 which have not been quite realized. Notwithstanding this, considerable progress was made in discoveries and developments of reefs at Wombat, at Demondrill, and also in the neighbourhood of Murrumburrah. The old Archdeacon reef has been worked, I believe, successfully. Mr. William Smith Barnes, of Wombat, has mined advantageously for some time past on his private property, close to the village. Two shafts are down, one at 50 feet, showing the reef, the other at 30 feet, which also strikes the gold-bearing quartz. The result of two trial crushings has been 1½ oz. and 2½ oz. to the ton. Close to this spot other parties are prospecting, and it is reported they have struck the same reef at a point westward. About half a mile eastward good gold-bearing quartz has been found near the surface. The place is known as Tobin's claim. I may here mention that all these properties are located not far from Sherlock Creek, where, at various times, quartz richly impregnated with gold has been discovered. At Murrumburrah a new reef of great promise has recently been found on private property.

The Cummingar works are now in full swing, and gold during the year has been extracted, realizing £6,222 17s. 6d. Eighty men are usually employed, but at present 112 are at work. The plant and machinery are valued at £25,000.

The

The New Burrangong Company has at last overcome the great underflow of water, and excellent results must follow, as it is know from repeated tests that the ground is equal to the choicest claims of the old Lambing Flat diggings. Gold, valued at £985 11s. 1d. has been obtained from the underground trenches and cuttings made for drainage purposes only. The main wash has only just now been touched, and since writing the above 118 oz. gold has been shown at this office, obtained since the beginning of the current month. Adjoining the New Burrangong is the South Burrangong mine, which may be described as in *statu quo*. Work in the immediate future will be resumed on this holding.

The Victoria Hill Sluicing Company, known as Gough's claim, for one man working fifty days, has given 60 oz. of gold.

Mr. Morton states that gold as treated at his mine (Cummingar), realized for 1,565 oz. 10 dwt. £6,490. Hence the high aggregate value shown in this report.

LACHLAN DISTRICT—Barmedman Division.

(*Thomas Love, Mining Registrar.*)

I HAVE the honor herewith to submit my annual report of the mining industry in the Barmedman Division of the Lachlan Mining District for the year ending 31st December, 1888, which I regret to add bears unfavourable comparison with the previous year, both as regards the quality of the stone and the number of miners who found profitable employment, but this appears more the fault of unfavourable circumstances than a deterioration in the quality of the reefs. The miners being unable to get to work below water-level, have been for the most part engaged in raising stone and mullock from the shallow workings which had been previously picked over and left as unpayable, and getting it crushed on terms or shares by the battery proprietors to enable the claimholders to hold possession of the ground and keep the pot boiling pending the long-expected and promised introduction of outside capital to erect the necessary powerful machinery to cope with the water and develop the resources of the field. Out of 2,665½ tons of stuff crushed during the year, over 2,000 tons have been crushed on the conditions named. This will account for the poor average yield as compared with that of the previous year, as per schedule hereto.

1887—1,370½ tons 1,454 oz. 9 dwt. 13 gr. ; average, 1 oz. 1 dwt. 5 gr. per ton.
1888—2,665½ tons 989 oz. 4 dwt. 5 gr. ; average, 7 dwt. 10 gr. per ton.
Number of Miners' rights issued for year, 80.
,, Business licenses issued for year, 10.
,, Mineral licenses issued for year, 5.
Quantity of gold won during year, 989 oz. 4 dwt. 5 gr. ; value at average price of £3 17s. 6d. per oz., £3,833 5s. 5d.
Number of applications for gold-mining leases, 5 ; embracing an area of 19 acres 3 roods 14 perches.
Number of claims from which gold has been won during the year, 8.
Number of miners employed, about 60.
Population of town, 190.

Tin has been discovered on West Mandamah Station by Roberts and party. The site of the discovery is about 12 miles south-west of Barmedman. A rush took place in July last, and a number of leases were applied for at the Temora office. The absence of water has prevented the discoverers from testing the value of their property.

Five prospecting parties, assisted by Government, have been prospecting the vicinity of Barmedman for alluvial gold, but have failed to discover anything of a payable nature. The only parties who obtained any gold are Pettiford and party and Debeneditti and party. The former on the site west of the Add Hill, close to the old alluvial discovery of Nessi and party, and the latter at a depth of between 50 and 60 feet on the Barmedman Creek, 2½ miles east of Barmedman. From a few to fifteen and twenty colours to the dish of fine gold were obtained from a heavy boulder wash on a hard uneven slate bottom, but not being payable the prospectors have abandoned it without giving the ground the test that such a prospect would apparently warrant. The ground being entirely untried, with the exception of the one line of shafts leading to the one from which the gold was got, the creek is the natural outlet for any alluvial leads there might be in the immediate neighbourhood of Barmedman.

None of the other three parties have obtained any gold.

LACHLAN DISTRICT—Temora Division.

(*James Davoren, Mining Registrar.*)

I HAVE the honor to submit the following as my report for the Temora Division of the Lachlan Mining District for the year 1888.

I issued during the year 314 miners' rights, being a decrease of 18 from the year 1887 ; 48 business licenses, 23 less than was issued in 1887. I also issued 27 mineral licenses. No mineral licenses were taken out in 1887.

I received during the year 9 applications for gold-mining leases, comprising an area of 59 acres, being 12 less than the number received in 1887.

According to returns received from the banks here the gold sold from this Division for the year is 1,771 oz., of the value, at £3 17s. 6d. per oz., of £5,862 12s. 6d.

After most careful inquiry I find there was about 6,400 loads of wash-dirt puddled at the various puddling machines, which gave an average return of about 2½ dwt. to the load. Most of this was obtained from headings and unworked patches at the outside verge of the lead.

In the early part of the year the South Australian Company and Bourke and party worked their respective quartz claims at Upper Temora. I have been unable to ascertain the quantity of stone crushed, or the returns, as all the parties connected with these claims have left the district.

About May or June, Bourke's Reef Company purchased the interest in the South Australian Company's mine, also in the Hidden Star claim. Bourke's Reef Company have since crushed 417 tons of stone, which yielded 178 oz. 1 dwt. 13 gr. of gold, of the value of £568, as per manager's return, herewith furnished.

I have been unable to trace the sources from which the 1,771 oz. of gold has been obtained. The managers state they promised many of the parties from whom they purchased gold to give the public no information on the matter.

The only machinery at work at Temora during the year was in the early part of the year, the South Australian Crushing Machine ; and in the latter part of the year the same machine, worked by Bourke's Reef Company, with the addition of Christie's Patent Stone-crusher, &c. According to Mr. Christie's estimate herewith, this plant is valued at £3,000.

Mr.

Mr. W. R. Groves' crushing machine at the Homeward Bound is estimated to be worth £2,000. It has not been at work during the year, owing to some difficulty in perfecting Mr. Groves' title to the ground.

The South Australian Company's old machine at Lower Temora has not been worked during the year. Its estimated value is £500 to £600.

About 100 miners were employed in alluvial-mining, and 55 at quartz-mining during the year.

I have no doubt there will be much more activity in quartz-mining in this division in 1889 than in any previous year, as much ground, believed to be payable, is held under leases which has never been worked.

About ten claims have been taken up during the year for tin-mining on Mr. Davidson's Mandama Station.

Messrs. Roberts, the prospectors, state the tin struck was stream tin, the depth of sinking 12 to 16 feet; the depth of wash was from 1 to 4 feet. The width of the run has not been ascertained, as they assert that tin can be struck anywhere they sink.

Mr. H. J. Woods, J.P., informs me he sent a small parcel of the ore to the Department of Mines, and that it assayed at the rate of 58 per cent. He also sent a parcel of 50 lb. to Messrs. Isley & Co., which assayed 62 per cent.

Owing to the dryness of the season and scarcity of water, I am informed that most of those who took up claims have abandoned them.

LACHLAN DISTRICT—Condobolin Division.

(E. A. Grainger, Mining Registrar.)

I do myself the honor to report, for your information, that mining operations in this division are only in their infancy; but I believe, from reports heard, that it would develop into a splendid silver and copper district if only the necessary capital were obtainable.

The Eureka Copper and Silver-mining Co. (Limited) are working their mine near the town, but as yet have not sunk sufficiently deep, but from observation seems satisfactory. It is impossible to say whether it will be payable or not.

Messrs. Stevenson and party have floated their Condobolin mine into a company, and from reports I have heard, things seem promising, but as yet are not down to any depth.

LACHLAN DISTRICT—Murrumburrah Division.

(Charles Cutcliffe, Mining Registrar.)

The Mining Registrar at Murrumburrah reports that the gold won during 1888 has been in money value £7,866 0s. 4d., being an increase on 1877 of £4,511 10s.

The number of miners' rights issued has been 118, as against 42 of the preceding year. Business licenses, 10; mineral, 3.

The Cunningar Quartz Mine is now in active operation, with more improved machinery and modern appliances for extracting gold. The number of miners employed is 100.

The Archdeacon's reef at Wombat is down 200 feet. 156 tons have been crushed during the year, yielding a return of 1 oz. 10 dwt. per ton.

A full and exhaustive report of the mines and their working in this division has been furnished to the Warden and Mining Clerk at Young for the Hon. the Minister of Mines' information.

LACHLAN DISTRICT—Young Division.

(Mr. E. Rogerson, Warden's Clerk and Mining Registrar.)

I have the honor to submit my report of the business transacted during the past year in connection with mining in this locality.

There has been a marked improvement in many respects in mining operations over those of the preceding year, notably as regards prospecting and the discovery of new reefs, and although not attended with very successful results as yet, still a more hopeful impetus has been given to mining enterprise, and a large number of miners have been, and still are, earning good wages. The old workings in quartz reefs at Garibaldi Gully, Stoney Creek, have been revived, and are being again tested, in some cases with fairly encouraging results.

The New Burrangong Gold-mining Company have had an average of thirty men employed; at present there are forty-eight. The principal operations have been on the lower level (or in bottom), 22 feet below the wash, for draining purposes. During the last three months of 1888 a yield of 215 oz. has been obtained.

The South Burrangong and the Hidden Star will start work shortly.

The Victoria Hill Sluicing Company has obtained during last year 60 oz. by one man for fifty days' working with steam-pump. Operations are suspended at this mine at present, owing to the drought.

During the year the issue of miners' rights has been 456, being an increase of 66 over the preceding year. Business licenses issued, 22; and mineral licenses, 30; the former showing an increase of 1, and the latter an increase of 28, on the number issued during 1887. Six gold leases, of the aggregate area of 59 acres have been applied for, and 22 quartz claims, 3 alluvial claims, 25 residence areas, 6 dams, and 5 water-rights have been registered.

The managers of the local branch of the Bank of New South Wales and of the Union Bank have kindly furnished me with the following particulars *re* gold purchased during 1888:—

	oz.	dwt.	gr.		£	s.	d.
Bank of New South Wales	610	2	13	value	2,378	0	11
Union Bank	95	8	11	„	369	15	3
Total	705	11	0		£2,747	16	2

Of the above purchased by the Bank of New South Wales, 251 oz. 4 dwt. 1 gr., representing a value of £985 18s. 1d., were won from the New Burrangong.

LACHLAN DISTRICT—Cudal Division.

(A. Minslow, Mining Registrar.)

I have the honor herewith to submit annual report for the year 1888 for the Cudal division. Eleven applications have been received for mineral, and fourteen for gold leases during the year. Courts and party, of Paling-yards, have crushed from their prospecting claim 80 tons of stone for 40 oz. of gold.

At Boney's Rocks 85 tons of stone have been crushed from the different leases and claims for 125 oz. of gold. There is a 5-stamp battery at Paling-yards, also a 5-stamp battery at Toogong. Those comprise all the machinery in the portion of the district. Scarcity of water and want of machinery appears to be the great drawback to the mining industry in this division. During the year 105 mines' right, 1 business license, and 10 mineral licenses were issued.

LACHLAN DISTRICT—Canowindra Division.

(Wm. Cook, Mining Registrar).

I have the honor to report a considerable improvement in this division for the year, the yield being 1,939 oz. 12 dwt. gold of the value of £7,382 7s., against 1,100 oz. for last year; of this, about 30 oz. was obtained from alluvial workings about Gum Flat. There is no doubt that but for the want of rain during the year the returns would have been much larger. There is no doubt that the coming year will show a still greater improvement.

Blue Jacket, Belmore.—This claim continues to be the largest gold producer in the division, having produced 1,293 oz. 1 dwt. from 1,237 tons stone, or an average of something over 1 ounce per ton. The vein, which varies from 1 to 4 feet in width, is now being worked at a depth of 220 feet.

Hayes Reef, Belmore.—Crushed 44 tons for 49 oz. gold. The mine is now being worked by tributers, who expect constant returns in future. They are now engaged in crushing a parcel of 50 tons.

Queen of the Ranges.—Have not crushed any stone during the year, as the vein is very much pinched in the shaft. The mine is now under suspension for three months to enable the holders to obtain funds to carry on work.

Wright and party, Belmore.—On the southern end of the Blue Jacket, are making preparations to start working their lease, which it is expected will add to the returns for the coming year.

Cargo, The Ironclad.—This mine, which is now held by a powerful English Company, has had a large amount of money expended during the year, both in developing the mine and erecting machinery, but owing to the great scarcity of water the returns are not nearly as large as they would otherwise have been. 723 tons of stone was treated for 567 oz. 2 dwt. gold.

Rise and Shine.—This party are having a trial crushing raised, to be treated in Sydney; should it answer expectations, machinery will be at once erected on the ground.

Dalcoutt Hill.—Steel and party are cross-cutting for their vein at a depth of 180 feet. Very nice gold was found in cutting through the vein in the shaft.

Copper lease.—Gazzard and party have taken up a copper lease between Dalcoutt Hill and the Ironclad Hill, samples from which are reported to have assayed very favourably.

During the year 197 acres have been applied for under Gold-lease Regulations, and 80 acres mineral leases.

Number of miners' rights sold, 169; mineral licenses, 21; and business licenses, 3.

Total value of mining plant in the division, £8,200.

LACHLAN DISTRICT—Parkes Division.

(Wm. C. Weston, Mining Registrar.)

I have the honor to forward my report for the year 1888. It will be seen that the yield of gold is not quite equal to 1887, but I fully anticipate 1889 will exceed the yield of either.

During the year 1888, the mining industry on this gold-field has further advanced, and the reefing has established itself on a thoroughly firm basis. The increased number of reefs working and number of miners' rights issued demonstrate this fact, although the yield is slightly less than that of the previous year, this is to be accounted for by the crushing machinery being stopped from the want of water. The Buchanan line maintains its position as possessing the noted claims of Hazelhurst and Quaile & Co.'s, which continue to yield very handsome returns; and on the Caledonian Hill, the Koh-i-noor reef (Dean, Pritchard, & Co.) have crushed regularly; their reef, which is easily worked, yielding 35 dwt. They have also a large body of stone to work on. Several companies have been formed during the year to work several well-known properties, viz., the Bushman's Hill, and the Young Australian, and the Homeward Bound claims; at each of these machinery of an improved type is to be erected, and will doubtless further stimulate the reefing industry of the district. At Currajong, Old Strickland reef has been reopened by Davis and party, who have discovered a body of stone varying from 12 to 15 feet in width, carrying a fair proportion of fine gold, and is considered by miners to be a valuable property. Many leases have been applied for, and old abandoned ground reopened, in some instances with good results. Much improvement is expected from the erection of machinery which will save fine gold.

In alluvial mining little is now done. At the Bachelors, dirt is being got up, but the drought has prevented washing being done, no water being available. On the Buchanan line, Hazelhurst is raising splendid stone. Quaile & Co., ditto. In Possum Gully, Fitzgerald & Co., Moore & Co., Paravicini & Co. have good stone. At the Caledonian Hill, Dean, Pritchard, & Co. have a good paddock out. At Currajong, the Dayspring Co. are raising stone from the old workings. Davis & Co., also at Currajong, have 400 tons grassed, expected to yield something over ½ oz. to the load. At Bartley's Creek, Wright, Miller, & Co. have 120 tons at grass. Various other localities reefs are being tried, and small trial lots are ready for crushing. The Eldorado Co., at Magpie Gully, are crushing at the Metropolitan Co.'s battery trial crushings of surface stone. This Company are sinking their main shaft, prospecting for the very rich shoot of gold lost by the former holders. They have a lot of ½-oz. stone in sight. The present year promises fresh developments. The district contains many reefs, which must remain unworked until machinery capable of saving fine gold is introduced into the district.

Leases

Leases for copper and silver have been applied for, and the specimens obtained give most encouraging results.

523 miners' rights were issued, 18 business licenses, and 3 mineral licenses; 52 applications for gold-mining leases, and 6 applications for mineral leases were applied for, and mining tenements were registered.

LACHLAN DISTRICT—Forbes Division.

(*E. A. T. Pery, Mining Registrar.*)

I have the honor to submit my report and statistics for the Forbes Division of the Lachlan Mining District for 1888. The amount of gold won in this division (as per Escort returns) for the year, is 962 oz. 7 dwt., 15 gr., showing an increase of 235 oz. 9 dwt., 21 gr. on the amount won in 1887, to which must be added about 100 oz. still in the hands of the banks, making a total of considerably over 1,000 oz. The increase thus shown, as compared with the statistics, may be accounted for by small amounts, derived from claims, not possessed of machinery.

Britannia Co-operative Gold-mining Co. (Limited.)—This Company has completed the erection of winding and pumping machinery, and has worked out a portion of the reef at the 90 ft.-level which has averaged over an ounce to the ton. The sinking of the main shaft is being proceeded with, for the purpose of getting ground open, ready for "stopping."

Pinnacle Reef Quartz-mining Co.—This Company has been greatly delayed in its operations by want of water, owing to the very dry season. The stone crushed during the year has averaged about 9 dwt. to the ton, nearly 1,000 tons of stone are now at surface, awaiting crushing.

The Metropolitan Gold-mining Co.—(Stricklands Reef) have, within the last half year, erected a "Huntingdon" mill, which has operated upon a quantity of stone, with very poor returns. Said stone being taken from a very large reef, proved not payable, owing to much of it, being "barren." I am informed that this Company is in process of liquidation.

Forbes Alluvial Gold-mining Co. (Limited.)—This Company has worked during the past year with varying success, having won considerably over 400 oz. of gold. They have met with much difficulty, through large bodies of water, from old workings.

The Crinoline Gold-mining Co. (Limited) have, through the collapse of main working shaft, been compelled to suspend operations during the last nine months; a reorganisation will shortly be effected.

Try Again, late Nil Desperandum.—This Company has done nothing during the past year.

The Phœnix Gold-mining Association—(Victoria lead) have, after considerable difficulty (through water), bottomed a shaft, on the above lead, and are at present taking a main drive, to the western boundary of their ground, preparatory to "blocking out." This claim, is worked with horses. About 50 oz. have been won, to close of year.

Bald Hills Lead.—Bathgate and party have during the year been at work on this lead. They have met with fair success, and have erected a puddling machine and whim.

El. Dorado Gold-mining Co.—This claim was originally known as Pennington's Reef, which at one time yielded as high as 11 oz. to the ton, but this rich "shoot" of stone was worked out. The present Company has been formed, for the purpose of thoroughly prospecting the ground and have great hopes of finding other good "shoots."

During the past year, I have issued 318 miners' rights, 18 mineral licenses, 10 business licenses. 32 applications for gold-mining and 2 for mineral leases were also received at this office.

Copper.—In November last a 40-acre mineral lease was applied for at Euroa, near Eugowra. I understand that active operations will shortly take place, in this neighbourhood.

Silver.—An 80-acre lease, near Melrose Plains, was applied for here in July last, but I have heard nothing of any work being done in that direction.

LACHLAN DISTRICT—Molong Division.

(*M. Hanly, Mining Registrar.*)

I have the honor to report on the mining industry in this division for the year now nearly closed.

During the year I issued 151 miners' rights, 14 mineral licenses, and 3 business licenses. I received 14 applications for gold-mining leases, and 4 applications for mineral leases.

The only place in this division that gold-mining is now carried on is now known as Delaney's Dyke, the locality is called Gumble or Woollogolong. The Dyke is situated about 14 miles in a north-westerly direction from Molong. The discovery was first made known in August last year by John E. Kelly, Esq., M.P., and Messrs. Delaney Brothers, the latter were the prospectors. The prospecting claim is a gold lease of 8 acres; the lease having been issued, the property has been formed into a limited liability company, with a capital of £80,000. On a recent visit to the mine I saw the manager, Mr. William Davidson, and the resident director, Mr. Andrew Delaney. The manager kindly supplied me with information of the mine as follows:—

The lode outcropped on the surface for a distance of 80 yards, and was found to be from 12 feet to 26 feet wide on the surface. Three shafts were sunk perpendicularly, and the lode was cut in each at 30 feet, and were continued on the underlay. At the 60-feet level the three shafts are connected by drives. The lode underlays at an angle of about 54 degrees. The south shaft is about 140 feet deep, and carries a 6 feet of lode all the way down to present level. Men were found sinking in this shaft. A drive has been commenced at the 130-foot level, going north and south, the lode widening as the drive progresses. At the north end of the 60-foot level the lode is 12 feet wide. A drive at right angles with the 60-foot level drive was put in, and a second lode was cut 7 feet thick, with a horse of 6 feet of ground between the two lodes, which appear to run parallel with each other. When the battery (ten stampers) was erected in March last, the small quantity of water then available was used up in crushing about 70 tons. It is said that the result of that first crushing was 15 dwt. of gold and 5 dwt. of silver per ton. Since then there has been no water to enable the battery to work, and for domestic use it has to be carted a distance of 1½ miles. Work on this mine has been continuous, with an average of nine men, so that, while the battery has been idle, the lode stuff at grass has accumulated to about 1,600 tons. Owing to the nature of the lode, which is not quartz, but some kind of a conglomeration, it is easily mined, and is

raised to the surface cheaply: a shot dislodges tons. In a gully or dry water-course quite close to the battery, are two large dams prepared many months ago to catch water.

No. 1 south is an 8-acre lease, Blunden and party.

No. 2 South is a 6-acre lease, M'Groder and party.

No. 3 South is an ordinary claim of four men, Windred and party.

No. 4 South is a 4-acre lease, Hughes and party.

No. 1 North is a lease of 8 acres, held by Delaney and party.

No. 2 North is a lease of 8 acres, held by Kelly and party.

No. 3 North is a 4-acre lease, held by Rubie and party.

No. 4 North; Haslam and party hold 6 acres. There are two other leases on the east of the lode held by Tanner and party and Williams and party.

In these various leases, a great number of shafts have been sunk, and driving done, but in none has the lode been found up to the present time.

The population at the Dyke, all told, is at this date 36 souls.

The Government land at this place is limited, as the freehold of Messrs. M'Callum Brothers is near on the north, east, and south, it is said that the lode outcrops in their land, and they found gold in the outcrop.

About 10 miles from the dyke, and about 12 miles from Molong in a south-westerly direction, I came to the Gumble tin-mine. Here there are four leases, three being held by Messrs. Kelly and Moore, and one by Mr. Hills. The former have sunk six shafts, having an aggregate of 415 feet sinking, and about 450 feet of driving; about 200 tons of ore is at grass; none of it has yet been treated. The lode is from 1 to 8 feet wide; men were at work, but here also water is scarce. No person was at work on Mr. Hills' lease; a shaft has been sunk 32 feet, but the lode was not found.

SOUTHERN DISTRICT—Braidwood, Araluen, Little River, Major's Creek, Nowra, and Nerriga Divisions.

(*J. Aldcorn, Warden.*)

There has been a good deal of activity generally in mining matters during the year 1888. In some of the above divisions a large extent of ground has been taken up, and leases applied for both for gold and other minerals.

In the Braidwood Division, alluvial mining has been carried on much as in recent past years, when water was available, and with fair success. A number of leases have been applied for for the purpose of working silver lodes recently discovered, as well as some quartz reefs for gold. Prospecting on the ground thus applied for has been in some instances vigorously carried on. The results as yet have not, except in one or two cases, been such as to justify the procuring of machinery.

In Araluen Division the workings have been confined almost entirely to the deep stripping claims in the bed of the creek, the long-continued dry weather having prevented any work in the smaller sluicing claims. The result as to gold procured is about the same as in the previous year. Unfortunately the otherwise welcome rain which fell towards the end of the year filled in several of the claims, which will involve a considerable loss in re-opening, if indeed the holders in some instances will be able to incur the expense of doing so.

In the Little River Division the want of water has, for the greater part of the year, prevented any ground-sluicing operations, from which hitherto the greater part of the gold has been obtained in this locality. There is a considerable falling-off in the amount procured in consequence. There has been a revived movement in the way of efforts to work the numerous quartz reefs in this division. About a dozen leases have been applied for, and some of the parties have set to work. In one case several leases previously granted have been purchased by a Company, chiefly of persons outside the district, and machinery has been erected on the ground. This Company are pleased with present prospects, and are now adding to the machinery for the purpose of more effectually saving the gold. As several of the leases lately applied for have just been granted, it is probable that more extended operations in this division will be the result.

Major's Creek Division is also dependent on a large supply of water for the working of the alluvial ground, and this it has not had, except for a few days during the year. A number of the miners have been obliged, therefore, to seek for other employment. A considerable part of the land in this division is private property, and on it, in past years, a good deal of work has been done in reefing. The difficulty, however, of effectively treating the stone led to the abandonment of several attempts to work the ground. Quite recently, however, the proprietor, in conjunction with some others, has procured machinery, the erection of which is nearly completed, which, it is hoped, will enable them successfully to work some of these reefs. Should this be so, there will probably be a revival of mining in the neighbourhood, as there are several places which may be similarly tried. On Crown land also some leases have been applied for, on which are galena lodes and mundic reefs. I understand that arrangements have been nearly completed for working these.

As to the Nowra Division, of which I have not long had charge, I am indebted to one of the leaseholders at Yalwal, the principal mining centre of the division, for the following information:—Lease No. 13, known as the Homeward Bound, has, during the last eighteen months, been worked as an open quarry. Previous to that time a tunnel had been driven about 200 feet into the ridge which carries the auriferous lode, and the quartzites having been cut, upward stoping was carried on from a depth of about 50 feet, the whole of the lode between that depth and the surface having been crushed. The stone is still being taken out from the walls of this cavity, which is about 60 feet wide. The output of the mine for twelve months prior to May, 1888, crushed at a small and not very effective 10-stamper battery, resulted in value to over £8,000. Since May, operations have been a good deal retarded by necessary repairs to machinery and want of water, but, nevertheless, gold to the value of £2,565 has been won since that date. The claim altogether has, since June, 1882, yielded the sum of £25,600. To the north of the Homeward Bound is the claim known as the Pioneer, a 5-acre lease, on which a large amount of work in sinking shafts and driving has been done during the past year, and about 400 tons of stone raised, which is estimated

estimated to go half an ounce to the ton. Before, however, it could be crushed, want of water obliged the owners to stop their machinery. In former times, for about five years, this mine produced gold to the value of £10,000—there is much good stone still in sight. The Caledonian is a 12-acre lease, on which six men have been at work during the year. Tenders were accepted for machinery, but in consequence of the insecure state of a bridge over which it would have to be conveyed the matter has been deferred for a time. Meanwhile a contract has been let for driving a tunnel through this ground. From time to time small crushings at neighbouring machines have resulted in 15 dwt. to 2 oz. a ton. The Hit or Miss is situated to the north of the Caledonian. On it a large amount of work has been done in trenching. Several shafts have also been sunk, in one of which, at a depth of 65 feet, good-looking quartz has been raised. The Star is an 8-acre lease adjoining the Homeward Bound on the south. About 700 feet of tunnelling has been done on it, at a large expense, but, as yet, without payable prospects. A third tunnel is now being driven with the object of cutting the Homeward Bound lode. Several other leases are held or have been applied for near these, from prospecting which very good indications have been found. Further down the creek is the Eclipse, a lease of 3 acres 3 roods. There is a 10-head stamper battery on this ground, with a shoot and between 300 and 400 feet of tramway. A large amount of dead work has been done in driving and sinking during the past year. About 700 tons of stone has been caushed, but with indifferent results. The workings have not been carried on in a very effective or economical way. The value of gold obtained from this holding for the past eight years is £10,577. To the south of the Eclipse is the Pinnacle, which has been almost idle for some time, and the holders have been called on to show cause why the lease should not be forfeited. On this mine there is a 20 h.-p. engine and a 15-stamper battery, tramways, &c. When it was continuously worked, from about 1875 to 1885, it is said that gold to the value of £15,000 was obtained. In addition to the foregoing, I may mention that a party from Sydney have been gathering up the tailings from the creek which have been allowed to go to waste. Some 2,000 bags will probably be sent to Sydney for treatment. Trials have given 7 oz. to the ton.

With regard to minerals, a small "Silver rush" took place, the locality being near the junction of Baxter's Creek with the Shoalhaven River. A number of 40-acre blocks were taken possession of under mineral licenses. Nothing of importance has as yet resulted from this. More recently, on what is known as the Right Arm, Yalwal Creek, a discovery of very promising argentiferous ore has been discovered, but nothing beyond a little prospecting has been done. A Company is, however, being formed with a view to testing the ground thoroughly.

In the Nerriga Division a large extent of ground has been taken up, chiefly for gold-mining, but in two or three instances also for silver and copper. A good deal of work in the way of prospecting has been done, although only in regard to one holding has the result as yet warranted any expenditure on machinery for quartz-mining. In my last report I referred to two Companies which had been formed for carrying on extensive operations by way of hydraulic sluicing on the old beds of the Shoalhaven River. One of these had completed a long and expensive race, &c., and had commenced operations. Unfortunately, however, the supply of water has been quite insufficient, and not much has been done in working the ground held by the Company. As regards the other Company, all that has as yet been done has been the testing of the large area taken up by them by sinking shafts, &c. The results of trials of the drift obtained therefrom have been very satisfactory. A considerable time has been occupied in taking levels for what will be a long and expensive race, for the conveyance of water to the Company's ground from the Shoalhaven River, near its junction with the Jembaicumbene Creek, with a branch from the Mongarlowe River. This work has occupied a longer time than was anticipated, but I am informed by Mr. Temmes, the manager, that it is now completed, and that tenders will shortly be called for the construction of the race and several necessary dams in connection therewith.

The foregoing is a report in, for the most part, general terms, but the Mining Registrars in the several divisions will, I have no doubt, add some more detailed information.

SOUTHERN DISTRICT—Berrima Division.

(F. R. Wilshire, Warden.)

I have the honor to report that during the year 1888 no increase in mining has taken place within my division, but rather a decrease, as shown by the smaller number of applications for mineral land, &c., &c., which are tabulated below, as compared with last year's results

Of the number of leases, &c., &c., applied for, few will, I fear, prove of any great value.

Few, if any, of the leases for silver at the Peaks, in the Picton District, are likely to prove remunerative, and the larger area taken up in this district for coal and shale will, in all probability, lapse or become forfeited, most of it having been applied for for speculative purposes, and without any present intention of winning the minerals therein.

Berrima Colliery is still at work, but the output is merely nominal; such also is the case with the Mittagong Colliery.

The Company, with large capital (some £170,000, I believe), to open a coal-mine at Wingello, some 15 miles south-west of here and of Moss Vale, and of which I spoke in last year's report, is about commencing operations, the manager having recently arrived.

The coal is said to have been thoroughly tested, and proved good, but the same thing has been said of nearly all the coal yet opened in this district. At the same time, the greatest difficulty has always been experienced in getting the Government railway officials to use it, representing it to be unsuitable for locomotive purposes.

It is alleged by some that the coal is highly suitable for said purposes, and it was hoped that the new Railway Commissioners would have had a searching investigation into this long-debated matter, seeing the immense importance it has in connection with the cost of working the Southern Railways, but nothing yet in this line appears to have been initiated, and the valuable coal deposits of this district seem to be doomed to remain unworked and undeveloped.

Referring to the Mittagong Coal Company, which recently opened with an output of 100 tons per day during the Newcastle strike, mostly for the Melbourne market (overland), they subsequently failed to secure a tender for the N.S.W. Railway supply, and are now closed, or nearly so, for want of orders.

This

This is the third or fourth colliery opened in this district within the last few years meeting with the same disastrous fate, and the subject is deserving of the earnest and careful attention of the Railway Commissioners.*

With regard to gold, nothing of any importance has been developed in the way of reefing, but several prospecting claims are being tested with the aid of moneys from the Prospecting Vote. Nothing is being done on the Mittagong Gold-field.

Work has been resumed on the Carrington mine, but with what prospects I am not at present able to state.

At Towrang silver-lodes nothing has been developed of much (if any) value; and the iron-ore lodes, in the vicinity of Bungonia, have not proved of any commercial value so far.

Should the Carrington mine prove profitable, these Bungonia lodes will doubtless receive further development, as being almost identical therewith (geologically speaking).

On the whole, with the exception of land taken up in this district for speculative purposes for coal and shale, mining has slackened off considerably in my division during the past twelve months.

Berrima.

No. of applications for	gold leases	4
,,	oxide of iron	2
,,	silver	15
,,	coal and shale	52
	Total	73
Miners' rights		19
Mineral licenses		60

Taralga.

Miners' rights	79
Mineral licenses	60

Goulburn.

No particulars to hand (the Mining Registrar being on leave, I believe).

SOUTHERN DISTRICT—Bombala Division.

(*James Giles, Warden.*)

I have the honor to submit my report for the year 1888 upon the Bombala and Cooma Divisions of the Southern and Tumut and Adelong Mining Districts, over which I exercise supervision as Warden, and which embrace the following gold-fields, viz.:—Delegate, Towomba, Nimitybelle, Collinton, Snowy River, Crackenback, and Kiandra.

Under separate cover I forward reports from the Mining Registrars at Bombala, Cooma, Kiandra, and Adelong; and I presume the officers stationed at Bega, Eden, Nimitybelle, and Tumut have already furnished their reports for the past year, giving detailed accounts of the various workings, proceeds, &c.; also the number of miners' rights and business and mineral licenses issued within their respective divisions to the 31st December last.

At Kiandra, the gold won during the past year did not exceed 600 oz., being considerably less than the yield for 1887.

The mining population of Kiandra, Crackenback, and Snowy River gold-fields may be estimated at 350, consisting of Europeans and Chinese.

Nimitybelle Gold-field.—I am pleased to state that there is a decided improvement in respect of mining matters upon this gold-field.

Collinton Gold-field.—Several gold-mining and mineral leases have been applied for; there is a very marked improvement in all matters connected with mining within this gold-field.

Towomba Gold-field.—Several prospecting parties have been searching for gold and silver reefs on this gold-field, and some mineral leases have been applied for.

Delegate Gold-field.—Although I cannot report improvement in mining business within this gold-field, I am convinced there is no retrogression.

SOUTHERN DISTRICT—Moruya Division.

(*G. Maunsell, Warden.*)

Although the favourable anticipations of my last report did not become realized during 1888, they are in no way diminished.

The completion and erection of most of the crushing plants have been delayed through various causes, consequently outside speculation has been in a semi-dormant state during the greater portion of the year, awaiting the results from the several crushings.

At the Gulph, Mr. Pollock has a 10 and the Mount Coman Co. a 25-stamper machine at work. Returns from the latter have not yet been made public.

The Little Gem, situated near Moruya, has erected on it a fine Huntington mill, which will be at work in a few days.

The Bodalla Mining Co., recently The Belle of Australia, at the Wogonga North Head, has a somewhat similar plant in the course of erection.

The late proprietor of the Moruya Silver-mine informs me that his Company, an English one, has sent out instructions to commence work immediately.

At Bumbo, in the parish of Wanban, a small water-wheel, driving a 4-stamper battery, has been erected.

The Bega Prospecting Association has men employed at Nelson testing the reefs there.

At Windham and Wallagoot, lease-holders are busy prospecting for silver, and have met with good indications of it. There are several parties prospecting in these localities; but the dryness of the season has hitherto proved a drawback to their operations. At

* The capital said to have been expended upon these futile attempts to develop this important industry in this district is represented to b something like the following:—Eritho Colliery, £15,000; Berrima, £24,000; Ringwood, £28,000; the Great Southern Co., Mittagong (and las £40,000, representing a gross sum of some £107,000.

At Tanja, a few parties make a livelihood by fossicking in the gullies.

Messrs. Bailey and Miles, on Mount Dromedary, are turning out some very rich pyrites; and Cowderoy's party works its mine constantly.

At Mogo, the prospecting party is earning good wages at alluvial working, and two other parties there have erected steam-pumps, with the intention of vigorously testing their grounds.

Messrs. Tyrell & Co. are industriously working a reef there, and they hope soon to find sufficient encouragement to induce them to procure machinery.

Within the last fortnight a small rush for leases has taken place at Dwyer's Creek, about 5 miles from Moruya.

Some of the mines, in the past, have been badly worked, and a great quantity of unnecessary labour has been done through the mismanagement. The want of water; a tendency to obtain possession of "abandoned" ground, with a view to dispose of it to syndicates before the issue of the leases, by persons not possessed of the means to develop it themselves; a lack of cordiality or of means, perhaps both, amongst some shareholders,—are causes that have tended to retard the development of the mining industry of my division during the past year.

I can now report that most of the obstacles referred to are on the eve of being removed, also that the recent heavy rains will give a further impetus to mining.

SOUTHERN DISTRICT—Yass Division.

(H. J. Chisholm, Warden.)

In submitting this, my annual report for the year 1888, I regret to say that the mining industry in this district is not in such a satisfactory and progressive state as I hoped it would have been.

In the early part of the year a sudden impetus was given to mining matters. During the following months the undermentioned areas were applied for, under mineral leases:—

January	40 acres.
February	280 acres.
March	80 acres.
April	60 acres.
May	20 acres.
June	40 acres.
July to December	Nil.

For a short time after the applications were made glowing reports were received as to the progress of work made, and it was anticipated that at last this district would be fully worked.

In some cases work has been suspended awaiting the survey of the blocks and the issue of the leases.

Gunning.

I enclose report from Mr. Pembroke, Warden's Clerk.

Burrowa.

I have received the following information from Mr. Wotton, the Mining Registrar:—

Frogmore Copper Mines, 16 miles from Burrowa.—These works stopped about four years ago, but have started again. 100 tons of ore on the ground, about 40 men employed, and have about £5,000 worth of machinery.

The silver mines about Rye Park have shown very good assays.

Yass Warden's Clerk.

The report from this officer will be at once forwarded.

Taking all things into consideration, our future prospects have not been for some time past so hopeful as at present.

SOUTHERN DISTRICT—Cobargo Division.

(L. J. Clifford, Mining Registrar.)

I have the honor to furnish for your information my annual report on the portion of Dromedary Goldfield in my district.

There are seven men working at Montreal on old ground fossicking.

During the year two or three claims on quartz in the neighbourhood of Bermague have been taken up under the Mining Act, but so far nothing tangible has resulted, as they seem only to be holding them with a view to selling.

The line of reef known as Progress and Poverty, near Montreal, has been entirely abandoned.

For the year I have sold 42 miners' rights and 37 business licenses, amounting in the total to £35, being an increase on the former year of £16.

SOUTHERN DISTRICT—Wagonga Division.

(W. J. Foster, Mining Registrar.)

In submitting my annual report upon this division I regret that the anticipations shadowed forth in my predecessor's annual report for the year 1887 have not been realized. Various causes have conspired to frustrate those expectations, which will be noticed further on.

I also regret to be compelled to state that claimholders and proprietors of crushing mills refuse to give any information in regard to the amount of stone raised or crushed, or the gold won therefrom, so that I am totally unable to give that data which is the vital information required by the Department for showing the prospects and progress of the gold-mining industry in this Colony. They seem to think that if they give the information sought they are exposing their private business, and perhaps jeopardising the value they place upon their holdings, forgetting that the information will be published in gross, and not in detail, or not believing that it will be so given.

Mount Dromedary.

The original prospectors have not crushed any stone during the year. Having worked out the upper levels they have been employed in driving a lower level; what success has attended their efforts I am unable to state, as they are very reticent.

The claims on the Star of the South line have been in full work, and considerable quantities of stone have been crushed, yielding fair returns, which rumour says is satisfactory to the owners; but the amount of stone treated, and the yield of gold therefrom, I am unable to state for the reason stated above.

There is a new feature developed during the year, that is to say, the deeper the work is carried the less free gold—the gold being found in pyrites, which cannot be saved by the ordinary stamper battery, and necessitates special machinery for saving the pyrites or "concentrates." A quantity from one of the claims on the Star of the South, was treated in Sydney by a mill adapted to the purpose, and the yield, as I have been informed, was about 75 per cent. of concentrates of the gross amount of stone treated, with a small return of free gold. I applied for the particulars, but have not received any answer.*

Wagonga North Head.

In this locality are situated the mines known as the Lady Carrington, Bodalla Gold-mining Company, and three or four private holdings. In regard to the above Companies, the work has been desultory, and no crushings, save trial crushings, which have been satisfactory, so much so, that the Bodalla Company is now erecting a large plant for saving the pyrites.

In one private holding the trial crushings have been satisfactory. In another, considerable quantities of stone have been sent to Sydney for treatment for pyrites. The percentage of pyrites, and the amount of free gold won, I have not been able to obtain.

Montreal.

Near this place is the reef known as the Progress and Poverty, in which some rich specimens were found some two years ago, and which caused considerable activity in taking up ground to lease at that time. During this year little or no work has been done.

Parish Cadjangary, County Dampier.

At or near the head of Coolagilite Creek a prospecting protection area in quartz was registered in August last. Since then two leases of 4 acres each have been applied for on the supposed line of reef. I am unable to state whether payable gold, or gold at all, has been found. The prospectors have not reported gold. One of the applicants to lease informed me their shaft was down 30 ft., and they intended having a trial crushing.

Brassknocker Creek, County of Dampier, Westward of Cobargo.

In 1886 a lease of 12 acres, on a then recently-discovered reef on or near this creek, was applied for, and considerable work done. A Berdan was placed on the ground for treating the stone, but whether the Berdan was ineffectual for the purpose—which is likely—or the stone too poor, I am unable to say. During this year little or no work has been done, and the ground is virtually abandoned.

Alluvial.

No new ground has been discovered during the year, and what work is being done is by fossickers, scattered over the division.

General Remarks.

158 acres 34 perches have been applied for to lease for gold-mining purposes, and 40 acres for mineral lease—silver.

The year has been exceptionally dry, and has retarded very much in some instances mining enterprise, as well as depressed all other industries.

TOTAL VALUE of Mining Plant in the division, £4,800.

SOUTHERN DISTRICT—EUROBODALLA DIVISION.

(*Henry J. Lea, Mining Registrar.*)

I HAVE the honor to report for your information that there is no mining carried on in this part of the Southern Mining District. All the mining is being done at Wagonga and Nerrigundah, where there are Warden's Clerks. I have during the year sold 121 miners' rights and 18 business licenses to the miners and business people on the Nerrigundah Gold-field.

SOUTHERN DISTRICT—MORUYA DIVISION.

(*H. Bragg, Mining Registrar.*)

I HAVE the honor to report in reference to the gold-mines in the Moruya Division that the alluvial claims have, with the exception of one, done but little during the past year. The claimholders expect better returns for the present year, as there are now three donkey engines on the alluvial diggings at Mogo. The quartz reefs are but as yet in their infancy. The Little Gem, situate about 3 miles to the south of Moruya, have erected extensive machinery, and have about 300 tons of quartz ready for crushing. This Company will commence crushing in a few days, and good results are anticipated.

Silver

* Warden's Office, Wagonga, 26th January, 1889. Sir,—I wish to amend my annual report for the year 1888 in that part relating to Mount Dromedary, and having reference to the production of "concentrates" from pyrites. Since forwarding that report I have received from one of the proprietors of the mine the amount of stone treated, and the yield of concentrates, which is as follows: 7 tons 16 cwt. 3 qr. of stone, producing 1 ton 15 cwt. of concentrates; equal to 22·32 per cent of concentrates. I have put the amount in the report at about 75 per cent., which is an error.—W. J. FOSTER, Mining Registrar. The Under Secretary for Mines, Sydney.

Silver.

There is one mine, about 4 miles from Moruya, with machinery erected thereon. This mine has been idle for some time past, but it has lately been floated into a Company in England, and the working of this mine will commence again in a few weeks.

Copper, Coal, Iron, and Tin.

None of these minerals have as yet been found in the district.

Total value of mining plant in the division, £2,850.

SOUTHERN DISTRICT—Gunning Division.

(*Sel. Pembrooke, Warden's Clerk.*)

I have the honor to report that during the year ended 31st December, 1888, three (3) gold-mining and six (6) mineral lease applications were applied for in this district, while the number of miners' rights and mineral licenses issued amounted to thirteen (13) and fifty (50) respectively. The gold-mining leases are all situated near Dalton, and are distant about 9 miles from Gunning. There has been a large amount of work done on Lease No. 88–1, the proprietors having about 500 tons of gold-bearing stone at grass, and I am informed that they intend erecting machinery for crushing within a few weeks, when it is anticipated that employment will be found for at least sixty miners. Gold-mining Leases Nos. 88–2 and 88–3 have also been extensively worked, and preparations are being made for erecting machinery. These leases are situated close to Lease No. 88–1, and the whole of them are said to be good paying properties, as the quartz is easily got out and the reef is very wide. Bulk lots have been crushed from each of these claims, giving results which have exceeded the most sanguine expectations of the parties interested.

Of the mineral leases applied for the majority have been worked more or less, the greatest amount being done in connection with Lease No. 88–1, on which a shaft has been sunk to a depth of 90 feet, and a drive put in for a distance of about 40 feet. This lease is situate about 16 miles from Gunning, and is in close proximity to the Jerrawa Railway Station. Several of the mineral leases are situated in the parish of Mundoonan, distant about 12 miles from Gunning, the whole having been tested more or less, but work has been temporarily suspended, awaiting the survey of the blocks and the issue of the leases.

The whole of the mineral leases were taken for the purpose of mining for silver. Numerous assays have been made from ore taken from the various claims, but no authentic information has been furnished to me as to the results.

I anticipate that the erection of machinery in connection with the gold-mining leases will give an impetus to mining in other parts of this district.

SOUTHERN DISTRICT—Araluen Division.

(*E. F. Carlile, Mining Registrar.*)

Notwithstanding the severe character of the protracted drought, continuing up to the last month of the year, the yield of gold has maintained very fair proportions, being 4,128 oz., value £15,892 16s. (4,100 oz. from alluvium and 28 oz. from quartz). Sluicing has been much retarded during the year through want of water, some of the claims having occasionally been enabled to work only one day in the week, instead of continuously, and the largest had to knock off one or two boxes altogether, which, of course, made a considerable difference in the returns. When rain came at last it was in such liberal supply that nearly all the deep claims were filled with sand or water, thus preventing profitable work for a few weeks. In one claim a steam-engine, and a centrifugal pump are buried out of sight On the other hand, the rain has been beneficial by causing a good growth of green feed, and checking the upward price of dry, which is a large item of expense in working the claims, where so many horses are employed.

During the "boom" many parties were out in the ranges prospecting for minerals, but did not succeed in finding anything worth while. As most of the specimens, however, sent to the Department for assay were surface stone only, not much dependence can be placed on the result till depth is reached. Some work is still being continued searching for silver.

The only quartz-mining has been at Bell's Creek, and not as much done there as in some previous years.

Judging from late yields of the claims, and the water supply being now abundant, the outlook for the coming year is as good as usual.

Total value of mining plant in the division, £20,830.

SOUTHERN DISTRICT—Little River Division.

(*P. J. Galway, Mining Registrar.*)

I have the honor to forward report for the year 1888, and am happy to state that quartz-mining is firmly established here, and as suitable machinery has been procured there is every prospect of the opening up of an extensive reefing district.

Sixteen new leases, representing 111 acres, and two extended quartz claims have been applied for during the past year, the greater portion being for legitimate working.

The Day Dawn Company, which was formed in Goulburn to work the Day Dawn Reef in connection with that known as the Earl Granville, have secured additional leases representing 27 acres adjoining their grounds.

Suitable buildings have been erected, and the battery-shed contains a 25 horse-power Tangye boiler, two Huntingdon mills, one 3½ feet, and one 5 feet, and two concentrators of the most approved kind.

There is also a Blake's pump for the supply of water for the battery. The necessary quantity is obtained from a substantial reservoir formed in the creek which runs close to the works, and can be depended on to keep up a supply in the driest seasons.

A steam mining-pump placed in the main shaft and driven from the boiler in shed keeps the working perfectly dry, and a large winch does the hauling.

The stone is heavily charged with pyrites, which are separated from the tailings by the concentrators, from 20 tons of which 1 ton of clean pyrites were obtained; assayer shows 20 oz. of gold to a ton of pyrites.

Ten

Ten tons of pyrites have been sent to Gunningar for treatment.

The reef averages 36 inches in width, and at 80 feet from the surface extends 160 feet, which is the present length of drive.

Forty men are employed in connection with the claim, and when the main shaft is put down 150 feet several more hands will be employed.

Murphy & Co. hold three leases, containing 18 acres, adjoining the Day Dawn Co.'s ground. Five tons of surface stone treated in Sydney returned 25 dwt. per ton. A shaft is being sunk on the reef.

Proctor and party hold 35 acres in two blocks. From the 25-acre lease 5 tons of stone taken from the 70-foot level and treated in Sydney returned 25 dwt. per ton. Work is expected to commence at once.

A steam pump will be placed on the Flora Reef, which is the property of the Day Dawn Co., and distinct from their present workings, as soon as a suitable one can be obtained.

The Jubilee Reef is idle for pumping machinery, and 40 tons of stone has been raised.

At Nom Chong's Extended Quartz Claim 10 tons of stone await crushing. This stone shows for 4 oz. to the ton.

Five tons of stone taken from Rickett's Extended Claim gave 15 dwt. per ton in Sydney.

It is expected that the Day Dawn Co. will crush for the public when they clear off the quartz they have at grass, which is now some 150 tons.

Prospecting for copper at Currawang Creek, Burrawang Range, has been going on for the past two years, and though promising indications have been met with from time to time, no continuous lead has yet been found.

A 40-acre copper lease has been taken up 20 miles further down the river by a Melbourne party, but no work has been done as yet.

During the silver mania a large amount of prospecting was done here, with the result of a gossan lode being found, which was traced and sunk on for 8 miles. Assays of from 7 to 10 oz. of silver were returned per ton. The deepest prospecting shaft was 25 feet.

The exceptional dry weather prevailing during the year prevented alluvial mining to any extent, and great damage has been done to the flumes connected with the water-races by bush fires, and the only place where a little gold could be procured was in reach of the river. This also had ceased to run, and all the river claims were idle from want of pumping power.

166 miners' rights, 8 mineral licenses, and 4 business licenses were issued during the year.

SOUTHERN DISTRICT—Nerriga Division.

(*P. J. Galway, Mining Registrar.*)

My annual report will show that this division, usually looked upon as an alluvial field, has during the past year developed into an extensive reefing district.

12 gold leases, quartz, representing 130 acres, have been applied for; also, 3 special leases for sluicing purposes, containing 75 acres; 5 gold leases, alluvial, 115 acres; 1 mineral lease, copper, 40 acres; 1 mineral lease, silver, 40 acres; 3 mineral leases, coal, 1,920 acres; 7 applications for sluicing claims, 175 acres; 3 extended river claims; and 3 engine sites for crushing and pumping machinery.

The quartz leases have been chiefly taken up on the line of reef known as the Welcome and Excelsior, and a Sydney syndicate hold a large interest in most of the leases there.

Crushing and pumping machinery of the most modern and approved kind is being erected, and a main shaft 9 feet by 3½ feet is being sunk.

There is also a 10-head battery on Dhutz's 20-acre lease, further down the river.

The applicants for gold leases for alluvial mining are engaged in surveying and laying out races for sluicing purposes.

No work is going on at present on the copper and silver leases. Most encouraging prospects have been obtained, and I am given to understand that work will be commenced shortly.

The coal leases are reapplications for leases previously taken up at Nowra, and refused by the Mining Department. The present applicants represent a Melbourne syndicate who are prepared to open up the mine, which contains kerosene shale of the richest quality. Surface indications of shale deposits can be traced for miles through the Nerriga District.

The Gorang Sluicing Company's works have been at a stand during the greater portion of the past year, caused by a want of water, and the Company propose erecting a large reservoir at the head of the race. This should have been done at first.

I am certain that the alluvial deposits can be more economically and quickly washed by raising water by pumping from the river than by gravitation. The water carried in the races has to be taken so high up the creek that the main supply remains untouched.

The Shoalhaven Hydraulic Sluicing Co., holding 500 acres by special lease, and 125 acres under the Mining Board regulations, have not commenced forming their race as yet. This race will be over 30 miles in length; the size, 8 feet by 4 x 4. The survey and laying down the pegs for cutting is completed, and work will commence, the manager informs me, when the ground required for that portion through Church and School lands will be resumed by the Department.

A wide bed of basalt crosses the Nerriga Division. Some years back a shaft was put down and the basalt pierced at a depth of 132 feet, and an auriferous drift struck. From the great influx of water, only a few buckets of wash-dirt were obtained, which gave most promising prospects of payable gold.

A small Co-operative Company has been formed to test the ground, and a tunnel 1,200 feet in length will be driven to cut the track 30 feet under the present depth obtained in the shaft. This will fully test the ground, and, if successful, be the means of opening up a large extent of ground for deep sinking.

The gold returns for the year are below the average, the very dry season preventing much alluvial mining. Number of miners' rights issued, 54; mineral licenses, 3.

These do not represent the actual number held, as a great many were taken out in Sydney and Goulburn by applicants for leases.

SOUTHERN DISTRICT—Major's Creek Division.

(*John Heaylett, Mining Registrar.*)

Consequent on the extraordinary dry season, alluvial mining within my division has been very slack. No ground-sluicing has been done, and very little puddling. The Long Flat portion of the division where, with a few heavy showers occasionally, the dams would hold out, but the past season favoured it not, hence very little has been done. The quantity of gold purchased on the creek will prove what I say to be pretty correct, and by comparing it with the quantity bought the previous year, I find there is a falling off of 295 ounces. I have no means of ascertaining what quantity has been disposed of at Braidwood. I am, however, pretty certain that some parties have taken the bulk of their gold where they get the best price, and as this is the case as regards the years prior to 1888, it cannot alter the figures set down in tabular form herewith, viz., 459 oz. 10 dwt. 15 gr., from alluvial ground, and I am surprised that such a quantity could be obtained without the aid of water.

Quartz-mining has not until now made any signs of progress. The result of 600 tons from a reef near Dargue's, at Spring Creek, shows a very small average to the ton, yet it paid the owners fairly good wages. The 120 tons from Tomsen's Blow, for an average of 2 dwt. 8 gr. to the ton, could not have satisfied the party, otherwise they would not have left it till it becomes richer. It is said that every picture has a dark as well as a bright side, and as I have been showing the dark side first, I shall now reverse it, to find that where stood the crushing mill erected by Dargue and party many years ago now stands a stone-cracker, a centrifugal roller, quartz-mill, two concentrators, (Frue) and steam engine of 30 horse-power, all of which looks much better than the old mill known as Dargue's, and it is expected this machine will be ready for action in the course of a few weeks at most, and will then commence on stone being taken out of the United Miners' old claim, which has been recently sunk 50 feet into the mundic stone, and are now putting in levels, and work going on day and night. A whim is being erected also, and a road made from claim to machine, contracts entered into for the carting of stone, and a supply of fuel for the engine. All this is going on on the private land owned by Messrs. Roberts, Hassell, & Co. I believe it is called the Dargue Company. Stone from this claim recently treated at the Cunningar pyrites works is said to have yielded as high as 19 oz. 17 dwt. to the ton. Should this mine prove a success, the Snob's Reef at Big Hill ought to get a fresh trial, it being on the same line with the United Miners, and it is said by experts that it is the best mining property at the creek.

During the year I sold 45 miners' rights, as against 41 for the previous year, and 18 mineral licenses, as against 3 during the previous five years. These latter have been taken for the purpose of prospecting for silver at Cleetmore and Wyambene, some 10 or 15 miles from here by a straight line, and 15 and 20 miles by the road from Major's Creek to Krawarree.

I asked the manager of the Wyambene Company's mine for information as to what has been done by him up to the end of 1888, and as yet no answer.

Speculators will not work the Rise and Shine Reef at Red Hill. Must have lease of it. Of course a leasehold is much harder to jump; yes; and can be held longer without working. The stone from this mine assayed at the rate of 3 oz. 12 dwt. gold and 32 oz. silver to the ton respectively. This and many other spots on the creek would not be idle but for the folly of planting a township on the very ground containing the gold; yes; both alluvial and quartz.

Number of days on which rain fell at Major's Creek, during the following years:—

1881	Rained on	117 days.
1882	"	113 "
1883	"	107 "
1884	"	78 "
1885	"	63 "
1886	"	74 "
1887	"	99 "
1888	"	40 "
	Total during the 8 years	691 "

Number of frosty nights at Major's Creek, during the following years:—

1881	Frosty nights	66
1882	" "	84
1883	" "	86
1884	" "	89
1885	" "	83
1886	" "	91
1887	" "	63
1888	" "	106
	Total No. of Frosts during 8 years	668

Not having a rain-gauge, I am unable to state the quantity which fell on each day, but may say that on many occasions a few drops only fell, and very often as much fell as about laid the dust—indeed it would be safe to say that not more than one half of the number gave enough to be of any benefit to the grass crops or for mining purposes, and on two occasions only was there enough to be of service to the sluicing or flooding of claims.

I have appended this to my report merely to show that these eight years have not been favourable to the working of the alluvial, *i.e.*, old workings, and there is no new ground to prospect consequent on the township and suburban allotments being in the way.

SOUTHERN DISTRICT—Braidwood Division.

(*C. E. Oslear, Mining Registrar.*)

I regret to say that I have very little to report in regard to the progress of the mining industry in my division of the Braidwood District. There is a considerable amount of prospecting going on, but no claims at present considered sufficiently good to warrant any great expenditure in machinery, &c. Messrs. Samuels & Co. are cutting a very extensive race, and when completed, with undoubtedly fine prospects, will show a splendid return for their work, setting aside the number of people it will give employment to in the district.

SOUTHERN DISTRICT—Goulburn Division.

(*A. A. Williams, Warden's Clerk.*)

I have the honor to forward my annual report of mining in this district during year 1888.

There is a falling off in gold and mineral lease applications as compared with 1887.

Gold lease applications for 1888, 19; for 1887, 54; mineral lease applications for 1888, 20; for 1887, 33.

Number of miners' rights issued during 1888, 217; mineral licenses, 79; business licenses, 4.

SOUTHERN DISTRICT—Bombala Division.

(W. A. Dorets, Mining Registrar.)

I have the honor to tender my report as Mining Registrar for this division for the year 1888, and I am glad to say that although no special advance in mining matters has been made, yet there has also been no retrogression. A large number of miners' rights have been issued, and indeed many more than last year would have been so issued were it not that the prospectors in so many cases brought their rights and licenses from elsewhere. Five extended alluvial claims have been applied for at Nelbothery, and from these a great yield is reasonably expected. They are at present in "suspension of labour" to give time to erect the very costly machinery which will be required to work the claims.

The amount of gold purchased by the Banks this last year is 501 oz. 19 dwt., as against 745 oz. 12 dwt. for 1887; also, the issue of rights and licenses for the past year is as follows:—Miners' rights, 44, as against 49 of the previous year; mineral licenses, 10, as against 2; and business licenses, 23, as against 24.

It may be confidently expected that as soon as Nelbothery is opened up by the abovementioned claims a great impetus will be given to mining within this division.

SOUTHERN DISTRICT—Nerrigundah Division.

(D. F. Stinson, Mining Registrar.)

I have the honor to forward my annual report for the year 1888.

Having only entered on my duties from the 18th July last, my report will not be as complete as I should desire. There being no office established in this division up to July of this year, the whole of the business from here was done at the Eurobodalla and Wagonga offices.

Quartz-mining.

The principal mine in this division is the Mount Coman, the property of the Mount Coman Gold-mining Company, Limited. The width of the reef averages about 4 feet 6 inches. This Company have erected a powerful battery of 25 stamp-heads, driven by a 40 horse-power steam-engine. It is connected with their mine by a permanent horse tramway about 2 miles in length. Fifty tons of stone (out of 600 tons at grass) has been crushed, but the yield is not known. Several smaller reefs have been opened during the year, the returns from which I have given elsewhere. Two other batteries have been erected since last report; one by James Pollock, at North's Creek; it is 10 stamp-heads, driven by 12 horse-power steam-engine; the other has been erected for E. J. Coman & Co., at Bumbo; description—4 stamp-heads, driven by an overshot water-wheel. Other Companies contemplate erecting machinery during 1889.

Alluvial.

Alluvial mining has almost been at a standstill owing to the scarcity of water. Creek claims are the only ones being worked. The miners inform me that they are barely making a living, but still have good hopes of the future of this diggings. No miners' rights or business licenses have been issued from this office during the year.

Total value of mining plant in the division, £17,000.

SOUTHERN DISTRICT—Bega Division.

(R. Frappell, Mining Registrar.)

I have the honor to forward my report of mining operations in this division for the year ending 31st December, 1888.

Mining has made little progress, but steps have been taken to develop the resources by forming a Prospecting Association, and operations commenced by testing a reef at Nelson's. Two shafts were sunk about 110 feet, and one driven 50 feet, but nothing payable has as yet been met. Alluvial gold was found in a creek near Wyndham; being on private property, operations were stopped.

A mineral lease of 40 acres has been taken up at Wallagoot. Sufficient indications of silver have been met to warrant a thorough prospecting. The ore raised has not been deemed sufficiently good enough to warrant the expense of a test. Several parties are out prospecting, and with plenty of water to facilitate their labours, I trust to hear shortly of something payable having been found. No machinery for treating ore has been erected in this division. About 20 ounces of gold has been purchased by the bank, principally from the old workings around Nelson's. With a better water supply and more interest taken in mining, I trust the present year will be productive of better results.

SOUTHERN DISTRICT—Yass Division.

(G. Addison, Mining Registrar.)

I have the honor to report with regard to mining in this division of the Yass Mining District for the year 1888 that I have received fourteen mineral lease applications for an area of 540 acres. All these applications were for silver, and as some of the specimens obtained were very good it was thought that mining matters would go ahead. However, little has been done, and at present matters are at a standstill. Although this is the case, yet, survey of the leases having just been completed, it is very probable that some work may be done.

There has been a little prospecting for gold, but there is nothing further to report on this subject.

During the year I have issued 26 miners' rights and 15 mineral licenses.

SOUTHERN DISTRICT—Berrima Division.

(Percy Barnett, Mining Registrar.)

In forwarding my annual report for the Berrima Division of the Southern District, I have the honor to state that, having been appointed Mining Registrar on the 1st December last, from which time to the end of the year no mining business was done in this office, my report as to the state of mining in this district can only be based upon a comparison between the business transacted in 1887 and 1888, as shown by the books in this office.

Four

Four gold-mining leases, covering an area of 63 acres, were applied for during the past year, as against one for 1887; and on some of them suspension of work has been obtained. So far as I am aware, gold-mining appears to be about at a standstill in this division, nothing new having been reported to me.

Sixty-seven mineral leases were applied for, covering an area of 17,291¾ acres, as against 13 for 1887, the majority of them being for coal and kerosene shale, with about 11 for silver, &c. 19 miners' rights, 60 mineral licenses, and no business licenses were issued during 1888.

TUMUT AND ADELONG DISTRICT—Queanbeyan Division.

(Jas. Aldcorn, Warden.)

The principal mining operations in this division are at Captain's Flat, and these have for the past year been chiefly carried on by three companies, known as the Commodore, the Vanderbilt, and the Kohinoor. At the Commodore, which was formerly known as the El Capitan, and for a time worked first for gold, and subsequently for silver, operations have been steadily carried on in the mine and at the smelting works from the time when the Company obtained possession, about five months since. The main shaft has been sunk 100 feet, and about 300 feet of driving has been done during that time. Tramroads to the smelting works have also been constructed. About 400 tons of lead ore has been stoped out. The smelting returns are 450 tons of ore (which includes a portion of gossan ore from the Vanderbilt Mine, which is being worked in conjunction with the Commodore), producing 33 tons of bullion. At the Vanderbilt, which comprises several leases, and, as stated, is worked along with the Commodore, a large amount of work has been done, including 1,500 feet of driving, 100 feet of sinking in main shaft, 550 tons of ore broken and still in the mine, a hopper constructed to hold 100 tons, with about 120 feet of tramroad 30 feet high. Several drives have been put in with the object of cutting lodes; but, except in the original shaft, nothing has yet been found to justify the erection of further smelting works, as is intended in connection with the Vanderbilt holdings, or rather the joint companies. At the Kohinoor Mine there have been several changes in the management, and the present manager, who has only had full charge for a short time, could only give me an approximate estimate of the work done and its results, as follows:—Drives, 700 feet; rises, 240 feet; stoping, 2,000 feet. Total value of ore produced, gold, silver, copper, and lead, about £6,880. Several stoppages have occurred for want of teams to draw coke (procured from Newcastle), limestone, &c. Another Company, the North Vanderbilt, hold some private land, and besides have recently acquired some leases on Crown land. They have done a considerable amount of work in sinking and driving, but have not as yet got any payable ore. Apart from the operations of these Companies not much has been done. A number of leases have been applied for, which have not yet been granted. By some of the applicants a little prospecting has been done.

The Goodrabigbee Sluicing Company, at Brindabella, have been carrying on their works in cutting a head and tail race—the former involving an extensive piece of tunnelling. Until the water is got on, not much can be done in the way of gold-mining.

At the Original Mac's Reef, Gundaroo Gold-field, lease 231, of 10 acres, operations have been suspended for some months for the purpose of getting machinery. A trial crushing of 400 tons of stone has been made, yielding at the rate of 4 dwt. to the ton.

On two leases held by Messrs. Bray, M'Alister, and others, three months' work has been done. A shaft has been sunk 30 feet, showing a reef 18 inches wide, and with gold visible. The sinking has been very hard, and an excess of water has been encountered. It is proposed to tunnel the hill and cut the reef; about 150 feet have already been got through.

At what was known as the New Mac's Reef nothing has been done for some months, it having been found that the reefs were on conditionally leased land, and that new regulations were necessary for the working of such land. Some applications have recently been made for permits to work thereon.

TUMUT AND ADELONG DISTRICT—Gundagai Division.

(C. W. Weeks, P.M., Warden.)

I have the honor to submit my report on the Gundagai Division of the Tumut and Adelong Mining District for the year 1888.

I regret to report that mining during the past year has been of an unprofitable nature throughout this division.

Quartz reefs, both old and new, have been tested at considerable expense, but in no instance has a payable reef been discovered.

The only conclusion practical miners can come to is that the lower depths must be reached before the second payable shoots of gold can be looked for. Such work requires more capital than seems likely to offer. The Bongongolong Co., at Burra, has not resumed work, the dyke on which they were sinking not having proved payable. Williams' battery, at Coolac, is only partially employed on prospectors' lots. The Mount Morgan discovery, at Mooney Mooney, has not sustained the reputation its name would imply. This find consisted of numerous detached leaders scattered over the hill, and it was expected that these would junction in a strong lode at a depth. Some of these leaders were very rich, but they appear to run out at a shallow level. Two of the original party still continue to prospect the ground. The pyritous reefs at Johnston's Hill, Kimo, have not come up to anticipations, the percentage of pyrites being too low.

Two applicants in this division were granted a share in the Prospecting Vote, viz., James Higgins, at Mount Parnassus, and Jesse Harford, at Kimo. Both are busy sinking, but with nothing new to report at present.

I see little prospect of gold-mining having a revival in these parts until an Act to authorize mining on private property is passed similar to the Victorian Act. It is believed that valuable deposits exist on private lands around Gundagai, the owners of which decline to permit any mining.

TUMUT AND ADELONG DISTRICT—Tumbarumba Division.

(J. F. Makinson, Warden.)

The year 1888 has seen some renewal of enterprise in this division, and, altogether, mining has progressed fairly. In April several lodes bearing galena were found at Coppabella, and 37 leases were applied for. At the original find of Musgrove and party, the lode shows at the surface 25 feet wide; the vein-stuff is quartz,

quartz, through which, in parts, is seen galena in patches. At the west side there is an almost solid mass of galena 3 feet wide, to where the country rock overlaps it; how much further this may run into the hill it is hard to say, for no opening-up has been done. An average of the assays of the galena gives about 42 oz. of silver to the ton, and 55 per cent. of lead. The lode runs nearly N. and S., and is in slate country, there being coarse-grained micaceous granite a little higher up the hill. There has been some litigation about this find, and development has been delayed from that cause and from the late collapse in silver-mining generally.

Sluicing for gold has been a little less productive than last year, owing to scarcity of water, the most successful being The Burra Sluicing Co., Watson and party, Tarcutta, and Heinecke and Sons, Upper Tumbarumba. Gras, Fort, and M'Larrin have applied for a special lease of 100 acres at Tumbarumba Creek, about 2 miles up from Tumbarumba, to be worked by the new hydraulic elevator sluicing process. This party is now at work boring to test the depth of the ground preparatory to constructing their elevators.

Very little has been done in gold-reefing. Shanghan and Johnson, after crushing about 200 tons from their reef at Horse Creek, found the yield insufficient to pay, and have given up operations for the present.

At Bald Hill, Rolfe and Moorehouse have all the year been vigorously working to find the deep lead under the basalt, but are unable to report success as yet. Matthews and party, who have obtained a subsidy from the Prospecting Vote for ground allotted to them to search for a deep lead at Tumbarumba Creek, about a mile and a half below the town, have, at the date of this report, got down 48 feet through the basalt, and expect to bottom in about nine weeks.

Butler and party have taken up a lease for lode-tin mining at Jingellic, and the prospect seems good.

As nearly as can be reckoned, the yield of gold for 1888 has been 1,510 oz. The number of miners' rights issued was 195.

TUMUT AND ADELONG DISTRICT—Albury Division.

(T. A. Browne, Warden.)

Since furnishing my report for the year 1887, I have the honor to state that an important change has taken place in mining prospects. On the hills and slopes of the Black Range, near Albury, always remarkable for the richness of occasional deposits, a reputation for permanently-payable reefs has been gradually acquired.

The exceptional crushings from the claim of Messrs. Pye and Wealands, at a depth of more than a 100 feet, first attracted investors, inducing the formation of a syndicate for the purchase of this and the adjoining lease. This 8-acre lease, as well as the 7-acre lease of Messrs. Goldsworthy and others, being secured, a Company has been floated, and the ground is being systematically worked.

On the same line and adjoining is the 5-acre lease of Messrs. Meredith, M'Lennan, and party, from which were obtained the unusually rich specimens referred to in my telegram of 26th June last.

A portion of the subsidy granted by the Government for the purpose of assisting prospectors has been awarded to the leaseholders of this claim, who have put down a shaft more than a 100 feet in depth, substantially timbered. The One Tree Hill and Clina claims are also being worked, and a tunnel has been commenced for the purpose of striking the leaders in the former claim, which are known to be of more than ordinary richness.

Not the least considerable mine-works in the vicinity of Albury are the Hawksview quartz-claims, situated on Mahir's Hill on the estate of Arthur J. King, Esq. Gold was found there and good work done more than ten years since, and though the work has been interrupted occasionally the average crushings have been rich, and the amount of gold won very considerable, having regard to the capital expended. A royalty of 10 per cent. has been paid by the leaseholders, of whom Mr. Polkinghorne has been the principal proprietor and organizer. As to the workings, a considerable amount of labour has been expended in tunnelling and sinking, as well as stoping, but the plan of operation hitherto pursued cannot be described as complete or satisfactory, having regard to the probable extent of the auriferous area.

The battery, which has been erected on the river bank at a distance of a mile, is, I am informed, to be replaced by more modern machinery. Mr. Polkinghorne has, I am told, a comparatively long lease of the ground from the former proprietor, but would not object to coalesce with a Company, should one be formed on terms mutually advantageous.

The line of country would appear to be distinctly auriferous, as the same formation is observable on the south bank of the Murray towards Bethanga, while, about a mile due north, Messrs. Osborne and Hertzog are working with fairly payable results from their last crushing on the property of Mr. H. C. Smith, of Mount Pleasant.

The Soudan claim, at Splitters Creek, is being worked by Messrs. Dalton and party, but without present results of importance. Considerable activity was evinced a few months since at Ganara, but after the leases were applied for the excitement seems to have died out.

The Bungowannah Gold-mining Company have not been at work for some months. Great difficulty was experienced in saving the gold, although the machinery was modern and complete, owing to the peculiar nature of the conglomerate among which the gold, in the first instance, was discovered. Eventually the shareholders decided to sell, and the works were closed. There has been no work done for the past six months, though it is thought that a different mode of treatment would render the affair payable. This property is situated upon the freehold of Mr. Gottlieb Singe, and is distant from Albury about 14 miles in a north-westerly direction.

There has been a considerable increase in the number of miners' rights issued and gold-mining leases applied for, as against similar tokens of mining industry in the past year. During the year 1888 there have been issued—miners' rights, 119; business licenses, 10; mineral licenses, 4; gold-mining leases applied for, 26; mineral leases, 7.

I may conclude with the expression of my opinion that as the existence of the precious metal has been proved on the western, northern, and eastern borders of the town of Albury, as from time to time deposits of extraordinary richness have been discovered, as in the present workings of the Black Range Companies highly payable stone is being brought to grass from a depth never previously reached, it may fairly be conceded that steady perseverance in the present systematic operations, combined with adequate capital, is alone needed to enable Albury to reach the first rank of auriferous localities.

TUMUT AND ADELONG DISTRICT—Narrandera Division.

(L. S. Donaldson, Warden.)

The character of the gold-mining industry in this division may be described as one of "great expectations." A number of reef-claims that were worked and abandoned some twenty years ago were reopened in 1887, some as ordinary claims and some as leases. The old returns were said to have been enormously rich, but so far nothing has been discovered to justify the report. The intensely dry weather that has prevailed during the past year has completely stopped operations, and all the claims and leases are registered for suspension of labour conditions.

The only yield of gold during the year has been from a crushing of 200 tons by Ferrier, Evans, and party, at Cowabbie, which gave some 4 dwt. to the ton, the value of the gold being nearly £150. The gold in this reef is extremely light and difficult to save, and it is estimated that more gold remains in the sludge than was extracted by the machine. They have a battery of ten stamps, and have purchased some specially-designed apparatus for saving the fine gold, which has not yet been tested. They have 200 tons of stone now ready for crushing, and as some good rain has fallen since the new year came in they intend to crush immediately. The shaft is now being deepened with assistance from the Prospecting Vote.

Some 4 miles from Cowabbie, Messrs. Anlezark and party have sunk a shaft, with assistance from the Prospecting Vote, to a depth of about 120 feet. A small quantity of stone has been raised showing gold.

At Grong Grong a few claims have been worked with no result, owing to the dry weather.

Should we be favoured with good rains this winter all the abovementioned claims and leases will be thoroughly tested, and if the anticipated results are realized there will be room for the introduction of more extensive crushing plant.

There has been no alluvial working in this division.

TUMUT AND ADELONG DISTRICT—Adelong Division.

(J. James, Warden's Clerk.)

I have the honor, in accordance with your telegraphed instructions of 14th January, to transmit to you my annual report for the information of the Honorable the Minister for Mines.

The year has closed for a total yield of 1,357 oz. 7 dwt. and 23 gr. of gold, 350 oz. from alluvium, and the balance from quartz. It shows, however, an increase of business in twenty-three applications for gold-mining leases. Other business is as follows:—Issues of 188 miners' rights, 4 business and 4 mineral licenses; registrations, 15 conditional, 9 unsurveyed, and 1 surveyed.

Mr. A. W. Molineaux, General Manager for the Perseverance, Victoria, and Williams' Amalgamated Companies, reports that during the year 273 tons quartz, yielding 335 oz. gold, were crushed at the Perseverance Battery, nearly the whole coming from the Company's "own" mine, varying from about 4 oz. to as many pennyweights per ton. During the year the Company have added a concentrator for saving the pyrites to their already extensive crushing plant. The concentrator, although giving a considerable amount of trouble at first, now works well. At the Perseverance Company's mines work has been chiefly confined to the Adelong shaft, which has been sunk a further 100 feet, making a total depth of 565 feet from the surface. The make of white stone still continues, and one speck of gold only was seen in the sinking. Mr. Molineaux is of opinion that were this white stone got through a payable reef would be found below it. Drives were also extended at the 300-feet level both north and south, but not a sufficient distance to reveal any change in the country. Payable stone is now being worked in the stopes above the 400-feet north drive, and also in some old workings at about 10-feet in depth, to the south of the main shaft.

During the past few months a small but rich leader was followed into the 4-acre lease to the south, but it cut out.

In the Prowse and Woodward's mine men have been working on tribute during the whole year, and have on the whole made fair wages, the number of men employed varying from seven to three.

At the Great Victoria Company's mine men have also been working on tribute during the whole year, varying from eleven to two. The Company have also done a large amount of baling, having had three men and two engines employed for about one week in four.

Mr. Molineaux hopes before another year has passed there will be considerably more activity displayed on the hill, and is convinced that capital is only required to develop the mines in order to reap rich returns.

Mr. A. D. Shepard, in his alluvial lease, has for a considerable period been engaged in an interesting experiment of stripping deep ground by machinery, which, by ordinary methods, was found difficult and dangerous to work, owing to drifts and influx of water. The material operated on is sand and black alluvium, the accumulation through ages of decayed vegetable matter. Powerful and costly machinery of a novel description is used. The mode of operation is first by streams of water, under 100 feet pressure, and operated by hydraulic nozzles. The powerful action of the water on the mass reduces it to mud or sludge, when it is pumped up. Mixed with the water which breaks it up the material runs away when pumped to the surface, and gives no further trouble. The chief difficulty to contend with is the tendency of the material to slip in large masses into the cut when it is first opened out. As the work proceeds time has to be taken to let it drain, and when once drained it stands like a wall. The experiment is likely to prove a great success, and will reward the enterprising proprietor, as the washdirt is proved by bores to be rich.

Two iron water-wheels, two turbines, and two steam-engines are kept in constant use.

In conclusion, it may be stated that the year has not been devoid of prospective interest. There is the large area of 180 acres taken up outside the extensive areas already held, the sale of the Curragong and Donkey Hill leases to syndicates, and the visit of the Prospecting Board. One good feature in the Board's visit is that the £300 allowed for prospecting the Gap vein will soon be availed of, as an engine and pumping gear are in course of erection.

TUMUT AND ADELONG DISTRICT—Queanbeyan Division.

C. J. B. Helm, Mining Registrar.

I have the honor to submit my annual report for this division for the year 1888, and in doing so am able to state that there has been a considerable stir in mining matters during that period, and a large amount of capital has been expended in developing and establishing works of a permanent nature preparatory to commencing

commencing mining operations. It is expected that when fairly started good results will be obtained, particularly in alluvial mining. On the Coolaman Creek there are several men getting excellent results from alluvial washing, and on the Goodradigbee River, at Brindabella, the Goodradigbee Gold-mining and Sluicing Company (Limited) have started with a capital of £25,000, to work 26 acres of alluvial ground, which they have acquired, and which is well known to be of rich formation. For the purpose of working the wash, which is supposed to be fully 100 feet deep, having been tried to a depth of 95 feet, and is 300 yards wide, a head-race 4 miles 38 chains long has been constructed, at a cost of £2,000; also, an extensive dam and reservoir. Other works necessary are at present being pushed on, thirty-six hands being employed. The mining manager expects to start washing very shortly. At Mac's Reef work is being pushed on by Bray and party, who hold two 10-acre gold-mining leases. A reef, 18 inches wide, showing gold, was struck at a depth of 30 feet. A tunnel has been put in 154 feet through very hard country at a depth of 100 feet, and it is expected to strike the reef about 300 feet in. Several other leases have been taken up in this locality. On Wright & Co's. lease of 10 acres some 400 tons of quartz have been raised, assaying 4 dwt. to the ton. The shaft has gone down 110 feet; width of lode, 4 feet. Prospecting has been general throughout the district. 156 miners' rights and 29 mineral licenses were issued during the year, being a large increase on former years. 10 gold leases and 6 mineral leases were applied for.

Four tenements were conditionally registered, and 2 registered in the Surveyed Tenement Register, also 12 tenements registered in the Unsurveyed Tenement Register.

Mining in this district is at present only in its infancy, and before long there should be some good results, as the district is without doubt a rich gold-bearing one, and it only requires capital to develop it.

TUMUT AND ADELONG DISTRICT—Nimitybelle Division.

(*G. W. Myers, Mining Registrar.*)

I have the honor to submit my report for 1888, and have much pleasure in reporting that a great improvement in all classes of mining has taken place during that period. Several new finds have been made, and the miners' rights and mineral licenses issued have been greatly in excess of the number for the previous year, as the subjoined table will show. In addition to the quartz reef at Kydra, at which a fair amount of work has been done in the way of stone-raising (Kiss and party alone expending five or six hundred pounds), crushing operations having been suspended owing to want of water consequent on the long continued drought. The following new finds have been taken up and worked upon—bismuth near Nimitybelle; silver near Nimitybelle; gold and silver at Thoko, about 15 miles from Nimitybelle; and stream tin at Thoka. The Firery Creek reefs on the Umeralla River have also caused a little excitement here, and the rush there has been the cause of a number of miners and others leaving this locality to work there. Crushing operations are to be commenced at Kydra in a week or two, and judging by the results obtained with a pestle and mortar the return from the stone at grass should give a handsome profit after paying working expenses. At Thoko a shaft was put down 100 feet on a lode, assays from surface of which gave both gold and silver, but a trial crushing of stone in Sydney did not give as favourable result as was expected. At Thoka also stream tin was discovered, and two prospecting areas of 80 acres each were taken up, but want of water caused the prospectors to obtain a suspension of work. However, they were able to obtain the following results from trial washing, viz.—from 2 up to 5 oz. per dish.

Return of miners' rights, &c., issued for 1888:—Miners' rights, 70, as against 19 for the preceding year; mineral licenses, 21, as against nil for the preceding year.

Total area of land applied for:—For gold, 35 acres; for silver, 80 acres; for bismuth, 79 acres.

In conclusion, I may safely anticipate increased activity in mining in my division during the coming year, and have no doubt that capital and machinery will be more largely employed in developing the apparently vast mineral resources of this district.

TUMUT AND ADELONG DISTRICT—Tumut Division.

(*C. J. Lloyd, Mining Registrar.*)

Gold-mining has looked up a little in this division this year. Two special leases have been applied for on the Shaking Bog Creek of 100 acres and 50 acres respectively. Croker and Benson have also applied for a 25-acre lease on Adjingbilly. Up to the present time no results have been obtained. The mining in the district is mostly alluvial. The only quartz-workings are Perkins and party at the old Lacmalac Reef, and Webb and party at Murphy's Reef, Micalong, neither of which have yet struck the quartz. The miners are so scattered that it is most difficult to ascertain the actual amount of gold found. Many of them sell it in Gundagai, and small quantities are sold to local storekeepers. Twelve mineral leases have been applied for at Yarrangobilly for working silver, copper, and lead. The owners are sanguine that they will develop a rich silver-mine, but up to present date no great results have been attained.

TUMUT AND ADELONG DISTRICT—Kiandra Division.

(*W. D. Bailey, Mining Registrar.*)

I have the honor to submit my report of the Kiandra Division for the year 1888. The number of miners' rights issued was 119; business licenses, 2; mineral licenses, 20; gold won, 586 oz.

Mining here is in a depressed state. The causes are a bad season for water and the shallow ground being nearly all worked out. At the Basalt, Evans and party have driven a tunnel 190 feet into the hill, also driven into the wash at about 80 feet, but did not strike payable gold. It is thought that they are not sufficiently far into the hill. At Township Hill, Heinz, Hooper, and party have extended their tunnel, also put in cross-drives in various directions, 168 feet, 40 feet, and 63 feet respectively; also sunk a shaft about 17 feet, and put in a short drive from it. At the Empress claim they had a very short season for water, but the yield of gold was fair. At the New Chum Hill they have erected a derrick, worked by a Pelton water-wheel, put in a new tail-race, and various other improvements. A large amount of stones are met with on the face at present, but the wash-up will not take place until the end of this month.

There was some little excitement caused by the report that a good silver lode had been found at Yarrangobilly, 20 miles distant, on the Tumut Road.

At this place a large number of 40-acre blocks were pegged out, but no work of any consequence done on any, with the exception of one or two. It is now almost deserted.

Doubtless other gold was won which I cannot account for.

TUMUT AND ADELONG DISTRICT—Reedy Flat Division.

(J. T. Hely, Mining Registrar.)

I have the honor to forward my report for the year 1888, as under:—

Mining matters in this division are very quiet at present, although it has every prospect to brighten up before the end of this year.

The number of miners' rights issued was 79, as against 65 for 1887; business licenses, 4, as against 3 for 1887. There was a greater number of miners working in the locality in 1887, but a number of them were working without rights. I had to prosecute some of them to take out miners' rights, and since then others have been more careful.

The quantity of gold won during the year was 453 oz., valued at £1,756, and about 60 or 70 oz. may possibly not be accounted for, as it has been taken to other places for sale.

Some attention is being devoted to quartz-reefing lately.

A Company has been formed, with a capital of £500, to erect a 5-head battery, to be worked by water-power, and expect to be in working order in about four months' time.

A prospecting association was formed some three months ago to search for reefs in the neighbourhood, and a reef has been struck, about 10 inches wide on the surface, and about 8 inches at the 36-feet level, showing gold freely, and is estimated to yield about 3 oz. to the ton, with about 17 tons at grass. Encouraged by the success of the prospectors, six claims have been pegged out along the line of reef, and other parties are prospecting in the locality.

The principal drawback to the opening up of the reefs is the fact that most of the land has been alienated, and without a special permit from the Minister for Mines miners are not allowed to prospect, and complain about the delay in obtaining the necessary permission to search for gold on conditional purchases.

The reefs about here would pay well with a battery so convenient, but most of the miners have no capital to back them.

I have been unable to furnish my report sooner through absence on other duties, but trust to be able to furnish it sooner next year with more satisfactory results.

TUMUT AND ADELONG DISTRICT—Albury Division.

(Charles A. Conley, Mining Registrar.)

I have the honor to report that a very considerable revival has taken place in mining during the past year, principally at the Black Range and vicinity. Several leases which had been previously worked and abandoned have been reapplied for, and are now receiving another trial; and, in most cases, with favourable results.

Some very good yields have been obtained at May Day Hill by Messrs. Pye and Wealands, viz., 95 oz. 10 dwt. for 13 tons, and 45 oz. 13 dwt. for 10 tons. This lease of 8 acres has, together with Goldsworthy Brothers' 7 acres, and other leases to the west, been purchased by a syndicate at a very high figure, and is now being systematically worked.

The holders of the adjoining lease (5 acres), on the same line and to the east, Messrs F. W. Meredith, M'Lennan, and party, have struck some extraordinarily rich patches in two shafts sunk by them, and as they get down the reef is more defined, and similar to that on the 8 acres referred to above. Messrs. Meredith, M'Lennan, & Co. were awarded a share of the Prospecting Vote this last year, and have already sunk a new shaft to a depth of nearly 100 feet.

The One-Tree Hill lease, situated on the east bank of Black Range Creek, and for many years worked by Messrs. George Day, M'Lennan, and others with varying success, has been applied for by a new Company, but comprising several of the old party. They have started a tunnel from the deepest level, 182 feet, and are driving to cut leaders originally worked, one having proved particularly rich in years gone by. Should they succeed in striking the leader as rich as anticipated at this depth, the general impression is that the claim will prove one of the most valuable in New South Wales.

During the past year both the Splitter's Creek and Bungowannah properties have been at work; besides, Hawksview (private property) and Nine-mile Reserve are receiving attention.

There is nothing to report in alluvial mining.

I append a list of miners' rights, &c., issued by me during the year:—Miners' rights, 119; business licenses, 10; mineral licenses, 4; gold leases applied for, 26, as against 1 last year; mineral leases, 7, one of the latter being situated near Yarrara, and remaining six at Mount Pilot, at head of the Murray.

TUMUT AND ADELONG DISTRICT—Cootamundra Division.

(A. J. M'Carthy, Mining Registrar.)

I have the honor to forward my report of mining operations in this division for the year ended 31st December, 1888.

During the year I have sold 57 miners' rights and 2 mineral licenses, and during the same period 3 gold-mining leases and 1 mineral lease have been applied for.

TUMUT AND ADELONG DIVISION—Captain's Flat.

(T. Canning, Mining Registrar and Warden's Clerk.)

I have the honor to forward my report, for the information of the Honorable the Minister for Mines, for the year ending 31st December, 1888. I have great pleasure in stating great progress has been made in the development of mining industry within my portion of the division of the Tumut and Adelong District, Captain's Flat. Area of land applied for at the local office here, 1,297 acres; miners' rights, 89; business licenses, 26; and mineral licenses, 28—sold during the year. Population, 500 (five hundred).

North Vanderbilt Amalgamated Silver-mining Co., portion of which land comprises 79½ acres, rented by the Company from Mr. George Osborn, of Foxlow, the remainder being mineral leases rented from the Crown. No. 1 main engine shaft, 10 x 4 in the clear, is sunk a distance of 212 feet, and timbered with sawn wood 2 x 7 to the bottom of shaft, cross-cut west at this level 108 feet; main level

south

south 160 feet, cross-cut east 24 feet to intersect lode; will have to drive further distance in cross-cut to intersect lode; a chamber and cross-cut at the 100-feet level running west; also a cross-cut at the 50-feet level running west 30 feet; a drive along course of lode running north and south 75 feet.

No. 2 shaft, 9 x 4 in the clear, is sunk to a depth of 102 feet, further sinking to be continued to a distance of 122 feet, when will open out and cut lode. This property adjoins the Kohinoor Mine on the north, and to all appearance is a continuation of the Kohinoor lode, running direct into the Vanderbilt Co.'s ground, only being separated by the Molonglo River.

No. 3 shaft is sunk a distance of 32 feet on course of lode slightly to the west of the Kohinoor line of reef, and adjoining the Kohinoor Mine. Recent assays obtained from several samples of ore taken from this shaft give returns to the ton, viz., 48 oz. of silver, 4 dwt. of gold, and 20 per cent. of lead.

Mr. Collins, mining manager is very hopeful of cutting a rich lode of gossan ore in No. 2 shaft, at present showing promising indications. A great deal of work has been done on this property.

Kohinoor Gold and Silver Mining Co. (Limited), Captain's Flat.—A good deal of work has been done at this mine. Much delay was experienced owing to the coal-miners' strike, being unable to obtain supplies of coke to keep smelter running. Levels driven a further distance of 7,000 feet, rises 240 feet, shafts sunk 130 feet, driven out in stoping 2,000 feet. Bullion from smelter containing gold, silver, lead, and copper matte, value £6,108 12s. 6d. I am unable to give quantity of ore put through smelter during the year which yielded the above return. Ore at grass, 200 tons, valued at £6,000. I am informed by the mining manager a second water-jacket blast furnace is to be erected here at once. Portion of the machinery is at present at Bungendore Railway Station awaiting transit to the Flat. When completed this will give employment to between thirty and forty hands more.

Commodore and Vanderbilt Gold and Silver Mining Cos. (Limited), Captain's Flat.—These mines have been quite recently amalgamated, although they are separate and distinct properties. No. 1 tunnel, Vanderbilt Mine, has been driven in mining lease 117 of 20 acres a distance of 570 feet, having to drive a further distance of 40 feet before lode will be intersected. In lease 19 of 20 acres a shaft has been sunk a distance of 130 feet; the lode was intersected at 100 feet, which proves 6 feet wide of good payable ore; a drive was then started to intersect lode shaft, at which point 128 backs were gained for 400 feet of driving, drives from shaft north and south on lode a distance of 177 and 84 feet respectively, which distance cut through shoot of ore, which is at present being stoped. No. 3 tunnel, which is situated in western lease, is in a distance of 300 feet at 236 feet from mouth of tunnel. Commodore lode was driven through at 20 feet wide, composed of iron and copper pyrites with a small percentage of galena. This drive is at present standing awaiting an air-shaft holing, when further development will be made.

North boundary of lease 114. A shaft has been sunk a distance of 78 feet, and drives have been put ahead north and south on lode 40 and 30 feet respectively through low grade ore.

Commodore Mine, Captain's Flat. In Commodore lode a drive has been driven along course of lode a distance of 900 feet, carrying 300 feet of backs, and proved a lode of 20 feet wide, composed of gossan and intersected with shoots of sulphides of lead, the lead ore now being used to smelt with Vanderbilt gossan. At mouth of tunnel a main engine-shaft 10 x 4 in the clear is sunk to a depth of 100 feet, and at present cross-cutting the lode, which is expected to be reached during the week. On the north end of lease a tunnel has been driven 148 feet and cut lode 3 feet wide, consisting of iron and copper pyrites. Other extensive surface works are being pushed ahead. I am informed by Mr. J. V. Thompson, mining manager in charge of both mines, that there is in sight sufficient ore to keep the furnace at least nine months running, the ore referred to being very remunerative. Bullion from smelter, 27½ tons recovered for 661 tons of ore, yielding—gold, 82½ oz.; silver, 11,000 oz.; lead, 29 tons 14 cwt.; total value of bullion, £2,868 18s. 1½d. I may also state there is to be erected at the Commodore a second water jacket blast furnace in the course of a month or so. Furnace running splendidly. A Mr. Levine, whose services have been secured by this Company, comes from Colorado, United States, seems to thoroughly understand how to treat the ore here, as the furnace is running most successfully.

A great deal of prospecting has been done in and around the Flat during the year.

I would like to mention a great public want felt here is the delay caused in putting the town allotments up for sale, the township being the most suitable place for residence here.

Total value of mining plant in the division, £10,000.

TUMUT AND ADELONG DISTRICT—JUNEE DIVISION.

(A. Elliot, Mining Registrar.)

I HAVE the honor to submit for the information of the Honorable the Minister for Mines my report for the year 1888 upon the Junee Division of the Tumut and Adelong Mining District. I am glad to be able to state that a considerable improvement has taken place in mining matters in the division, and experts have given their opinion that there are some rich reefs in this neighbourhood. Since my last report several new and apparently very promising quartz reefs have been discovered in this division. Several Victorian speculators have purchased half of the Redan claim (Johnson and party), and I hear that a good battery will shortly be erected by them. Several crushings have been made from this claim, the yield being from 1½ to 2 oz. to the ton, and it is considered that quite as much gold was lost owing to the very defective machinery, which consists of five head of stampers, very much out of order. Some splendid stone is now being obtained from Fincher's claim at a depth of 60 feet. The last crushing from this claim (14 tons), with very defective machinery, yielded 2 oz. 13 dwt. per ton. In Stevan's claim, which adjoins Fincher's, some very good stone has been obtained within the last few weeks. There are at present at Wantiool about 120 tons of quartz at grass. During the year the Pioneer Gold-mining Company has been formed to work the Pioneer claim at Eurongilly. Machinery known as the Huntingdon Mill has been erected near the claim at a cost of about £1,250. From this claim have been crushed 105 tons of quartz, yielding 79 oz. 15 dwt. 19 gr., which realized £300 12s. 1d. Everything at these reefs is now at a standstill owing to the want of water. At Mitta Mitta; on Piercy and Dobbyn's lease, things are very quiet, but I have been informed within the last few days that a Company is being formed in Sydney to work the reefs there. It is the opinion of practical men that only by the most approved of modern appliances for saving gold can the ore in this locality be successfully treated.

Within the last few weeks several prospecting parties have obtained some very good specimens from the reefs at North Junee, which have been abandoned for some years, but it is very probable that ere long a stir will take place in this locality.

Not

Not far from these reefs, at Specimen Hill, M'Grath and party (having received aid from the Prospecting Vote) are still carrying on their work in the alluvial, but up to the present with no definite results. The gold won in my division during the year (as far as I can ascertain) has been 232 oz. 2 dwt. 16 gr., representing £835 17s. 6d.

During the year I issued 66 miners' rights (nearly double the amount of previous year), and received 8 applications for gold-mining leases, covering 68 acres. A number of extended quartz claims have also been applied for.

I hope next year to be able to furnish a report showing a still further increase of business in my division. Total value of mining plant in the division, £2,300.

TUMUT AND ADELONG DISTRICT—Cooma Division.

(*Jas. B. Spence, Mining Registrar and Warden's Clerk.*)

I HAVE the honor to furnish you with my annual report of the Cooma Division of the Tumut and Adelong Mining District for the year 1888.

516 miner's rights, 127 mineral leases, and 2 business licenses have been issued in this office, as against 65 miner's rights, 27 mineral licenses, and 1 business license issued during 1887.

Gold.

A very considerable amount of prospecting has been done in this district, and I am pleased to state with very encouraging results.

The Colinton reef was found in June last, since which time some very good work has been done on the different areas, but, owing to the very rough and hilly country, only the prospector and two adjoining claims have yet struck the reef, which, in the prospecting claim at a depth of 40 ft., is 3 ft. wide, and well defined. Several tons of quartz sent for treatment to Sydney have yielded from 2 oz. to 8 oz. to the ton. There are now about thirty miners at work on the different claims.

What is known as the Fiery Creek diggings is a most important find, and quite a local rush occurred in August last. There are several parallel reefs at this place, composed of a conglomerate slate quartz and ironstone gossan on the surface, but at a general depth of 40 ft. the reefs turn to solid quartz, varying from 6 in. to 3 ft. in width. The gold found at this place is generally very fine, and will require very careful treatment to save it. Numerous assays have been made, yielding from 1 oz. to 10 oz. to the ton. I am informed that machinery is to be erected on the Umeralla River, near to this field, very shortly, and, when it arrives, I feel sure the sixty miners at present working there will be fully doubled. On the various claims there is over 100 tons of stone ready for crushing, the value of which it is impossible to arrive at.

Several other auriferous reefs have been found in this district, and those being worked with encouraging results are—Big Badja, Bredbo, and Cowra Creek.

Twenty gold leases have been applied for since the 1st June last, amounting in the aggregate to 120 acres.

220 gold claims, mostly quartz, have been registered, but a great number have since been abandoned.

Although the requisite forms were posted to managers of several mines, no returns have yet been received by me.

There are very few men engaged here in alluvial digging, and the amount of gold bought is only about 195 oz., of the value of £773, the price of gold being from £3 15s. to £3 16s. per ounce.

Silver.

Silver-mining has been actively prosecuted during the year, 42 mineral leases being applied for amounting in the aggregate to 1,605 acres.

In the Bredbo District a Goulburn syndicate have taken up several leases, and on one of them employed some eight or ten men to sink a shaft, from which several tons of ore was sent to Sydney for treatment, but I have not been able to obtain the results.

Messrs. Mant and party discovered a lode within 1 mile of the Bredbo Railway Station, consisting of galena and ironstone gossan, assays from which return 20 to 25 oz. of silver to the ton. They have applied for two leases of 40 acres each, and have sunk two shafts to a depth of 70 and 50 feet, but had to suspend operations owing to the flow of water in both shafts. I believe they are about floating a Company to obtain necessary appliances to work.

The find of a silver lode near the Big Badja River caused a sensation here, and mineral prospecting areas were pegged out for miles, but the original prospectors, Messrs. Jackson and party, are about the only ones who have continually worked the land. They secured 100 acres, on which they have put down two shafts. No. 1 shaft is well timbered to a depth of 100 ft., with a drive of 50 ft. No. 2 shaft was sunk to a depth of 30 ft. when a flow of water suspended further sinking. Owing to the very broken and unsettled state of the country in this vicinity, it is thought that sinking to a great depth will be necessary before the lode becomes well defined. Assays from No. 1 at a depth of 20 ft. gave the splendid returns of 329 and 334 oz. of silver to the ton, with a large percentage of lead. The lode consists of conglomerate quartz and ironstone gossan, with veins of galena.

During the year the mining revenue received at this office amounted to £1,110 12s. 6d.

In conclusion, I may state that, from the large amount of prospecting done in this district during the past year, there is every probability, with the advent of machinery, that substantial developments will be made during the present one.

PEEL AND URALLA DISTRICT—Glen Innes Division.

(*G. Martin, Warden*).

Tin.

THE season of 1888 was the most trying experienced by the miners since the opening of the tin-mines in 1872; and the rapid fall in prices, coupled with the long continued dry weather, had a most depressing effect on the industry. The severity of the drought was unprecedented in New England. From the middle of February to the first week in December very little rain fell on any part of the tableland, and the very gum-trees withered away on range and flat under the fierce heat and absence of moisture. In

such

such a season surface-mining was brought to a standstill in most places, and as the deep leads opened were gradually diminishing in productiveness the fall in the output from 2,846 tons to 1,281 was not surprising.

Prospecting has been carried on vigorously by the Basaltic Lead Company during the year, with a view to test the deep ground, ending at the Gulf, near Kangaroo Flat. Eight men have been continuously employed, and the manager informs me that 73 feet of trial shafts have been sunk in drift and basalt, 57 feet of cuttings opened, and 627 feet of tunnels (6 by 5 feet) driven mostly through hard granite rock. A cross-drive, put in for a distance of 183 feet, showed a face of coarse wash-dirt, from 1 to 6 feet in thickness and 80 feet in width, carrying a little tin.

The amount expended to 31st December in prosecution of this work was £1,189 8s. 10d.

The only operations being carried on in the lode are at the Ottery mine, from which source 93½ tons of black tin were won from stone crushed at the Tent-hill battery.

The output of tin ore for the year was 1,281 tons 13 cwt., Emmaville producing 1,037 tons 13 cwt., and Glen Innes 244.

At the average price of £67 10s. at the smelting works at Tent-hill the total value would be £86,533 18s.

573 tons ingots refined tin were forwarded from the smelting-house to Newcastle during the year.

Silver.

At the commencement of the year the silver boom was at its height, and supposed silver-bearing land could not be measured fast enough to satisfy the demands of a market where investors generally seemed to care little or nothing about the prospects of *bona fide* mining, but very much about the prompt issue of transferable scrip. Of the many companies floated in the early part of 1888 but four were in active operation at the close, viz, Webb's, Webb's Consols, Pye's Creek, and Castlerag. Webb's was earliest in the field, and the mine was well opened up and an extensive crushing, roasting, and leeching plant in full operation in January.

The machinery, however, was apparently defective, and the workmen necessarily inexperienced in the manipulation of a new and refractory ore. In consequence, active work in reduction was suspended after the first trial, and the ore concentrated and forwarded to Adelaide for final treatment.

The local manager reports that 400 tons of ore were treated during the year, giving a return of 13,182 oz. silver, being at the rate of 33 oz. per ton. The average number of men employed was 43, and the depth of the main shaft 314 feet. The distances driven in the mine were 354 feet on the 90-feet level, 260 feet on the 150-feet level, 126 feet on the 200-feet level, and 24 feet on the 250-feet level.

The value of the machinery on the ground is estimated at £11,250.

Webb's Consols mine is about 10 miles south of Webb's, and in a different formation of country, and although it is not so well developed as the latter mine the indications of richness are more promising.

The mining manager in charge (Mr. T. G. Davey) has favoured me with a report, which I give in full:—

This mine comprises five mineral leases, being portions 1,014, 1,015, 1,016, 1,018, and 1,019 of 20 acres each, and four mineral lease applications for 120 acres, all situated in the parish of Gordon, county of Gough.

In April last a Company was formed in Melbourne to work the mine, and since then the exploratory operations have been uninterruptedly carried on.

Work has been confined to sinking five main shafts, two of which are now 100 feet deep, and the others 75, 67, and 20 feet respectively. These shafts are each on a distinct lode, and all of them have produced more or less payable ore.

No. 1 shaft is 10 by 4 between timbers, and has been sunk perpendicularly. As the lode underlies slightly to the east it is now out of the shaft, but the continued occurrence of spots of galena at the bottom shows that it cannot be more than a few feet distant. Some 80 tons of ore have been raised from No. 1 shaft, consisting principally of copper pyrites and arsenical iron. It is only of late that we have met with indications of galena reef, assaying about 35 oz. of silver per ton.

No. 2 shaft is at a much lower level, and has been producing galena from the surface. This lode is almost perpendicular, and its width has not yet been ascertained. It is known, however, to be over 15 feet wide, as it has been traversed for that distance without showing any indication of walls. It consists of veins and "bunches" of galena, mispickel, and copper pyrites in a matrix of felspathic quartz. Some of the galena veins have at times been as much as 4 feet wide. From this shaft two parcels of ore have been bagged and sent away for treatment, the first parcel of 20 tons to Adelaide, and the second, also of 20 tons, to Germany. The average gross returns from these two parcels have been 73 oz. of silver per ton and 66 per cent. of lead. There are still 200 tons of ore lying at the surface from this shaft, which contains about 7,000 oz. of silver and 60 tons of lead. Preparations are being made to drive north and south on the lode at a depth of 76 feet.

No. 3 shaft is higher than No. 1, and has not reached the galena level yet. It produces large quantities of mispickel, and the lode is composed of very soft porphyry.

No. 4 shaft is 66 feet deep, and consists of felsite, through which crystals of galena are disseminated.

No. 5 shaft is 20 feet deep, and carries large quantities of mispickel and copper pyrites.

The Company is now negotiating for the purchase of a small concentrating plant, with a view to obtain immediate returns from the ore being raised from these shafts. The plant will consist of a set of Wall's rolls, with stonebreaker, screens, elevator, &c., three automatic plunger jiggers, two or three revolving sluice-tables, buddles, and a 20 horse-power engine. The capacity will be about 120 tons per week.

So soon as the mine has been sufficiently developed the plant will be materially increased, and smelting and refining will be introduced on the mine.

As lead predominates in the concentrated ore, it is needless to say that simple smelting is the process which is best adapted to its treatment.

The country formation is granite and quartz porphyry.

There is no doubt that at a depth galena will be abundant in all the lodes, as is shown by the fact that in No. 2 shaft (which is situated in a gully, and at a much lower level than the other shafts) galena predominates. In No. 4 shaft, again, which is next in level to No. 2, galena is freely seen; and in No. 1 shaft, where no galena had previously been seen, it was met with at 90 feet, and since continued to increase as sinking proceeds.

I consider that the prospects of this mine are most encouraging, and I see no reason why it should not soon occupy the premier position among the silver mines of New England, especially when we take into consideration the large area and numerous lodes.

The bearing of the lodes, approximately, is north 10° east.

Pye's Creek mine is about 20 miles north of Webb's, and as its ores carry a larger percentage of galena it is probable that they will be found much easier of reduction.

With the exception of a 12 horse-power engine, with winding gear complete, there is not any machinery on the ground, and operations have in consequence been confined to raising ore, of which there is about 400 tons to grass at the main shaft (now down 179 feet). This ore is estimated to yield 40 oz. of silver to the ton and 25 per cent. of lead. 42 tons of ore were sent to Adelaide for treatment, and the returns of a portion smelted gave 49 oz. silver and 5 dwt. of gold to the ton. All labour is now concentrated at the main shaft, where three shifts of men are employed. It is intended to sink to the water-level, with a view to open up the mine and test its value before erecting the reduction works the management have in contemplation.

Castlerag

Castlerag mine is within 6 miles of Deepwater railway station, and being a more recent discovery is not so well opened up as the other mine. The ores bear a close resemblance to those of Sunny Corner, in the western district of the Colony, and it is anticipated that, as with those ores, the process of reduction will not be difficult. Operations in shaft-sinking and tunnelling are being actively pushed on by the proprietary, who seem determined to bring the mine into full working order as soon as possible.

The total amount of refined silver obtained was 18,160 oz., contributed as follows:—Webb's, 13,182 oz.; Pye's Creek, 2,058 oz.; Webb's Consols, 2,920 oz. The total is not large, but considering the difficulties attendant on the introduction of a new phase of mining, and the utter inexperience of those at first entrusted with its management, it is not surprising that the results so far have been profitless and the output so small. It has, however, been proved that the silver-bearing veins are valuable, and when a more extended experience shall have given the knowledge necessary to master the treatment of the ores with economy, as well as skill, there is little doubt that many of the mines will pay, and that the local industry will take its place amongst the permanent industries of the country.

Gold.

Although the Glen Elgin Gold-sluicing Co. virtually abandoned operations after an expenditure of more than £3,000 on their concession on the Rocky River, there were signs of a revived interest in mining for this metal in other parts of the division. They were most encouraging.

Towards the end of the year two companies were formed to work large areas of alluvial ground at Oban, and many leases were taken up on the long-neglected reefs at Kookabooka.

At this latter place the reefs are very numerous, intersecting a peninsula of granite formation, hedged in amongst slate mountains, on the edge of the wild and broken country extending easterly towards Grafton. The veins are narrow, but the stone in places is very rich, showing gold freely.

The proprietors of the Welcome Stranger (Simpson, Drew, and Brereton) are erecting a crushing plant with ten head of stampers, which will be ready for work about the middle of April, and it is anticipated that the stone to grass will yield from 5 to 10 oz. to the ton.

The field appears to be an extensive one, but its development will depend very much on the success of the first crushing of stone from the Welcome Stranger. If anticipations are realized, there will be a rush to the place, and a very promising mineral country will be opened up. At present there are about 100 people on the ground, and preparations are being made to accommodate a much larger number. Gold has been mined for in the alluvial for years in every creek and gully in this neighbourhood, but it is only recently that prospectors have been successful in inducing capitalists to assist in opening the reefs. The field is distant S.E. from Glen Innes 34 miles by road.

About 360 oz. of gold were won from the alluvial at Oban and Glen Elgin during the year, principally by old resident miners.

At £3 15s. per oz., the value would be £1,350. It is not possible to ascertain the average earnings of the goldminers, as the return of metal won is but approximate, and tin and gold are associated and mined for together.

I should say, however, that ordinary labourers' wages are not made by the majority.

Ten oz. of gold were obtained from the Pye's Creek silver ore from the Emmaville District under treatment at the smelting works in Adelaide. This is an entirely new source of supply, and may be of importance when that mine is further developed.

Bismuth.

The Kingsgate Bismuth is still the only mine at which work is being actively carried on. About 40 men and 20 boys have been employed, and, according to the railway returns, 47 tons 15 cwt. were forwarded to Newcastle for shipment to England. I cannot give the value, as the management decline to furnish any particulars in connection with the working of the mine or sale of ore.

The average numbers of miners at work in my division during the year were as under:—

Emmaville.

Europeans	544
Chinese	950

Glen Innes.

Europeans	60
Chinese	80

Generally, in my division, mining for stream tin is becoming less and less productive, as known deposits are being worked out without new sources of supply being opened up. Tin-mining in the lode is still in a tentative condition, and of the three plants formerly at work but one, the Ottery, is now crushing stone. As this phase of mining is lessening in productiveness, there are, however, others opening which promise to more than take its place. From the Queensland Border to the Aberfoile River (the southern boundary of the division) silver ores have been found of more or less commercial value; and over half that distance, centring at Oakwood and Kookabookra, gold-bearing reefs are known to exist, which, it is probable, will now be made to disclose a profitable return on invested capital.

In the neighbourhood of Kookabookra, at Paddy's-land, the ranges are of serpentine and slate, basalt-capped, and evidently highly mineralized. In almost every gully on the west side of these ranges gold has been found, and silver and copper ores have been obtained where the formation has been laid bare on their eastern planks. The slate has weathered away for miles on these ranges, covering steep mountain sides with a smooth grass-grown coating of soft debris; but at some points hard cubical masses of slate are exposed in bulk, offering opportunities for procuring roofing material which may some day be turned to account. This portion of the country has been but little explored by any miner with the exception of the solitary and inexpert gold fossicker. In these days of mining adventure, it ought not to be any longer overlooked, as its mineral presence is worthy of closer investigation than has yet been given to it.

PEEL.

PEEL AND URALLA DISTRICT—Bingera Division.

(*Corbett Lawson, Warden.*)

I have the honor to submit my report for the portion of the Peel and Uralla Mining District under my observation for the year 1888.

After careful inquiry from reliable sources, I find the yield of gold from the Bingera District was over 1,250 oz. last year, being in excess of the preceding year, in spite of the prolonged suspension of operations caused by the scarcity of water for washing purposes. In many places large quantities of wash-dirt are stacked waiting the much-coveted rain.

At the following fields the prospects are gloomy and discouraging:—

Diamonds.—The old Diamond Co. has disappeared. Three new companies have retaken some of the old abandoned leases. The new Australian diamond-mining syndicate have sunk in a deep mountain gorge a shaft on the field proper, striking diamondiferous wash-dirt at a depth of 130 feet, and driven tunnels south and west. Mr. A. S. Low has sunk a very fine shaft, 250 feet deep, in the basaltic rock, and is compelled to suspend operations to obtain machinery to reduce the great influx of water struck at that depth.

Gold.

Bingera.—The All Nations Reef has changed hands. It is expected increased capital will furnish means to properly develop this promising reef. On the Town Flat several leases are pegged out. One Company has sunk a shaft and erected pumping plant. It is reported they have struck payable wash-dirt.

Bobby Whitlow.—A few old hands still making a living, and some shafts are commenced on the prospecting reserves, by the aid of a grant from the Prospecting Vote.

Gympie Flat.—In the first months of the year the flat was remunerative, but in consequence of the continued drought wash-dirt was stacked, and miners left.

Spring Creek.—Reading and party have struck some good patches. H. Miller has sunk several shafts without success. This country requires crushing appliances to develop its resources.

Upper Bingera.—Most of the leases abandoned. Collins & Co. still continue working with variable returns.

Barraba.—Several new Companies floated, who have commenced work.

Tea-tree.—The Pioneer Co. have suspended labour. Creek dry; engine and battery idle.

At Ironbarks, Crow Mountain Paling Yards, very little doing.

PEEL AND URALLA DISTRICT—Tamworth, Nundle, and Bendemeer Division.

(*J. L. King, Warden.*)

In reporting the mining progress in the Tamworth, Nundle, and Bendemeer Divisions of the Peel and Uralla Mining District I regret that I have not a more favourable one to make.

Tamworth Division.

In the latter end of 1887 seven gold leases, in all 110 acres, were taken up in the vicinity of Swamp Oak Creek, adjacent to the Great Northern Railway line, about 20 miles from Tamworth, the leases for which are only now lying in my office for signature. The applications being for abandoned ground, no actual work beyond a prospecting shaft or two has been done. I have once inspected these leases, and am informed that a Company has been formed to work them. They contain an ironstone lode which is said to have gone from 5 dwt. to 1 oz. per ton.

The only other mining property in this division is a prospecting area held by Aitken and party, about 4 to 5 miles easterly of the town. To this party aid has been promised to the amount of £312 10s., *i.e.*, 25s. a foot for 250 feet of tunnelling. There are a series of reefs running in a north and south direction, and the drive is to cut them at a lower level. The distance completed is 82 feet, and the first reef has been cut at 74 feet at a depth from the surface of about 50 feet; it is 10 inches at top, and 21 inches at bottom of tunnel, between hard slate walls, and well defined. The quartz on crushing has been found to carry gold.

Nundle Division.

The great excitement which prevailed here at the latter end of 1887 and beginning of this year has almost subsided. The work now going on consists of a few of the leases on the cement being worked, I may say, with the exception of Mount Ephraim in a preliminary way. At Mount Ephraim, the cement has been followed at two levels with sandstone between, above, and below. A large quantity of stuff has been put through the pans, with, I am informed, fairly satisfactory results. A number of other leases have been applied for in this locality. At the one at Cement Hill machinery equal to the Mount Ephraim plant has been erected. Several shafts have been put down, and the owners are now calling for tenders for the working of the lease on tribute.

Particulars of Mount Sheba water scheme and tail-race:—No. 1 Dam, at junction of Burnt and Burnt Hut Creeks, with 13 acres surface; base, 120 feet; height, 25 feet; length, 5 chains; to hold 30,000,000 gallons of water. No. 2 Dam, 10 chains below No. 1 Dam, 7 acres, surface; base, 70 feet; height, 22 feet; length, 5½ chains; to hold 10,000,000 gallons of water; to be led by race, 2 feet 6 inches at bottom, 18 inches deep at lower side, which includes a flume of galvanized iron, 6 chains long, across Wet Creek to Dam No. 3, to hold 1,000,000 gallons of water; thence again by race to wooden tank (this race is about 3 miles long, from No. 2 Dam to wooden tank); thence by iron and steel pipes, 2,400 feet to where the wash-dirt is, viz., 800 feet of 22-inch iron pipes, 800 feet 18-inch steel pipes, 800 feet 15-inch steel pipes, 200 feet extension pipes, 13 inches of steel, to face of hill; the whole pipes are to be fitted with expansion joints; the end has two nozzles, with 4-inch vents. It is estimated that 500 yards of wash-dirt can be washed into tail-race every eight hours. The tail-race is cut in the solid rock, and is 7 x 5, with a fall of 10 inches in every 12 feet, and is 400 feet long, where, in the boxes, paved with wooden blocks, will be laid, and everything swept into them. The bed rock is dipping into the hill, and the wash-dirt has a face of about 100 feet, and seems to be inexhaustible, and it has been proved for years to carry gold, as good wages have been made, so it is said by all who have worked it, and a very large quantity of the dirt has been washed away with only race-water power.

At

At Mount Sheba (or Red Hill), where it is intended to sluice the face, large dams are being constructed, capable of holding 40,000,000 gallons. The pipes (iron) are on the ground, and operations were to have commenced in February next; but the want of water will be a great delay. The prospects of this Company appear to be very good, as it has been proved that the gold exists, and the latest and best sluicing appliances are to be used. At Dangar's Gully a new tunnel has been driven, and is now in 300 feet, and when completed will prove the whole of the six leases here taken up.

At Nimble Nook the Tamworth Prospecting Company are driving a tunnel to prove the existence or not of a cement lead in that locality. (It is about 5 miles from Mount Ephraim.) They are in about 561 feet. The cement has been found and worked in a primitive way in various localities with success by small parties, but as yet the working of it on a large scale has not proved a success. Should it do so, I am certain a large field of labour will be opened out over an area of 10 x 5 miles.

Several reefs are still being worked (without machinery) in the vicinity of the Hanging Rock, but, as heretofore, they bear a very low percentage of gold, and when found in any quantity it is contained in small leaders or veins which pinch out. There is no crushing plant in the neighbourhood, which is a great drawback, as stone will not pay when carted any distance.

A pound nugget was found at the beginning of the year about 12 feet from the surface, but nothing since. In fact, alluvial mining is at a standstill, owing to the scarcity of water, this being the dryest season for years past.

At Foley's Reef, at Bowling Alley Point, they are sinking on a lead of gold, which yields from ½ to ⅔ of an oz. per ton. Dowel and Stewart are working on their lease. All other workings are idle, except the Chinamen's claim in the bed of the river, which is being worked, I hear, to good advantage, but they are reticent in disclosing their winnings.

At Anderson's Flat (of which I have a very good opinion) is likely soon to be work, but it will be an expensive and tedious undertaking to cope with the large quantity of water in this flat. The present holders are however *bonâ fide* in their intentions, and are deserving of some leniency, as they have spent considerable sums of money.

The Lord Carrington Reef has been worked by Messrs. Hole and Williams to a depth of 100 feet, and a drive of 37 feet, but here, the water is in great quantities; as also at the John Bull claim, adjoining, where work has been suspended for a long time.

There is a crushing machine here which does the work of the whole field.

The area of land held and applied for under lease in this division is 1,032 acres 3 roods 33 perches, and the gold won for 1888 cannot be fairly estimated.

Bendemeer Division.

The mineral leases in this district are principally for tin-mining, and are being worked as far as want of water will allow, the Watson's Creek Tin-mining Company excepted. This property consists of 160 acres of mineral leases and valuable plant. The whole was offered at auction lately and brought in.

Gold won (approx.), 1,700 oz.; number of miners' rights issued, 321; number of business licenses, 8; number of mineral licenses, 17.

PEEL AND URALLA DISTRICT—SCONE DIVISION.

(*W. F. Parker, P.M., Warden.*)

I DO myself the honor to forward my sixth annual report upon the Scone Division of the Peel and Uralla Mining District, under my charge, during the period 1st January to the 31st December, 1888, viz., at Stewart's Brook and the Denison (Moonan).

There has been a considerable influx of miners to Stewart's Brook Gold-field during the past twelve months. The Royal Standard Gold-mining Company (Limited), which was formed about May, 1888, have raised and crushed about 800 tons of stone, which yielded 1,900 oz. of gold, valued at about £6,800. The nominal capital of this Company is £24,000, in shares of £1 each. The directors are Messrs. John Wheeler (chairman), Wm. Lovegrove, W. Clarke, J. V. Wareham, and I. P. Josephson. The legal manager is Mr. F. R. Woodhouse, and the mining manager is Mr. W. L. Adams. About thirty men are employed on the works. The Company purchased the claim of Messrs. A. Hearn Bros. for £2,000, and acquired other land adjoining by purchase, making a total area of about 35 acres, situate on a steep hill. They have a battery on the ground, and its appliances are to be greatly strengthened by the addition of five stamp-heads. Originally the stampers were driven by water-power, but are now worked by a 12 horse-power portable steam-engine. Of course when the supply of water is sufficient the machine can still be driven by water-power, and thus save expense in the working.

First Half-yearly Report of the Directors of the Royal Standard Gold-mining Company to Shareholders thereof.

Your directors have much pleasure in submitting their first half-yearly report, and in doing so have to congratulate the shareholders upon possessing a valuable dividend-paying property. Immediately after the formation of the Company on the 2nd May, 1888, your directors appointed Mr. W. L. Adams—a practical and experienced miner—as mining manager, who has put the mine in good working order, and under whose supervision sinking has been continued, drives proceeded with, and stoping and raising stone carried on.

Your directors have purchased a battery and manager's house, including the right to a water-race and machine site lease of 2 acres, and were therefore enabled to start crushing early in July. This battery is situated close to the mine, is worked by a water-wheel, but owing to the supply of water at times being insufficient to keep the machine going—in fact a stoppage was caused upon two or three occasions—your directors have recently purchased a 12-horse-power portable engine, which works satisfactorily; so that when the water supply fails the engine can be worked, and therefore crushing need not be stopped for want of driving power. The present battery consists of five head of stampers, but your directors decided to increase the number to ten, and the additional stampers have been ordered from the foundry, and will be erected as soon as possible.

The following is the result of crushings from your mine since the Company's formation:—On 19th July, 1888, 50 tons of stone yielded 158 oz. of gold, 21 oz. silver, of the value of £617 18s. 4d.; on the 9th August, 1888, 75 tons of stone yielded 227 oz. of gold, 31 oz. silver, of the value of £884 14s. 7d.; on 24th August, 1888, 40 tons of stone yielded 148 oz. gold, 19 oz. silver, of the value of £578 5s. 4d.; on 25th September, 1888, 60 tons of stone yielded 299 oz. gold, 38 oz. silver, of the value of £1,167 3s. 4d.;—thus 225 tons of stone yielded 832 oz. gold and 109 oz. silver, valued at £3,248 1s. 7d.

The battery was unavoidably stopped recently for ten days, owing to sickness amongst the miners, but everything is again in satisfactory working order.

The balance-sheet to 29th September, duly audited, is appended, and shows at credit of profit and loss account £1,562 18s. 9d., out of which a dividend of 1s. per share has been declared, payable 20th October, amounting to £1,200, leaving to be carried forward to credit of profit and loss account £362 18s. 9d.

J. WHEELER.

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The total yield of gold at Stewart's Brook during last year from about 1,250 tons of stone crushed I estimate at about £8,000, but there is a large quantity of stone to grass waiting to be crushed. On the north of Stewart's Brook (where till the last few months but little mining has been done) a good deal of prospecting and work is now being carried out with encouraging prospects for future operations. John Ninnies and party's 8 acres, leased on New Year's Gift line of reef, situated about ¼ mile north-west from the Royal Standard Battery reef, averages 9 to 10 inches, in very soft, easily-worked country. Shaft sunk 30 feet, out of which two crushings were made, going 13 and 21 dwt. of gold per ton respectively. North of this about 1 mile is the line of reef known as Carter's, running north and south, on which, Adams, Gordon, and party have 10 acres leased, the reef averaging 2 feet in thickness. Several crushings have been made from this reef, averaging 1 oz. per ton. I have heard that this claim is about to be formed into a Company, with a capital of £2,500, to erect a battery and work the mine efficiently. There is a good supply of spring and swamp water available. To the east and adjoining is a claim and lease held by Kariens and party, on a new line of reef known as the Marquis of Lorne, which shows good gold; reef, 15 inches at present depth of shaft, and widening as they sink. Close to this is a claim worked by Finn, Goddard, and party, who are working on a large reef with sufficiently good prospects to cause them to persevere. About ¼ mile away from this, in a south-easterly direction, is the Lady Maude line of reef, out of which very good crushings have been raised. Clifford and party and Kariens and party have claims on it. South-west of this 300 yards is the Cook's Patch line of reef, on which Elliott, Hewison, and party have a 10-acre lease, on which they have done a great deal of work, having sunk two shafts over 70 feet deep, and have put a level in between same about 40 feet in length for ventilation purposes. At 70 feet the reef underlays sharply to the east (or slides), which they are following, with better gold showing the deeper they get. They have something over 100 tons of stone at grass awaiting the completion of the additional five heads of crushing machinery at the Standard Battery. Through the gap, and on Denison Fall side of Blue Mountain, is situated the Morning Star reef, on which Elliott, Hewison, Manly, and party have a couple of leases. This reef is a good size, and promises well. There are also two other large reefs running adjacent and parallel to it, each carrying gold, but not sunk on. North-west of this about 300 yards is the Early Rose reef, on which Mr. A. A. Wall, who has a lease and claim, has done a lot of work and expended a good deal of time and money searching for the main reef. Crushings from this reef have gone nearly 5 oz. to the ton. A good deal of prospecting is being carried out about here in addition to the claims mentioned. West of the Early Rose lease about ¼ mile is a 25-acre lease, held by Messrs. Wall, Harris, Gillies, Oram, and party. Some rich prospects are to be got on this ground, which, when developed, should prove a good property. This ground is not being worked now, through awaiting survey and granting of lease. North-west from this is a 5-acre lease, held by Harris, Oram, and Wall, on a new line of reef, known as the Red, White, and Blue, on which a tunnel is being driven to cut the reef in solid country. North-west of this again is Fuller's Reef, distant about ¼ mile, on which Driscoll, Williams, and party hold several leases. This reef is the only one that has had a large amount of work done on it, and from which very good returns of gold have been obtained in past years. The lowest level tunnel in this claim is over 1,200 feet in length, and there are several others, with numberless shafts, &c., out of which numerous crushings have been taken, some reaching as high as 10 oz. per ton, and nothing below 1 oz. To the north of Fuller's reef about ½ mile is the Welchman's line of reef, which is a very large one, being 16 feet in places across, and from which some very good crushings have been taken, yielding as much as 5 oz. per ton. Messrs. Wall and Harris have a large lease here, and are busily engaged sinking and timbering up a main shaft 8 feet by 3 feet in clear, divided into up and down ways and ladder-way. This is a fine bit of work. They are down about 60 feet, and it is their intention to sink a further distance of 100 feet on the reef (underlay) before going to the heavy outlay to sink the main shaft. A tunnel is driven in on reef a distance of 330 feet, and requires driving another 300 feet to cut the shaft at a depth of about 120 feet. In moist seasons this reef is very wet, and the tunnel will drain the workings to that depth. Application for aid to drive same has been made to the Prospecting Board, who are expected to visit this field and Stewart's Brook. Mining otherwise at the Denison is quiet, as there seems no prospect of being able to get stone crushed through the long-continued drought. Several lots of stone are waiting for the necessary rain, viz., Fuller's Co., 100 tons; Black of Fuller's reef, 30 tons; Baber of Painter's reef, 25 tons. There seems to be any amount of reefs about carrying gold which require the necessary capital to develop them. Several of the largest reefs about here were leased some months ago, and there seems to be no intention of working them till the leases are granted. Moore and party and Tilse and party are on a good reef at Rusty Gap, Omadale Brook, and I hear there is some prospect of a Company being formed to work same effectively and to erect machinery on the ground.

In connection with the future prospects of Stewart's Brook and the Denison, I may here state that I have strong grounds for believing, taking the extent of the auriferous quartz country into consideration, the excellent average given by the reefs tested, and the hitherto primitive mode of working them, that there is a prosperous future in store for these fields. All that is required is a judicious expenditure of capital to develop and open out the field, and which can best be done by Companies, as from the difficult nature of the country the individual miner would have no chance.

I have just heard upon good authority that two of the largest and best reefs at Stewart's Brook are about to be floated into limited liability companies, which, if carried out, will give considerable impetus to the mining interests, and which might reasonably be expected from the marked success of the Royal Standard.

The Bluey line of reef, situated at Upper Stewart's Brook, is a well-defined reef, and which, I believe, is about to be floated into a large Company. I believe this claim, if skilfully managed, would yield a handsome return to the shareholders.

At the Denison (Moonan), during last year, 150 tons of stone was put through the battery there (a ten-stamper, driven by water-power), yielding a return of 197 oz. of gold. I estimate the number of gold-miners at Stewart's Brook at 250, and at the Denison 25, making a total of 275. During the year, 197 miners' rights, 4 business licenses, and 6 mineral leases were issued, and 87 applications for gold-mining leases. I may here state for your information that a number of the miners at Stewart's Brook are in possession of miners' rights for the present year issued to them out of this district, which accounts for the difference between the number of miners estimated and the number of miners' rights issued from this office.

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The families of about thirty of the miners have settled at Stewart's Brook during the latter part of last year, and a publican's general license has been issued to Mr. Michael Dunn, at Stewart's Brook, which supplies a long-felt want.

The following is a summary of the stone raised and the yield at both the Denison and Stewart's Brook :—

	tons.	oz.	amount.
Stewart's Brook	1,250	2,250	£8,000
Denison (Moonan)	150	197	690
	1,400	2,447	£8,690

PEEL AND URALLA DISTRICT—Armidale Division.

(C. E. Smith, Warden.)

In forwarding my annual report for the year 1888 of mining operations in the Armidale Division of the Peel and Uralla Mining District, I have to refer with regret to the long-continued drought which prevailed during autumn, winter, and spring of last year, causing serious losses in stock and to agricultural products, and retarding the development of our mineral resources from an insufficient supply of water, and in many instances causing unavoidable cessation of work at the various mines in the district. However, the dry season has helped to give a great impetus to prospecting, and new discoveries of minerals in different localities were of frequent occurrence, and may lead to profitable employment being found for a large number of miners.

The quantity of gold obtained in the district is returned at 11,500 oz. as against 5,000 oz. for 1887, which shows a marked improvement in the increase of the mineral wealth. The find at Hillgrove amounts to 10,454 oz. 1 dwt. 5 gr., and the return from Mr. George Smith's mine, now known as Baker's Creek Gold-mining Company, is highly satisfactory, and has fully realized the favourable anticipations I expressed relative thereto in my last report, as the total yield for four and a half months' crushings, between May and December, is represented to have been 8,964 oz. 5 gr. from 766 tons quartz.

The legal manager of the Eleanor Gold-mining Co. reports as follows for the past year :—"6,053 tons of stone crushed, yielding 1,490 oz. 1 dwt. gold, valued at £5,842 16s. 9d.; average, 4 dwt. 22 gr. per ton; and that the antimony ore raised was 133 tons. That the shafts, viz., Brackin's, was 213 feet deep; Isabella, 100 feet deep; and No. 2, 100 feet deep. There were from 55 to 60 men employed. The stone raised was very poor, and operations were suspended during four weeks owing to failure of water supply. The Company is now erecting furnaces for extracting the antimony from the stone, leaving the stone to be afterwards treated in the battery to extract the gold."

During the year frequent applications were made for suspension of labour on land taken up for gold-mining, and had to be granted, owing to the scarcity of water and want of capital and machinery. Some Companies recently formed have commenced work with proper appliances, and under the skilful management of experienced mining experts.

The Hillgrove mines, which have attracted a population of nearly 1,500, will, during 1889, be tested, I trust, with satisfactory results; and I am of opinion dividends in many instances may be expected from capital judiciously invested in the Gara River Gold-field.

PEEL AND URALLA DISTRICT—Inverell Division.

(W. W. Fraser, Warden.)

I have the honor herewith to submit my report for 1888 of the working of the mines in my division.

Owing to the continuing drought, the like of which I have not known during my residence in this district for over thirty-five years, the output of tin in this division has fallen to some 11,000 tons. The money value, however, of the output has not been so much affected, owing to the high prices ruling, which averaged £68 per ton. The same causes have similarly affected all the other mining industries, viz., diamonds and silver, and most of the mines have had to suspend operations for want of water. Some valuable additions in machinery have been erected, noticeably crushing and smelting works, by Mr. E. W. Bathurst. But for the causes above stated, the works are now at a standstill.

Prospecting for silver still continues on the Weean and Dingo Creeks, and the assays have in some instances, been good.

Our future prospects do not look very encouraging at present, but we must hope for better times.

PEEL AND URALLA DISTRICT—Tingha Division.

I have to report that the year 1888 has been a most disastrous one as far as the mining industry is concerned, on account of the want of water, there having been no rain of any consequence for the whole year.

The output of tin for the year has been 253 tons less than that for 1887. The price, however, in consequence of competition, has been exceptionally high, and consequently the price therefor has been only £29,458 less than that for 1887. The falling off in the output is attributable to the failing of the shallow ground and the want of water.

Reefing is now being resorted to, but as yet there is no definite result to report.

The diamond mines, as far as I can learn (as all their business is transacted at the Inverell Office), have also been at a standstill for want of water.

Tin.—Quantity, 1,007 tons; value, £69,683. Total value of mining plant in the division, £6,900.

PEEL AND URALLA DISTRICT—Uralla Division.

(James Watt, Mining Registrar.)

I do myself the honor to submit the annual report for this division for the year 1888.

Owing to the prolonged and disastrous drought very little stuff could be washed, and that only at long intervals of time. Old claims, which have been patiently worked for years by such parties as Young's, Anderson's, Watson's, and others, have yielded the usual regular quantum of gold, and it is a matter

matter of surprise, and speaks well for the auriferous character of the field, that upwards of 200 miners most of them European, can at any rate obtain sufficient gold on the Rocky River and vicinity to warrant their devoting the whole of their time to the task.

Of the deep-lead mines at Doherty's Hill I have nothing of an encouraging nature to report. The Old Rocky Mining Co. have now tunnelled 429 feet in a S. 20° E. direction from their shaft, 300 feet of which were driven with assistance granted from the Prospecting Vote, but the returns up to the present have been so very poor that operations will shortly be suspended. Messrs. Carroll, Rice, and party, and Mr. W. J. French have also been granted assistance by the Government. The prospects from the claim of the first-named party are very promising, and they confidently expect some rich return for the long and hitherto profitless task in which they have been engaged during the past three years.

In August last a rush of a mild nature took place to a spot to the north of the Chinese burial-ground, and to the south of the old workings on the famous Mount Jones. About a dozen parties have been working their since, with a yield averaging ½ oz. to the load. The sinking is comparatively shallow, but the wash is for the most part only about 2 inches deep, and the stuff up to the present has had to be carted for about a mile to water. Boners and party have been the most successful in this rush, realizing at first about an oz. to the load. The ground is exceedingly patchy, and not at all likely to develop into something permanently beneficial to the district.

From what I have been able to glean from the local banks, gold-buyers, and other sources, I estimate the yield of gold last year in this division to be approximately 820 oz., as against 900 oz. reported for the previous year.

Licenses were issued as follows:—Miners' rights, 327; business licenses, 2; mineral licenses, 14; as against: miners' rights, 266; business licenses, 5; mineral licenses, 2,—sold in 1887.

The increase in the number of miners' rights sold in 1888 may be accounted for by the fact that about the middle of July a large number of leases were applied for at Boro Creek, situated about 25 miles east of Uralla, in which many of the Uralla residents were interested, and which, by the way, proved a complete failure, some inexperienced persons having mistaken quartzite, which is abundant in the locality, for auriferous quartz.

PEEL AND URALLA DISTRICT—WALCHA DIVISION.

(E. Marriott, Warden's Clerk.)

I HAVE the honor to submit herewith my annual report for the Walcha Division of the Peel and Uralla Mining District for the year 1888.

A considerable amount of prospecting has been going on throughout the district, and mining generally may be considered to be progressing.

Glen Morrison.

The Glen Morrison Prospecting Company still continue working their ground. Mr. Walworth, the person in charge of the mine, reports as follows:—

(2) *Star Line of Reef.*—Deepest shaft, 195 feet; lowest level, 185 feet; lowest worked level, 127 feet. Work done since 27th June, 1888:—Building old workings; prospecting at various levels—good prospects at 50-foot level and 127-foot level; prospect about 4 to 5 oz. per ton; width of reef, from 6 inches to 15 inches. Crushings from this reef have reached as high as 70 oz. per ton.

(2.) *Bar Line of Reef.*—Deepest shaft, 130 feet; lowest level, 84 feet. Work done during the past six months:—Building old workings; sinking main shaft from 84-foot level (which work is still being carried on to a depth of 150 feet; width of reef, from 1 foot to 3 feet. Crushings from this reef average 3 oz. per ton.

(3.) *Temperance Line of Reef.*—Deepest shaft, 70 feet; lowest level, 70 feet. No work done on this line of reef during the past six months. This reef is 2 feet wide; trial crushings, 16¼ dwt. per ton; crushings have reached 3 oz. per ton; about 20 tons quartz at grass.

(4.) *Root Hogg Line of Reef.*—Not worked for three or four years; crushings, 7 dwt. per ton.

(5.) *Cherry-tree Line of Reef.*—Not worked for three or four years; crushings, 11 dwt. per ton.

Centennial Gold-mining Company.

Mr. J. N. Watts, secretary, reports as follows:—This is a lease of 6 acres on the Glen Morrison field. The Company have expended about £500, and have sunk a main shaft to a distance of 104 feet. They are driving on the 60-foot level, and the reef shows 3 feet thick, and carries a very fair prospect of gold, which is estimated to go, at the least, 1 oz. to the ton. The Company have prospected the entire length of the lease, and traced the gold at each end.

Homeward Bound Gold-mining Company.

Mr. J. N. Watts, secretary, reports as follows:—This claim has been worked by James Kean and party, under a permit from the Minister for Mines. The Company have expended about £300 in prospecting the ground, and have proved the property payable, and reported the same to the Warden. Application was made to the Prospecting Board for assistance, but Messrs. Slee and Anderson considered the stone, at sight, was rich enough to pay all expenses to sink to a depth and prove the reef in settled country. The Company have increased the shares, and now have sufficient capital to thoroughly test the property, and are very sanguine as to the future of the mine. Work will be pushed on vigorously at once.

Tia River Reefs.

Tia River Gold-mining Company.—Mr. J. N. Watts, secretary, reports as follows:—This Company have been steadily pushing on work, and have about 150 tons of stone at grass for crushing. It is the intention of the Company to continue the shaft to a depth of 170 feet, and then put in a cross-drive and work the reef from that level. The expenditure up to date has been about £850, and all the work done is of a very substantial nature, and fixed for the future working of the mine.

Mountain Maid Reef (E. Oxenbridge and party).—Prospecting Claim—Sinking main shaft under assistance from Prospecting Vote. Present depth of shaft, 101 feet. Reef about 22 inches wide, showing a little gold. About 10 tons of stone raised. Propose to sink to a depth of 150 feet, and then drive on line of reef 50 feet.

Sleeping Beauty Reef (David George).—Sinking main shaft under assistance from Prospecting Vote. Present depth of shaft, 78½ feet. Proposed to drive east from 70 feet deep. *Nowendoc*

Nowendoc.

Mount Carrington Claim, Nuggetty Gully—Henry Whittam and party.—Still working on this claim. Air-shaft, 150 feet; deepest level, 300 feet from top of mountain to end of present working in No. 2 tunnel; propose to drive 500 feet more in a northerly direction.

Cells River, below Yarrowitch.—A number of miners have been working (alluvial) in this locality with fair returns,

Mumble Creek, below Yarrowitch.—Messrs. Potter, Welsh, and Rodway have taken up two leases and a prospecting area; still prospecting. Attention having been directed to this locality, may ultimately prove payable. Miners' rights issued during the year, 88; licenses, nil. About 100 oz. of gold purchased locally, value (Sydney Mint), £3 13s. 3d. per oz.

PEEL AND URALLA DISTRICT—Barraba Division.

(*P. Sinclair, Mining Registrar.*)

In submitting my report to you of the Peel and Uralla Mining District (Barraba Division) for the year 1888, I have the honor to inform you during the year I have issued 102 miners' rights, 4 mineral licenses, and have had 28 applications for leases, meaning a sum paid into the Treasury of £207 for the year. For the last twelve months mining matters have been very slack in this division. Owing to the long drought we have had people have been compelled to leave the mines and seek work elsewhere, for want of water.

There are 3 batteries in this division; they have hardly done any work in the year for want of water. I think 1889 will see a great change in mining matters in this division.

There is a Company formed that intend, in 1889, to use the chlorination process, and great results are expected, and many are of opinion the coming year will see this a very flourishing division.

I find it difficult to furnish you with a satisfactory report. Owing to the scattered position of the miners, there has been a great decrease in the population this last six months. I cannot form an estimate of the yield of gold according to the scattered population and the small lots that have been obtained by different parties. Very few of the leases are worked.

PEEL AND URALLA DISTRICT—Bingera Division.

(*T. Connolly, Mining Registrar.*)

I have the honor to submit to you my report for the year 1888, which, on the whole, is much better than 1887.

I have issued 208 miners' rights, 1 business license, and 12 mineral licenses. Twenty-five mineral leases and 24 gold-mining leases have been applied for. 1,200 oz. of gold has been obtained during the year.

The continued dry weather is a great drawback to miners. There are hundreds of loads of dirt stacked, waiting for sufficient rain to wash.

Total value of mining plant in the division, £2,200.

PEEL AND URALLA DISTRICT—Tamworth Division.

(*H. A. Ledger, Mining Registrar.*)

The number of miners' rights applied for during 1888 was 86. There are about 14 men at work in different localities prospecting some reefs, but as yet no payable reef has been found. The leases taken up some time ago for manganese have not been worked during the year, nor has any other mineral been found in payable quantities.

PEEL AND URALLA DISTRICT—Bendemeer Division.

(*H. B. H. Stumbles, Mining Registrar.*)

I have the honor to forward my report for the past year of the Bendemeer Division of the Peel and Uralla District. During the year ending 31st December, 1888, there have been 15 applications for mineral leases received at this office for the purpose of mining for tin, that being the only mineral at present worked in this district. There have been 17 mineral licenses issued at this office and 2 miners' rights during the year. Anderson and party have raised 8 tons 18 cwt. of tin, which was sold at £75 per ton. Murray and party have raised 5 tons, which was sold at £75 per ton. Northy and party have raised 3 tons 7 cwt., which was sold at £75 per ton. Hetherington and party have raised 2 tons, which was sold at £65 per ton. The Watson's Creek Tin-mining Company's ground has mostly been worked on tribute. The Bendemeer Company have commenced work on their ground, and are at present employing about 13 men.

PEEL AND URALLA DISTRICT—Cassilis Division.

(*Henry S. Hawkins, Warden's Clerk.*)

Three 40-acre blocks were marked out at Yellow Water-holes, Cassilis to Mudgee Road. Prospects for tin made, but without success, the assay of metal being too small to work on. Nothing has been done in the way of mining for last six months.

Two mineral licenses issued in year 1887.

HUNTER AND MACLEAY DISTRICT—Copeland Division.

(*E. L. Maitland, Warden.*)

I have the honor to submit my report of the Copeland Division of the Hunter and Macleay District for 1888.

Having taken charge of this district towards the end of the past year, time has not allowed me to make so thorough an inspection of the various claims and leases in this division as I could wish.

The past year has shown no improvement on 1887. Mining matters generally being at a very low ebb, but little work has been done; and, although the returns from the small quantity of stone crushed have been good, yet the expense attending the crushings, together with the cost of cartage to the machine, leave but a small margin for profit.

The result of the various crushings throughout the field have averaged nearly 2¼ oz. to the ton, and, as the gold-saving appliances comprise none of the modern improvements, it proves conclusively that, with capital judiciously expended and improved machinery, payable returns would be forthcoming from the greater number of the numerous reefs in this part of the district.

The Centennial Gold-mining Co. have now driven their tunnel about 994 feet, and are preparing to extend it still further, in the hope of shortly cutting the rich reef known to be in their claim.

During the year that has passed, 16 applications in connection with gold-mining leases have been dealt with.

Capital and improved gold-saving appliances are absolutely necessary in this district, and, until these are available, there is but little hope of a permanent improvement in the present state of mining affairs.

HUNTER AND MACLEAY DISTRICT—Bulladelah Division.

(*Charles H. Fawcett, Warden.*)

I do myself the honor to report as follows with reference to the Bulladelah portion of the Hunter and Macleay Mining District:—

At present there is only one party working at Coolongolook, and another at Paddy's Creek,—at the former the yield of late being over 16 dwt. per ton, and from the latter about 2 oz.

When suspensions granted expire, and leases are granted that have been applied for, no doubt the field will show an improvement.

The only claims apparently flourishing are those of the Alum Company, Limited. Their buildings, works, and improvements are valued at over £8,000. With additional ground they have now nearly 300 acres.

The refined samples forwarded to England, Melbourne, China, Germany, and many other places, have been considered highly satisfactory; and when additional machinery, now expected, arrives, a large addition to the men employed will be made.

HUNTER AND MACLEAY DISTRICT—Kempsey Division.

(*John Ducat, Warden and Mining Registrar.*)

I have the honor to submit my annual report on the mining fields for the year 1888 in the Macleay Division of the Hunter and Macleay Mining District, showing the progress made thereon.

At the beginning of the year a discovery was made near Deep Creek, in the county of Raleigh, and parishes of Newry and Valley Valley, of a belt of country which contained a mispickel quartz which had the appearance of being highly auriferous, and supposed to be silver-bearing. An application was made by Buckman and Marshall, the prospectors, for a mineral lease of 20 acres. They commenced work on this at once, and soon uncovered a blow of considerable size of that quartz. Several small quantities of the stone was sent for assay to prove what it contained. All of these, from the separate assays, and made by separate assayers, gave a report that the stone contained gold varying from 3 oz. up to 6 oz. to the ton. This caused the prospectors to convert their application into a gold lease. Immediately five others were also applied for. Upon none of these, however, could a second blow or reef be discovered. Shafts were sunk on three or four of them to a depth of 40 to 50 feet without a reef being struck. These shafts were north and south of the prospectors. Buckman and Marshall sunk a new shaft west of their first, and at 40 feet struck stone. They sunk down the face of this reef for 27 feet. An assay of stone at this depth gave a return of 11½ oz. gold to the ton. The reef now dipped off to the east. A drive has been put in. When at 20 feet the reef was again found. They have sent a quantity of stone away to Sandhurst to have it treated in bulk by the chlorination process. This will be a test whether the field is to be a payable one. Much money has been expended already on the ground searching for the reef, and to prove that there really is a reef. From the prospectors' shaft the reef proves to bear east and west, not north and south as at first supposed. There are thirty-four mineral leases applied for around the immediate neighbourhood of the prospectors. On several of these shafts have been put down to a depth of 45 and 50 feet. On Verge's and one of T. B. Larke's the reef was struck lying west of the prospectors. The stone raised is finer grained and closer looking than that from the prospectors. Some assays have been made of the stone, and gold found to be the principal mineral contained. The reefs are proved to be very hard to work and the stone difficult to treat, so that it can only be by great expenditure of capital that the field can be made payable. There is no machinery or other appliance on the field up to this for crushing or developing the mines. The gold in the stone is very fine dust.

About 2 miles south-west from this field, and nearer the south arm of the Bellinger River, while some persons were prospecting the country around, an antimony reef was discovered, and five applications for mineral leases lodged on the supposed line of reef. D. Anderson and party on No. 88–6 have done much work. They have a shaft down 50 feet, and have uncovered a large reef of rich antimony. They have about 100 tons or more at grass, but have not put any quantity on the market. They desire to float it into a Company, and thus procure capital to work it. None of the other applications lodged on this antimony-field have been opened up yet, but are being held over to ascertain, by the work on Anderson's lease, whether the reef is payable and likely to be permanent. A second reef of antimony has recently been discovered on the Nambucca, about 20 miles to the south-west of Anderson and party's, in the direct line over to the Corrangula antimony mines. I have before pointed out to miners here that I was confident a reef was underlying the country between the Deep Creek and Corrangula mines.

The Warrell Creek mining field is nearly at a standstill. Numerous reefs were discovered of chiefly ferruginous quartz, and supposed to be silver-bearing stone. Forty-four applications for mineral leases were lodged, and several prospecting protection areas were also taken possession of. A good deal of work in sinking shafts was done. The assays obtained from the stone were so poor that it was not sufficient encouragement for money to be expended on them. The holders of land had not means sufficient to persevere on into deep sinking, and I am satisfied that it will only be on deep sinking anything like payable stone will be found. The present state of the field—the uncertainty of what or how much mineral the stone contains—does not give sufficient encouragement for investing capital to fully prove it by deep sinking.

The Corrangula antimony mines are likely again to be actively worked. Mr. Becke, the manager, is at the works, having the machinery, furnaces, and plant put in working order; and I hope soon to see the works assume their former busy activity.

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The leases Nos. 237 and 245 (Hodson's) have suspension of work granted on them, so that nothing is doing on them. Cohen and party's leases in parish of Lincoln are idle. No work has at any time been done at these.

As no alluvial diggings have ever been discovered in my division, as Mining Registrar, I have only to report on the sale of miners' rights and licenses. I have sold during the year, 241 miners' rights, 69 mineral licenses, and 1 business license.

HUNTER AND MACLEAY DISTRICT—Dungog Division.

(C. G. Smith, Warden.)

I have the honor to report that the mining operations at Wangat during last year do not seem to have sufficiently advanced in importance to attract an increase of population. This is attributed to want of capital to enable the few miners now on the field to efficiently work their ground; but the claim at Lower Wangat, known as the Wonga Wonga (late Golden Spur), and which is said to be the best of these workings, having lately passed into the hands of a Company of business men, there are hopes of a better future for the field. The claim alluded to is worked by a tunnel about 300 feet in length, at a perpendicular depth of about 200 feet; width of vein, from 8 to 18 inches; underlay to north, bearing east and west; six men at present employed; plant, consisting of trucks, rails, and mining implements, is valued at £100. During last year 90 tons crushed for 98 oz. 12 dwt., valued at £320 18s. 10d. On an adjoining claim a tunnel is being driven to cut the vein, and a lease of 5 acres on same reef has been applied for.

At Upper Wangat one claim has lately been worked, but not to advantage, the returns for 80 tons crushed being only 14 oz.

Three leases have been applied for of 7, 4, and 2 acres, evidently on the same reef as the workings at Lower Wangat, about 5 miles distant. A lease of 10 acres has also been applied for at Little Mountain, 4 miles from Dungog, but nothing payable yet found.

At Lower Wangat there is a battery of ten stampers, water-power, 15-horse, and valued at £1,200; and one at Upper Wangat, five stampers, water-power, 10-horse, and valued at £700.

No pyrites or cement have been operated upon in this division, and only a trace of silver in the stone.

Twenty-three miners' rights have been issued for this year, about one-half being held by working miners.

HUNTER AND MACLEAY DISTRICT—Bulladelah Division.

(Robert Quayle, Mining Registrar.)

I do myself the honor to report as follows respecting the Bulladelah portion of the Hunter and Macleay Mining District for the year ending 31st December, 1888:—

Twelve leases have been taken up for quartz-mining, 108 acres in all.

The Golden Butterfly, late Mountain Widow, J. F. Conway and party, crushed about 115 tons, which yielded 16½ dwt. to ton. Owing to the machinery breaking, crushing has been suspended. The deepest shaft is 120 feet, and contractors are sinking 50 feet deeper. The reef averages from 7 to 12 inches. About 40 tons of quartz to grass.

Mount Springfield, James Stuart and party, have made considerable progress in sinking and driving; but, owing to insufficient supply of water for crushing purposes, suspension of labour was granted. The deepest shaft is 70 feet, and a reef of 4 feet 6 inches to the bottom. About 50 tons crushed yielded 1 oz. to the ton; 100 tons to grass.

The Sutton, T. A. Paulson and party, crushed 5 ton, which yielded 8 dwt. to ton. Shaft down 25 feet. A well-defined reef, 3 feet thick, traced to the bottom. Suspension of labour granted to afford time to erect machinery.

The Wonder, J. H. Gillman and party. Very little progress has been made, owing to the country being very hard and wet. Shaft down about 96 feet, with a small vein showing good gold. The above-mentioned claims are situated at Coolongolook, about 20 miles from Bulladelah.

The Rosebud, W. Masters and party, at Paddy's Creek, put in a tunnel, expecting to cut the reef, but as yet have not done so. A trial crushing went 2 oz. to the ton in Sydney.

The Australian Alum Co. (Limited) have made considerable progress since my last report, and have added to their shed accommodation, purchased a new 35 h.-p. boiler, erected an additional kiln, made additional tramways, and doubled the width of the shoot that brings the ore from the top of the mountain to the tramways. There are about 750 tons of calcined stone on the slacking-floor ready for treatment in the extracting-vats, and the manager is now waiting for some additional machinery from Melbourne to recommence manufacturing. About 20 tons of allum has been refined, and samples sent to England, Germany, China, Melbourne, and other parts of the world, which has given great satisfaction. Forty acres have been added to this property, which makes about 300 acres in all. It is situated close to Bulladelah, and a great number of men will be employed when full work is carried on.

HUNTER AND MACLEAY DISTRICT—Maitland Division.

(F. V. Isaacs, Warden's Clerk.)

I beg to report that the only mineral operated upon in my division during the year 1888 was coal.

As the quantity of coal raised during the year at the various mines working in my division is supplied to you from other sources, I have not considered it advisable to obtain it again, as I found last year that the returns made to me were very inaccurate.

The principal collieries working in this district are the Greta Coal-mining Company, South Greta, and Homeville Collieries, near West Maitland, Rathluba, and several smaller ones, such as Four-mile Creek, Matthew Tulip's pit, &c., near East Maitland.

The number of applications for mineral leases during 1888 was 37, comprising an area of 18,404 acres, and an annual rental of nearly £3,000.

The coal is generally reported to be of first-class quality.

Five of the before-mentioned applications, consisting of 400 acres, were taken up for the purpose of mining for salt, and the specimens shown me by the applicants prove that the salt is of very fine quality.

The number of mineral licenses issued during the year was 29, and miners' rights, 19.

HUNTER

HUNTER AND MACLEAY DISTRICT—Copeland Division.

(E. N. Maitland, Assistant Mining Registrar.)

Mining has been almost at a standstill during the past year, and the little work done has been by miners without capital, who have been heavily handicapped by the want of modern gold-saving appliances, the high prices charged for crushing, and the cost of cartage from the mines to the machines.

The number of miners' rights and business and mineral licenses issued for 1888 are as follows:—Miners' rights, 166; business licenses, 20; mineral licenses, 20.

Total value of mining plant in the division, £3,250.

NEW ENGLAND DISTRICT.—Tenterfield Division.

(J. B. Graham, Warden.)

I do myself the honor to submit my report on the Northern Division of the New England Mining District for the year 1888.

In my last report I pointed out that at Fairfield, the principal gold-field in this district, great difficulty had been experienced in saving the gold, in consequence of its fineness, and its association with other minerals, and I was then in hopes that before the close of 1888 appliances would be available to satisfactorily treat the ores. I regret that I am not yet in a position to report that such is the case. During the greater part of the past year, in consequence of failures and the great general depression that took place in the early part of the year in all mining matters, the industry almost collapsed. The depression was especially felt in this district, as the mines were comparatively in their infancy. Only failures having been previously met with, and in no case did there exist a dividend-paying mine, it was almost impossible to obtain the necessary capital to carry on mining. Fortunately, principally through the enterprise of Mr. R. W. Stuart and a few gentlemen connected with him, a fresh impetus was given to Fairfield, and there is now every probability of proving whether the mines are payable or not. Extensive works are in course of erection, which will soon prove whether the practically unlimited extent of poor or low-class ores can be profitably treated. If it proves, as is confidently expected by experts, that the ores, containing from 4 to 10 dwt. of gold to the ton, can be made to pay, it will open a vast field for the enterprise of capitalists and miners. The great wealth of Fairfield will be found in its low-class ores. Vast quantities of stone can be obtained at a minimum cost that will yield an average of from 4 to 6 dwt. to the ton. This yield, treated with the latest labor-saving appliances, and on a large scale, is expected to leave a handsome profit. Generally, on the gold-fields in this district, the yield is, as far as I can ascertain, equal, if not greater, than the preceding year. In other minerals, such as silver, tin, copper, &c., the general prospects are encouraging, although the yield up to the present time has not been great. The necessary machinery and plant to extract the metals is not yet available.

I will deal with each division of my district separately.

Fairfield Division.

This division comprises the east and north-east portions of my district, including Fairfield proper (or Drake), White Rock, Red Rock, Timbarra, Pretty Gully, Tooloom, and other smaller diggings.

The Fairfield Gold-field of which Drake is the township, is situated about 38 miles east from Tenterfield. It is now about two and a half years since gold was discovered in the locality. Since then it has risen to be a field of great importance and promise, not only in gold, but also in other minerals. It can now be said to be through the dangerous period of depression and reaction consequent on that over-estimation of value, over-speculation, &c., which invariably affects all new fields started as this was, on a "*rich find*" and a "*rush.*"

The land at Fairfield was originally taken, in the most part, by working miners or prospectors, as gold-mining leases; and this was the first field to which the regulation applied compelling labour to be employed from the time that the land was taken possession of. Many of these leases have now been abandoned and cancelled. Some have been retaken again to be worked in larger areas, and in cases where gold is not the principal mineral, in mineral leases. This is the only way in which capital can be encouraged in the field From the difficulty of extracting the gold the poorness of the ores, and the necessity for the erection of large works and labour-saving appliances, the field is not what may be termed a working-miner's field. It is impossible to successfully mine in almost any part of it unless by the preliminary expenditure of considerable capital.

The principal mines in the immediate vicinity of Fairfield are the Mascotte Gold and Silver-mining Company, the Strauss Gold-mining Company, the Great Northern Gold-mining Company, the Adeline Gold-mining Company, and the Mount Carrington Gold-mining Company.

The Mascotte gold-mine is situated about 3 miles south-east from Drake. Rich silver ore has been found containing a percentage of gold. The leases are held as gold-mining leases, and work has been continuously employed during the year principally in opening up the mine and prospecting it as to its permanency. About 600 tons of ore has been raised, which is valued by the manager at an average of £12 per ton. The deepest shaft is a little over 100 ft., and it is estimated that there is 7,000 tons of ore in sight. I am informed that the Company are making arrangements for the erection of machinery to treat the ores for gold and silver. Various trial crushings and experiments have proved most satisfactory. The mine is under the management of Mr. B. Bryant, an old and experienced Victorian miner. This mine should yield payable results immediately on the completion of the machinery and treatment of the ores. The manager expects to be at work within a few months.

The Strauss Gold-mining Co.'s mine is situated on Sawpit Gully. The ore in this mine as far as yet ascertained is of low grade, but from the size of the lode likely to be very plentiful and easily obtained. It was worked from the surface down to water, and the ore crushed resulted in a yield of about 10 dwt. to the ton. About 1,400 tons have been crushed. In order to drain the mine of water, it was decided to put in a tunnel to cut the lode at the 90 or 100 ft. level. The tunnel is not yet complete, but considerable work in connection with the mine and machinery has been effected during the year, such as laying tramways to facilitate the delivery of the stone to the mill, &c. As soon as the tunnel cuts the lode it is anticipated that a great body of stone can be operated on at a minimum cost. The lode is 9 or 10 ft. wide. About 30 men are employed on this mine.

The

The Great Northern Gold-mining Company.—This is a new Company, taking what was called Messrs. Harvey, Pastetrson, & Co's. holdings, and some other neighbouring leases. The Company now own a considerable area of land, principally situated in Sawpit Gully. It is intended to mine for gold, silver, and for copper, which exist in large and valuable lodes and reefs through the property. Mr. R. W. Stuart is the resident managing director of the Company, to whose courage and enterprise, to a very great extent, the further development and advancement of this field is due. Although this Company has only very lately been formed, extensive machinery has been ordered, and some of it is now on the ground. A considerable number of men have been constantly kept employed in prospecting, opening mines, making roads, tramways, dams, machine sites, &c., and great energy is shown. The Company are satisfied by their manager's and the reports of experts that although the ore is of a very low grade its quantity, and the small cost at which it can be mined, the treatment will leave a considerable profit, if worked on a large scale. The ore is not expected to average more than from 4 to 6 dwt. to the ton. 1,420 tons of stone from various parts of the land have been crushed, the yield of which was about 235 oz. of gold. The treatment by the battery was not considered satisfactory, as a loss of gold was shown in the tailings.

A very rich lode of copper running through some of the leases is now being worked. Twenty tons of the ore has been treated at Newcastle, yielding over 21 per cent. of copper. The reef is 4 feet wide, and consists of carbonates and sulphides of copper containing a little gold. On a late visit I made to the locality I inspected this reef, and from what I saw of the stone raised at the shaft I should estimate the whole lode to average from 12 to 15 per cent. copper. There are several other good-looking copper lodes on the land and in the vicinity which have not yet been developed, but some have been sufficiently prospected to show rich outcrops of copper ore. My opinion, after seeing the country, is that it will eventually prove to be an extensive and valuable copper-field.

The Adeline gold-mine is situated on private property, immediately adjoining the town of Drake. It was here the first discovery of gold was made, about 2½ years ago, and where the first surface lot of stone that was quarried, or shovelled out, 10 tons, yielded 130 oz. of gold; this find caused the rush to Fairfield. £7,000 worth of gold was obtained from this mine in a comparatively short time, but for some reason it has been closed for a considerable period and no work done on it. During the whole of last year no work was done, but arrangements have been made now and the mine is reopened. A shaft is to be sunk to a depth, and a new process is to be used in saving the gold, which is mixed with iron, copper, and other minerals, rendering it difficult or impossible to save by the ordinary process. I anticipate that this mine will again show good results.

The Mount Carrington Gold-mining Company have expensive and perfect battery plant, consisting of 15 head of stamps, extensive self-acting tramway, and other works, on which a considerable expenditure of capital was made. I regret to say this mine is now idle in consequence of the poorness of the ore and the difficulty of extracting the gold.

There are various other mines at Fairfield which are not of sufficient importance for special notice in this report. Speaking generally of Fairfield, I am convinced, although many disappointments have been met with, that the gold and other minerals, especially silver and copper, exist in such quantities and over such large areas, it will, with the White and Red Rocks, prove one of the most important fields in this Colony.

At Long Gully, about 6 miles south from Fairfield, a number of mineral leases for silver were applied for during the year. In one case a small but very rich find of gold was made in what is known as Rivers & Co.'s lease. About 13 tons of the ore has been treated, yielding 253 oz. of gold. The reef is a narrow seam of zinc-blende, carrying free coarse gold, plainly visible in almost every piece. The seam is only a few inches thick, and has not much the appearance of permanency. Objections have been made to the granting of this mineral lease on the ground that the land is auriferous. The matter now awaits the inspection and report of a geological surveyor. The country is very rough, in a dense scrub difficult of access.

White Rock.—Although the now celebrated White Rock is properly a Fairfield mine, being only about 3 miles from the township, I have kept the report on it separate. The only work being done in that locality is in the White Rock Proprietary Company's mine and in the White Rock Silver-mining Company. The works in the White Rock Proprietary Company's mine are very extensive, and preparations are made for the reception of vast machinery which has been ordered from America. A very large body of stone has been quarried out, and some valuable prospecting has been done in sinking a shaft to test the lode at a deeper level. About ninety men have been kept employed during the year in building dams, levelling machine sites, making roads, tramways, and other necessary works, erecting machinery, of which, although not nearly completed, a considerable quantity is on the ground, consisting of a 20 horse-power compressing engine for air rock-drills. A 12 horse-power engine driving saw-mills and two large engines for the reduction works are also now being put into position. It is expected that the machinery will be at work in three or four months. About 13,000 tons of ore is awaiting treatment, and the quantity that can be obtained is practically unlimited. The ore raised is estimated to be worth over £20,000. The question to be solved is whether or not the ore can be treated at a profit. Mr. Howell, an American expert of high reputation, estimates that with the machinery he has ordered for the Company, over £100,000 a year profit should be made. The greater part of the ore is low grade, but the seams, which are numerous, are rich. About 163 tons of picked ore has been sent away for treatment at various times, and to various places, resulting in returns averaging £8 per ton. I understand the process to be adopted in the treatment of the ore is by crushing and concentrating the galena and pyrites by gravity, much similar to the treatment of lode-tin ore. For this purpose a considerable quantity of water will be required. Dams have been erected and excavated to contain 1,000,000 gallons of water. The watershed of the gully on which the mine is is only of very limited extent, but this is to be assisted by taking water from Plumbago Creek, and pumping it over a spur range 200 feet high. A 20 horse-power engine will be employed at this work. When this mine gets fairly to work, if it nearly approaches the anticipations of the manager and the experts who have examined and reported on it (and I have no reason to doubt but that it will), it will be one of the largest and richest silver-mines in the Colonies, second only to the Broken Hill Proprietary mine. The mine appears to be inexhaustible. The ore now in sight, even with the large reducing works to be employed, would last for many years. As far as I can judge (and it is also the opinion of experts), the mine shows every indication of its becoming richer as it is developed,

developed. The seams appear to be making in every case as they go down, and from the first shot put in until the present time the appearance of the mine, and the richness and number of seams have improved. The only question is, as I said before, will it pay a profit on the working and treatment.

The Red Rock is situated about 9 miles north-westerly from Fairfield. Several large Companies have been formed to work the mines in this locality for gold and silver, the principal of which is the Great Red Rock Gold-mining Company. A considerable amount of work has been done by this Company during the past year. There is a 20-head stamp mill on the property. A large quantity of ore was put through, but it was found that the ordinary process of crushing and amalgamating would not save all the gold, nor any of the silver. Proper plant for the treatment is now being obtained under the advice of Mr. Howell. Mr. W. J. Begilhole, an experienced miner, is the manager; and important works have been done and erected under his supervision in a way most creditable to him as a mining manager. A main shaft is now being put down, dimensions 13 x 5 feet, containing three compartments; it is now 140 feet deep, to be continued to 300 feet. An engine and winding gear is used in connection with this shaft, and the work is progressing rapidly. A tunnel has been driven on the course of the lode which will eventually meet the main shaft; it is now in 233 feet, and is to be continued 217 feet further; it is kept in full work, and will strike the main shaft in that distance. Crushings from stone taken from various parts of the surface of the land yielded 207 oz. of standard gold to 800 tons of ore crushed, but as the average of the ore was found on assay to be over an ounce to the ton crushing was discontinued; the tailings on careful assay showed a loss of nearly two-thirds of the gold. A trial ton of the ore was sent to the Chlorinatory works at Sandhurst, which yielded 1 oz. 3 dwt. of gold; and a ton of tailings similarly treated yielded 14 dwt. of gold. Mr. Howell, whose experience entitles him to be considered a reliable authority, I understand reported favourably on this mine, and he has been instructed to obtain the necessary plant for the proper treatment of the ores.

Adjoining this mine there are several other Companies, principally the British Red Rock and the Central Red Rock. A considerable amount of work has been done on the mines belonging to these Companies. On the British Red Rock a shaft and drive have been put in, which intersects the lode at the 200-feet level. The ore carries payable gold; its extent is at present unknown; it appears to be an enormous deposit of auriferous ore, mixed with other refractory minerals; it is comparatively poor, but with the natural advantages, such as the low cost the ore can be mined and the existence of water-power, it should be made to pay. If the Great Red Rock Company succeed in profitably treating the ore by the process recommended by Mr. Howell, a large field of auriferous country will be opened. The future of the whole of this district depends on whether or not the low-grade ores can be mined and treated profitably.

Timbarra Gold-field is situated 35 miles south-east from Tenterfield. The principal works are on the Surface Hill Gold-mining Co's. land. They have been working for some time in auriferous granite dykes by crushing and hydraulic sluicing. The yield is about 4 or 5 dwt. to the ton, which, as the ore can be broken down with the hydraulic and quarried out at a minimum cost, should, if worked on a large scale, with improved machinery and labour-saving appliances, pay well. Little or no profit has yet been made, as the plant is quite insufficient. It is expected that the Company will be refloated, with a view to obtain capital to work on a large and economic scale. The auriferous granite is in dykes of soft stone, running through a high spur range. The quantity of stone is unlimited. About 10 miles north of Poverty Point, on the Old Tabletop, Mr. Dickson has a small 3-head of stamps battery. He is also on an auriferous dyke running through granite, showing heavy iron pyrites, and yielding a payable return of gold.

Several alluvial claims are working in the gullies and in the Timbarra River, at which the miners are making fair wages

Pretty Gully is situated about 40 miles north-east from Tenterfield. The workings are principally alluvial. About twenty-six miners have found employment there, and are earning fair wages. This is a good field for prospecting for reefs. Although alluvial mining has been carried on for many years in the creeks and gullies, very little prospecting for reefs has been done.

Tooloom Gold-field was once of great importance. Many years ago, in the first rush for alluvial gold, in the northern district, Tooloom proved to be one of the richest fields. On the rich gullies being worked out it was abandoned for other rushes, and very little work has since been done on it. Some miners have been working on surfacing and old workings, and a little work has been done in reefing, but it has been virtually a neglected field. Occasionally some rich finds are still made. This is another field which certainly holds out every inducement for prospecting for reefs and old deep leads. The basalt ranges in the locality, I have no doubt, cover old river beds and alluvial deposits, in fact some prospecting has been done in a basalt range extending north-east and south-west, from near Pretty Gully to the old Tooloom diggings. From the appearance of this range and the surrounding country it was expected that it covered an old river or watercourse. A syndicate was formed by Mr. C. Haagar, and about £400 has been expended in sinking a prospecting shaft through the basalt. This shaft was put down on the range to a depth of 232 feet. Ninety feet was through decomposed basalt, then 100 feet of sedimentary sand thickly impregnated with arsenical pyrites and wood fossils, and the last 40 feet was through very coarse sand, showing patches of alluvial wash. The bottom when left was on a coarse layer of gravel. At this depth water was struck, and the syndicate having expended its capital, work was stopped in December. It is to be regretted that this prospecting has, at any rate for a time, been abandoned. Taking into consideration the great extent of country that would be proved by prospecting under this basalt, I would strongly recommend it as a fit object for the assistance of funds from the Prospecting Vote. If the theory is correct that it is an old river, the whole surrounding country being auriferous would make it most probable that a deposit of rich wash existed. I intend to bring this matter under the notice of the Prospecting Board on their anticipated visit to the district.

Tenterfield Division.

Boonoo Boonoo is the only field of any importance in this division. It is situated 13 miles north from Tenterfield. A great deal of work has been done on the field during the year, and a considerable amount of capital has been expended, I regret to say, with generally disappointing results. The two principal gold-mines are held by Queensland syndicates—the Golden Crown and the Lady Mary; both have now knocked off work under partial suspension of labour, in consequence of too much water, but pumping is kept continuously going in both mines, night and day. The country, although on the top of a high tableland, is extremely wet. The formation is granite, and the reefs are large and generally

well

well defined; but the gold is patchy and uncertain—in fact, with few exceptions, I do not think they are payable, unless gold is found at a lower level than it has yet been found possible to go. The Golden Crown Company, under the management of Mr. H. Benjamin, have shown courage and enterprise which deserve a better fate than they have as yet met with. A considerable amount of work has been done by the Company, and a very perfect little plant, consisting of a 5-foot Huntingdon mill, has been erected. Pumping gear to lift 5,500 gallons an hour has been kept constantly at work day and night since August, 1887. Even that now fails to keep the mine dry enough to sink over 65 feet. Gold was found to the 40-feet level; the reef then appears to have been cut off by a large reef carrying little or no gold. Prospecting drives have been put in, extending in all 220 feet. The country proved to be unsettled, and the manager has every confidence, if he is able to get to a lower level, he will again strike the gold. £700 has been expended by the Company without any resulting profit, and they are now applicants for assistance from the Prospecting Vote, to enable them to continue operations. This application will be brought before the Board on their visit. The Lady Mary also has a 5-foot Huntingdon mill and complete plant and pumping machinery. They are very much in the same position as the Golden Crown. Both these mines are still keeping the pumps going day and night.

Some stone was crushed lately from a mine known as Vickery's which yielded 3 oz. 9 dwt. to the ton. This may be only a patch, but the holders are confident that they have a good reef.

A few men are working in the old alluvial in the creeks and making fair wages. About 5 miles south from Boonoo Boonoo, rich silver stone was discovered, containing chlorides; a great many leases were applied for, and some of the leases are now being worked by syndicates or Companies—the Andrew Jackson, Tuca, Lady Mary, and others. Remarkably rich assays have been obtained, and the reefs show in many places good stone containing gold and chlorides and sulphides of silver. Some quantities of stone have been sent away for treatment, and the results have been satisfactory. These mines are still in their infancy. It will require capital and time to develop them, but they promise well. The reefs are in granite, and they consist of quartz and gossan; they are well defined, but the mineral-bearing seam is at present narrow, widening in depth. The deepest shaft on the field is not more than 30 or 40 ft. The water is troublesome, and no proper mining can be done until steam-pumps are used. At present there is no machinery on the ground.

Wilson's Downfall Division.

Wilson's Downfall is about 30 miles north from Tenterfield. The mining in this district is principally tin and silver. In tin, the old workings on the alluvial are still supporting a large mining population, principally Chinese, working on mineral licenses or tribute. Little or no work has been done in prospecting for lodes or deep leads, which no doubt exist. Some enterprise has been shown in opening up deep ground low down on Wylie Creek, with some success; two pumping engines are kept at work, and the wash yields well; the stripping is heavy, about 25 ft. A very important silver-field has been discovered at Rivertree, about 16 miles east from Wilson's Downfall. The reefs are large and well defined, and show rich galena and carbonate of lead, assaying from 10 to 100 oz. to the ton. Smelting furnaces are in course of erection. The richness and the size of the lodes would justify the expenditure of capital to develop the silver. I feel convinced that as soon as capital can be obtained to put on the necessary reducing plant good results will be obtained. There can be but little doubt but that payable lodes exist, and nothing but the general depression and stagnation in mining, caused by over-speculation and estimation of values, prevents this rich field from coming into prominence. Plumbago of a very superior quality exists in large quantities at Undercliff, between Wilson's Downfall and the Rivertree mines.

Lunsville and Solferino.

There is very little to report on these fields. A number of miners are still working on the reefs, and occasionally good finds are made, but they are small and patchy. A new discovery of gold was reported to me on the 11th December, on Marcolini Creek, about 3 miles from Miller's Scrub; the find is alluvial, depth, 3 feet, yielding ½ dwt. to the dish of coarse gold.

I have not received the particulars from any of the officers as to the number of mining applications, issue of miners' rights, business licenses, &c., except Fairfield and Tenterfield, but that information can be obtained from the reports of the Mining Registrars.

The number of miners' rights, business licenses issued, and the number of applications for gold and mineral leases at Fairfield and Tenterfield were as follows:—

Fairfield.—Warden's Office for 1888.

Miners' rights issued	555
Business licenses issued	30
Mineral licenses issued	195
Applications for mineral leases	182
Applications for gold leases	56

Tenterfield.—Warden's Office for 1888.

Miners' rights	223
Business licenses	13
Mineral licenses	123
Applications for gold leases	16
Applications for mineral leases	48

I am forwarding specimens of the various mines in connection with this report.

NEW ENGLAND DISTRICT—Wilson's Downfall Division.

(*J. G. Draper, Mining Registrar.*)

I have the honor to forward my report on the mining industry of Wilson's Downfall Division of New England Mining District.

During the early part of the year 1888 some activity was shown in portions of this district. At Rivertree, a vast area of land has been applied for, containing silver, several of the applicants having prospected with good results, and I am informed that they intend shortly to go more fully into the development of the country, which is as yet new and untried, and only situated within 4 miles of the Tooloom gold-diggings. One party stated some time ago that they intend to erect a furnace, having been well satisfied with their prospects; but in any case something will be done after leases have been received.

At

At Undercliff, Wooller and party are prospecting a reef which is supposed to contain gold, but nothing of importance has been obtained yet.

Mr. John Carmichael has been doing extensive prospecting for tin on Wylie Creek, employing at the present time about fifty miners, also having two engines at work. Smith and party also intend shortly opening up their ground adjoining Carmichael. There is nothing new to report in other parts of this district.

During the year ending December 31, 1888, the following business was done in this office:—112 mineral licenses issued; 19 miners' rights issued; 6 business licenses issued. 83 mineral leases applied for, as follows:—Silver, 63; tin ore, 17; plumbago, 3. The quantity of tin ore won during the year ending December 31, 1888, being 203 tons, valued on the ground at £12,180. The mining population is at the present time about 320.

NEW ENGLAND DISTRICT—Fairfield Division.

(*J. P. Curran, Mining Registrar.*)

I have the honor to forward my annual report for the year just ended, December 31st, 1888. Although our expectations of the past two years have not been fully realized, the general outlook of this gold-field is by no means discouraging. Judging from the earnest way in which some of our leading mining men are securing large areas of mining land and expending a great deal of money in the erection of machinery and in the development of their mines, is, I think, a sure and certain sign of the confidence thus shown of this being in the future a large mineral-producing district. In my last report I called attention to the fact that the way the land was then held in small areas by poor men had a tendency to retard the progress of the field, and the prosperity of the field depended on the time when the land would be in the hands of wealthy companies who could afford to erect suitable appliances for working the land on a large scale, and thus confer greater benefits on the working man, and contribute largely to the wealth of the district.

At the end of last year I informed you that silver-mining was again coming into prominence. Since the discovery of that metal in this part of the division, 196 applications have been made for mineral leases, comprising an area of 7,000 acres. Very little work has been performed on any of this land, except two blocks owned by the White Rock Proprietary Company and two blocks held by the Extended White Rock Silver-mining Co. On the first-named Company's land they have about 12,000 tons of ore ready for treatment, and now awaiting the completion of the reduction works. This Company have expended about £20,738 during the year in raising ore, making tramways, dams, saw-mill, and concentrating machinery, and have constantly employed about ninety men on the mine and works connected therewith, and have raised altogether about 12,163 tons of silver ore, estimated to be worth £22,203. Of the quantity raised, 163½ tons of first-grade ore has been treated, and silver obtained therefrom of the value of £1,207 13s. 7d. The plant at the mine consists of one air-compressing engine, 20-horse-power, for the purpose of working the rock-drills; one saw-mill, with all the necessary appliances, where all the timber is cut for the use of the mine, the machinery of which is driven by a 12 horse-power engine; and one 6 horse-power winding engine. They are also placing in position one pair of engines, 200 horse-power, for reduction and concentration works. The whole of the machinery is expected to be in working order within three months from date. Ample provision has been made for the supply of water necessary to carry on these extensive works by the excavation of three large dams, estimated to contain 1,000,000 (one million) gallons of water. To keep up the supply they have, by means of a race, diverted the water from Plumbago Creek, which will be lifted from a reservoir at the terminus of the race, a height of 200 feet to the crown of a hill which divides Plumbago Creek from the gully on which the White Rock mine is situated. For this purpose they have an engine 20 horse-power. The ore will be conveyed from the mine to the reduction works by means of a self-acting tramway 1,000 feet in length. The trucks will run up to the face of the mine, when they will be loaded by hand and discharge their contents at the battery, the full truck in its descent drawing back the empty one. The face of the mine, which is 350 feet wide, shows numerous veins of ore of a superior quality, and I have no doubt will be one of the best mines in the district, and be the means of maintaining a large population in its immediate neighbourhood. They purpose when in full operation at the works to reduce 1,500 tons per week. In conclusion, I might state that the whole of the work is under the control of Mr. John Rossiter, whose skill as a mining engineer is well known.

The Mascotte Gold and Silver-mining Co. is the next in order to the White Rock Proprietary Mine. This mine has been during the past year continuously worked, ten men being employed, but the most of the work carried on has been of an exploratory nature. The object has not been to raise stone so much as to prove the pemanency of the mine by the shaft and drives now open. 600 tons of ore have been raised, of the average value of £12 per ton. The deepest shaft is 106 feet, and the lode is 8 feet wide; and the manager, Mr. B. Bryant, informs me there is now about 6,666 tons of ore in sight ready to be broken down. The ore in this mine contains both gold and silver. The reason why no returns of bullion have been obtained from this mine before this is that they had not decided as to which was the best and cheapest method of treatment. This difficulty appears now to have been overcome, and it is expected that the mine will be in full operation in a few months, as arrangements are now being made and nearly completed in London for the erection of the best gold and silver saving appliances in connection with this mine.

The Strauss Gold-mining Co., Saw-pit Gully, is the next mine of importance on the field. This Company have been employed during the greater part of the year in developing their mine, therefore very little crushing has been done. The quantity of ore passed through the mill during the year amounted to 1,318 tons, from which they obtained 673 oz. of gold, of the value of £3 17s. 10d. per oz.; amounting in all to £2,619 1s. 10d. At the commencement of the year this Company, in consequence of the great influx of water in their mine, found it necessary to drive a tunnel from the lowest part of the land in order to cut the lode at the 90-feet level, and thereby drain their workings, and at the same time to facilitate the transport of ore to their battery, and dispense with all hauling. They have laid a tram-line from the face of the workings at the level just mentioned to the battery, a distance of 500 yards, which is now completed, and crushing operations will be immediately resumed. This, when in full work, should be one of the best paying mines in the district, as there is an immense body of crushing stuff to operate on; the lode being 9 feet wide, and with such improved appliances as they have at hand for the extraction of the metal, cannot fail to be remunerative. They have kept constantly employed thoughout the year twenty-seven men.

The

The Great Red Rock Gold-mining Co.—This mine is being worked for gold and silver, and is situated at Red Rock, about 8 miles north-west of Fairfield. The operations of this Company are confined principally to surface outcrops, which gave encouraging returns last year; but in order to ascertain the value of the mine at a depth crushing operations were suspended, and the Company have sunk a shaft to a depth of 149 feet, and at this depth the ore is found to be of such a refractory nature that it is found necessary to introduce a different kind of machinery for its treatment to that hitherto used, which will probably be erected during the incoming year. The machinery previously used consisted of 25-head battery, with mercury-tables, &c. The plant, including the winding-engine on the mine, is valued at £2,500. The last crushing was from a surface lode 40 feet wide. About 800 tons yielded 207 oz. of bullion, worth £2 15s. 9d. per oz., and judging from its low value it evidently contains a large percentage of silver. The quantity raised during the year is about 1,000 tons. The dip or underlay of the reef is east, bearing or strike north-east by south-west. Forty-five men are constantly employed on this mine.

The British Red Rock Gold-mining Co. (a London proprietary) is the next of importance in this locality, and the works are under the management of Mr. Richard Sweet, a gentleman of great mining experience. A great deal of work of an exploratory nature has been performed by this Company during the year; 22 men have been regularly employed. One shaft has been sunk to a depth of 66 feet, and a level driven from the face of the hill on which the mine is situated which intersects the lode at a depth of 200 feet. The width of gold-bearing matter is uncertain, as it appears at present to be one great mass of gold-bearing quartzite. The prospects of this mine, on the whole, are very good.

The Great Northern Gold-mining Co. is another Company which has been formed recently for the purpose of working a number of gold and mineral leases at Fairfield. The general manager, Mr. R. W. Stuart, has kindly furnished me with a report, which will be found attached hereto, from which you will gather some valuable information respecting the properties held by this Company. I have no doubt that the formation of this Company is a step in the right direction towards the development of this field. Hitherto the land had been held by men who had not the means to work it, and were simply holding possession of it as best they could for the purpose of selling to the best advantage. All difficulties now seem to be removed, and fair and reasonable arrangements have been made with the original holders of the land by admitting them into the Company just formed, and thereby giving them an opportunity of participating in any profits that may accrue from the venture. I do not think I need to go into any further particulars respecting this property, as Mr. Stuart's report will give all the information required.

The Mount Carrington Gold-mining Co., I regret to report, has entirely suspended work, and the battery, which appeared to be the most complete mining plant on the field, having been erected at a cost of £6,500, is now idle. Still there are hopes entertained of a resuscitation of the Company, and active operations being resumed.

The Adeline Gold-mining Co.—The mine, owned by the above Company, is situated on the private estate of George Smith, Esq., adjoining the village of Drake, and directly on the main road from Tenterfield to Casino. Though this was the first mine opened at Fairfield, and from which £7,000 worth of gold was obtained in a few months, it has been closed for a considerable time. The Company has been lately reorganised, and a main shaft has been started to thoroughly open up the lode, and a better method of extraction than that previously adapted will be decided on. It has been found that the ore is of a complex nature, and can not be dealt with by the ordinary process used for the extraction of free gold. From the present appearance of this lode in this mine I should think that with the proper gold-saving appliances that good results might be expected. This mine, in my opinion, has not been worked in a way by which it could be made profitable. Sufficient care has not been bestowed in the proper classing of the auriferous matter. Consequently a great quantity of worthless stuff has been sent to the mill, with the result that the poor stuff impoverished the rich stuff, and the mine could no longer be worked at a profit. The lode in this mine is about 4 feet wide, dip or underlay west, bearing north and south.

At Long Gully a man named Rivers, whilst searching for silver on a mineral lease, discovered a small vein of gold-bearing stone. It being contrary to the mineral lease regulations to work for gold on a lease of this description, an application was made for a gold-mining lease of 4 acres to cover the portion of land in which the gold had been found, and upon sinking the reef showed unmistakable signs of being very rich. About 13 tons of stone was taken out in sinking, which yielded 353 ounces of gold. The locality where this gold was found is situated about 6 miles south of Fairfield, and has every appearance of being auriferous. At present the whole of the country in that direction is covered by mineral leases, which prevents any searching for gold. Rivers and party are still raising very rich stone. The gold in this particular claim appears in a peculiar formation, the free gold being found embedded in zinc-blende.

This gold-field is remarkable for the number of rich patches of mineral that have been discovered from time to time. At a place called Grant's Gully, near Tooloom, a man named Payne obtained 110 ounces of gold in six days from an old abandoned reef. I paid a visit to this locality during the holidays, and was surprised to see so little prospecting done over such a large area of auriferous land, as evidenced by the number of creeks and gullies that have been worked years ago, and in which a few old fossickers still seem to be making a living. I was told by the old residents there that there are a great number of small veins of gold-bearing quartz in various parts of the district, but none of them have been sunk on. The more I see of this part of the division the more convinced I am that it will in time come to the front as a large gold-producing district. The great auriferous belt extends from Poverty Point in the south to Upper Tooloom in the north a distance of 55 miles. The places intervening where gold has been found, and worked for a lengthened period, are M'Leod's Creek, Timbarra, Fairfield, Lunatic Reefs, Pretty Gully, and Lower Tooloom.

The number of men who find employment at Tooloom is about 30, and at Pretty Gully and Lunatic Reefs I find about the same number, and all seem to be making fair wages.

A Mr. Haager has for the last two years been engaged in sinking in the basaltic formation, which extends from Pretty Gully in the direction of Tooloom. The only encouraging result obtained as yet has been to find a little gold at a place within 4 miles of Pretty Gully, at a depth of 300 feet. The influx of water at this place prevented him from continuing his researches, as he had not proper appliances to cope with the water. He has also, at a point about the same distance from Tooloom, sunk a shaft 232 feet deep, but not bottomed: the first 90 feet through hard basalt, the next 100 feet through a kind of sedimentary rock highly charged with pyrites and fossiliferous matter, the remainder of the depth through coarse gravel and boulders. Sinking the last 5 feet the water became very heavy, and work has been

suspended,

suspended. £400 has been expended on account of this shaft. The most interesting feature in connection with this place is that within a short distance from the shaft the bed rock is close to the surface, indicating the presence of a deep channel inside, which has been filled in by volcanic or other causes.

I have endeavoured to obtain from the various mine managers the most reliable information respecting the properties under their supervision. Mr. W. J. Begelhole, the manager of the Great Red Rock Gold and Silver-mining Company, has handed me a carefully-written report of the mines under his control. From this and Mr. Stuart's report you will obtain a great deal of information of an interesting nature.

Mr. Peter Bezant has also handed me a short report, giving a description of the mine which he has charge of, from which you will be able to get some further information.

The population of this division at the present time numbers about 1,000 (one thousand). The climate is particularly healthy, judging from the death-rate, which is exceedingly low compared with other districts.

Only one fatal accident has occurred in the mine during the year, a miner named Richard Hacket having lost his life through an explosion of gunpowder in a mine at Red Rock. A magisterial inquiry was held, and a verdict of accidental death was returned, no blame being attached to the manager of the mine.

I am indebted to the courtesy of the manager of the two local banks for returns of the amount of gold which has passed through their hands this year.

The amount of gold won from all sources amounts to 1,713 oz. 17 dwt. 21 gr.

The amount of revenue collected during the year is as follows:—

	£	s.	d.
Deposits with mineral lease applications	1,672	15	0
,, gold lease applications	266	0	0
Collections for miners' rights	259	10	0
,, mineral licenses	195	0	0
,, business licenses	30	0	0
Deed fees and stamp duty on leases	44	5	0
Summonses, subpœnas, and sale of gold-maps	13	13	0
Total	£2,481	3	0
On account Trust Fund :—			
Survey fees, mineral leases	803	10	0
,, gold leases	45	10	0
,, mining tenements	57	5	0
Deposits with objections to leases	20	0	0
Total	£3,405	8	0

I have received 182 applications for mineral and 56 applications for gold leases. I have issued 555 miners' rights, 30 business licenses, and 195 mineral licenses.

NEW ENGLAND DISTRICT—Solferino Division.

(R. Wilkinson, Mining Registrar.)

I have the honor to herewith give my annual report upon the Solferino Division of the New England Mining District.

Quartz.

The Lion Mine, Lionsville, which is held by a syndicate, of which Mr. Ken Hutchison is the managing director, have had two men at work all the year putting in a tunnel on the course of the reef, from the level of the adjacent creek, and which is intended to be continued on to the main shaft, which will be met with at about the 150-foot level. These two men have driven a distance of 225 feet with a fair reef all the way, but walls mostly very hard, but have not seen any gold visible to the eye, although a sample of the stone assayed 14 dwt. to the ton. They still have about 200 feet further to drive before meeting with the shaft.

The Garibaldi Prospecting Claim.—Bassetti, Uduesich, and party have kept four hands at work during the whole of the year, stoping out blocks of ground left by former owners of the mine, which in some instances turned out fairly well, having treated at the Sydney Mint and other places about 25 cwt. of specimens for a money value return of £523 12s.

No. 1 North Garibaldi.—C. Harkin has kept steadily at work all through the year putting in a low-level tunnel on the reef, and informs me that he has come on to some very good gold during last month.

Shellamelia.—A. Famini and others commenced a tunnel in January, to enable them to get some 100 feet of "backs" to work upon; they have driven 190 feet on the reef, but never saw a colour, and have still 130 feet further to go before they expect to be under the shoot they had in the upper or 40-foot level, which turned out very well, although not publicly made known.

Band of Hope.—(J. F. Adam and party.)—Owing to the non-success of the Company to float their property in London market for purpose of putting in a tunnel on the reef at a depth of 500 feet, and other causes, they were granted suspension of labour for six months, and it is only within the last two months that they made a fresh start.

Golden Bar.—Which, as mentioned in my last report, was about changing hands, a sale for £500 cash having been effected early in January, the syndicate who purchased put four men on for a couple of months, and then two for three months more, but unfortunately never struck another patch after clearing out the one in view when the sale took place, and the funds having run low they procured six months suspension, at the expiration of which, no doubt, they will recommence.

Cangi.—There have been two 10-acre leases taken up—one upon the John Bull reef, and the other upon the Sir Walter Scott, both being abandoned ground for the last ten years. The applicants have been doing a little work on each since taking possession, and upon the latter they have got some very good gold, having taken out 3 tons quartz and sent it to the Mint for treatment, which gave a very good yield of 3½ oz. to the ton, thereby causing a little notice to be taken of it, and it is very probable that a large company will be formed to give it a thorough trial, machine site and water-rights having been applied for in conjunction therewith, the claim being within half a mile of the Mitchell River. On the

the John Bull the owners have driven in an old drive a further distance of 20 feet with good prospects; also sunk a shaft on the reef some 100 feet from the old workings, and have a good show, sufficient to induce them to enlarge their capital with the view of erecting machinery.

The Pioneer, about midway between the Cangi and Mann River, was retaken possession of in early part of the year by Taylor Bros., but I have not heard what they have been doing, except a report of 1 ton of stone being treated at the Dora battery, Mann River, for a yield of 1 oz. 9 dwt.

In Alluvial.—There is nothing worthy of note from the old quarters; all the hands that are at work have been in same spot for years, making their usual average of ½ oz. per week. The only excitement is a new find made by Mr. Paulo Marcolino, who, with a couple of others, were deputed to prospect the Solferino neighbourhood some two months back.

Mr. Marcolino reported a new discovery of gold on 10th December, in a creek he has called Marcolino Creek, which is distant about 3 miles north-easterly from Old Scrub Diggings and 9 miles westerly from Lionsville, on Washpool Waterfall. It is one of the left-hand branches of Cedar Creek, and being well up on the range there is very little water for sluicing purposes.

Mr. Marcolino obtained 15 oz. 4 dwt. of coarse gold, up to 5-dwt. pieces, in about five weeks, upon a rough bar and in crevices. The holidays coming on so close after the report, nothing much was done up to the end of the year, except the marking off of claims, of which some thirty men's ground was taken possession.

What trial there has been does not show any gold above Marcolino's prospecting claim, which he applied for, although nice-looking country and well cemented. There were a couple of ounces got some 300 yards below the prospector in a small bit of ground, also a 7-dwt. piece. The creek downwards is very rough, with hard bars intervening, and all the available ground in the creek is being now worked by some twenty-five men, who will soon see what it is to turn out.

There are several other creeks in the neighbourhood which will now get a thorough overhaul by those prospecting around.

I have issued 59 miners' rights, 1 mineral license, and received 6 applications for gold-mining leases for an area of 41 acres.

As far as I have been able to collect, the amount of gold won in this division is as follows:—From alluvium, 189 oz. 7 dwt. 4 gr.; from quartz, 154 oz.; total, 343 oz. 7 dwt. 4 gr.,—valued at £1,202 12s. Price of gold, from £3 6s. to £3 13s. per oz. Number of miners at work are 15 each, quartz and alluvial; total, 30.

NEW ENGLAND DISTRICT—Tenterfield Division.

(*T. Burne, Mining Registrar.*)

I HAVE the honor to forward my report for the year 1888.

Since my report submitted to you for the year 1887, machinery has been erected on the Lady Mary Gold-mining Co's. property, consisting of a 5-foot Huntington roller and a 14 horse-power steam-pump with saw-bench complete. This being a Queensland Company, no information has been received of the amount of gold won therefrom.

On the Golden Crown Gold-mining Co.'s property, machinery somewhat similar to that on the Lady Mary claim has been erected. The water being very troublesome, the steam-pumps are kept working night and day. This is also a Queensland Company.

Hinith and party have been working off and on throughout the year, the last crushing giving a very fair return to the owners. This claim is about being floated into a Company.

On the Big Swamp, known as Basket Swamp, the Andrew Jackson Silver-mining Co. have done good work in prospecting, obtaining very payable assays. Water is very troublesome preventing them going down any great depth without the aid of machinery. Five tons of stone from this mine has been sent to England for treatment. There are three shafts down on this mine. No. 1, 27 feet, showing lode of 2 feet 6 inches, have driven same north and south 29 feet and 27 feet respectively; No. 2, down 12 feet, showing lode 3 feet; and No. 3, down 14 feet. Ore at grass, about 50 tons. Work on this mine has been temporarily suspended, waiting arrival of machinery.

The work of prospecting is still going on at the 8-mile silver claims, but the ground is too wet to make much progress; the stone obtained therefrom has given very satisfactory assays.

There has not been much work done on alluvial. Some of the old ground has been reworked at fair wages by a few men.

I have issued during the past year:—miners' rights, 223; business licenses, 13; and mineral licenses, 123.

I have received 16 applications for gold-mining leases, and 48 applications for mineral leases.

NEW ENGLAND DISTRICT—Emmaville Division.

(*Ewd. W. Robinson, Mining Registrar.*)

I HAVE the honor to submit my report of mining operations for the year ending 31st December, 1888, for the Emmaville Division of the New England Mining District.

During the early part of the year a great impetus was given to this district in consequence of the boom for silver lands, and a great quantity of land was taken up for silver-mining purposes. Several Companies were floated, some of which continue working with reasonable prospects of success ultimately. Others, from various causes, only partially tested their lands, and stopped working, and in some instances little or no work has been done upon the land selected.

Following on this bright prospect, a disastrous drought occurred, extending over eight months, its effect being severely felt by those engaged in tin-mining, one of the principal products of this district, consequently the output of this mineral has been greatly restricted for the past year.

Vegetable Creek proper is still being worked over and over again by the various Companies upon tributes, principally by Chinese, who make small wages and appear satisfied, and also here and there on the course of the creek parties are to be found obtaining tin mineral more or less.

The deep lead at Rose Valley continues to be worked on tribute principally. There are three parties on Wesley Co's. land, and one party on the adjoining land, known as 17 acres. Bailey's claim continued to work throughout the year, employing a large number of men, but intend closing, as they have cut

out

out all payable land at the present market rate for the mineral. The adjoining claim, Cunneen, Reed, & Co., have nearly cut their ground out. The Albion Co. are preparing to contend with the large amount of water known to exist in the vicinity of their ground.

Cadell & Co., who were prospecting Thomas Gordon's land, adjoining the Albion Co., have stopped for a time. They have expended a large amount, and will have to erect machinery to contend with the water, &c. Allen & Co., at the Two-mile, have cut out their rich patch.

At Kangaroo Flat the Hall Bros. continue working their ground upon tribute. Little mineral has been obtained during the year through want of water.

The Basaltic Lead Prospecting Company, at the supposed outlet of the deep lead, are vigorously pushing on their works. The work done represents about 70 feet of sinking, 57 feet of open cutting, and 627 feet of tunnelling, and have expended nearly £1,200. It is to be hoped that this Company will be successful, as it will open out a large field.

At the Y Waterholes both the deep lead and shallow workings continue to be worked by Chinese, principally on tribute, also at the Graveyard Creek.

At Big Ben Flat a great amount of land has been taken up for tin-mining purposes, and fair prospects have been obtained.

At the Glen Creek several parties are at work, only making wages.

The Dalcoath Company have erected an engine and pumping appliances to ground-sluice their surface land; also a considerable amount of work has been done on the lodes on this Company's land, also on the land adjoining, and from both some rich stone has been raised.

At the Tableland the output of tin has been small, consequent upon the drought, in some places not having rain for twelve months.

The Dutchman Lode Company are preparing to open out their land again.

At the Butler mine work is being constantly carried on.

At the Nine-mile a Company are erecting an engine and pumping appliances to work their land, the tin showing very fairly in the ground.

Work has been continuously going on during the year at the Ottery Lode Co.'s land, but for want of water the crushing and dressing plant has been stopped.

Silver.

Work is being vigorously carried on at the Webb's mine, the Webb South Extended, the Centrals, Webb's Consols, and others.

At Nine-mile a considerable amount of work has been done, and some good assays have been obtained from the Emma, Octopus, and Broken Hill mines, Pye's Creek.

A great amount of work has been done by the Pye's Creek Co., also by the Caves Co., Bonanza Co., Cornstock Co., and Homeward Bound, also at Castlereagh.

The outlook for silver-mining looks very fair, but will require time and capital to develop the mines to a depth.

CLARENCE AND RICHMOND DISTRICT—Grafton Division.

(A. L. M'Dougall, Warden.)

I have now the honor to forward you my annual report as Warden for the Clarence and Richmond Mining District for the year 1888.

I beg to state that I have not thought it necessary to make a personal inspection of the mines under my jurisdiction, and have obtained from the Mining Registrars at Grafton, Dalmorton, and Nana Creek the subjoined return of lease applications, miners' rights, &c., issued by those officers during the year 1888, as follows:—

At Grafton, 109 miners' rights and 84 mineral licenses were issued, and 2 gold-mining and 7 mineral lease applications were duly registered and forwarded on to your Department.

At Dalmorton, 68 miners' rights and 4 business licenses have been issued, and 16 applications for gold-mining leases, comprising 83 acres, have been received, and duly forwarded to you. Five machine areas, 1 prospecting claim, 6 quartz claims, 2 business areas, 1 tunnel site, 2 water-rights, and 6 applications for protection areas have been made.

At Nana Creek, 25 miners' rights have been issued; 15 gold-mining lease applications, comprising 47 acres, were made, and duly forwarded on to your Department; and under the Mining Board Regulations, 2 prospecting claims, 3 ordinary claims, 2 machine sites, 1 residential site, 3 tunnel and 2 dam sites were applied for. 133 tons 17 cwt. of quartz were crushed at the Dargue battery during the year, and 159 oz. 7 dwt. 12 gr. of gold obtained.

There are now only about 35 men at the Nana Creek Gold-field engaged in mining and other pursuits, but I cannot give you a return of the number at Dalmorton and the Mann River reefs, but it must be considerably more, especially at the latter place.

CLARENCE AND RICHMOND DISTRICT—Murwillumbah Division.

(Joshua Bray, Warden.)

I do myself the honor to report that no payable gold has yet been discovered in the district under my charge.

In the early part of January, 1888, a party of prospectors circulated reports that an assay of stone obtained from Smith's Creek gave a result of 4 oz. 15 dwt. of gold and 53 oz. of silver to the ton. A small local rush immediately occurred, eight gold-mining lease applications were lodged for land at that place, and many prospecting areas were pegged out, but the only work done beyond the removal of small quantities of surface stone was the sinking of two shafts, each about 25 feet, upon what appeared to be the most promising reef. A ton of stone was forwarded to Sydney for assay, which yielded only a few grains of gold to the ton, and work in the locality was then discontinued.

In addition to the prospecting at Smith's Creek, two leases were taken up within the suburban boundaries of the town of Murwillumbah. Three shafts of 53, 35, and 30 feet, respectively, were put down, the result absolutely nil, and at the end of May all the leases which had been applied for in this district had been abandoned.

A Warden's Court of enquiry was held in February, but the disputed area has since been abandoned by both the interested parties.

CLARENCE AND RICHMOND DISTRICT—LISMORE DIVISION.

(*C. Coghlan, Mining Registrar.*)

I DO myself the honor to report for your information that mining operations in this district have revived considerably during the past year. On the 9th March, 1888, I reported that, on 6th instant (March) £28 10s. were received through Mr. Warden Bray for gold-mining lease application of 25 acres at a place called Black Head, on the coast, north of Ballina; and that a notice of intention to apply for 25 acres more at same place was posted at the Court-house here by Jas. Holden, E. W. Allingham, and A. S. Meares; but no report of discovery of gold had been made. Very soon after this a small rush set in to this locality, and 10 other gold and 4 mineral leases were applied for. Several practical miners worked the sand on the beach, and were supposed to have made wages.

On the 23rd May, D. W. Munro reported that he and party had discovered payable gold at Black Rock, near Ballina, which was contained in a seam 9 feet thick, described as scoriaceous basalt, underlaying about 20 feet of columnar basalt on the face of the cliff, about high-water mark, and appeared to extend a considerable distance inland. He also stated that two parcels of the mineral rock taken from the said seam of about a ton each were forwarded to the Royal Mint to be crushed; that the first yielded 15¼ dwt. and the second 12 dwt. to the ton, which is supposed to be payable, owing to the facility with which the ground can be worked and stone crushed. Efforts have been made to procure suitable machinery; but for some reason or another a start has not yet been made at crushing.

Several miners are at work at a locality known as Evans River, some 8 or 10 miles south of Ballina, and are making wages.

Three other gold-lease applications were made for a locality known as Peter's Grass, on the dividing range between the Richmond and Tweed Rivers, but not much mining operations carried on there.

One hundred and seventy-four miners' rights and 36 mineral licenses were sold, and 15 gold and 6 mineral leases were applied for during the year.

CLARENCE AND RICHMOND DISTRICT—DALMORTON DIVISION.

(*W. F. Poole, Warden's Clerk.*)

THERE has been considerable stir in mining matters during the past year, but owing to the drought very little crushing has been done. Four new reefs showing good prospects have been opened. One of these, the Garden Hill, has 30 tons at the Union Company's machine waiting to be crushed. Another, the Mountain Maid, is reported to have about 60 tons ready for the same machine when rain comes.

The Scottish Chief is reported to have struck a new reef carrying good gold. The manager of this claim is now making a dam, and states that machinery will shortly be placed on the ground.

The Little Dora Reef did not crush as expected, still the returns ought to be considered payable, the average being over 25 dwt. per ton from Taylor's claim, and over 2 oz. from the other claims that have had trial crushings.

Alluvial mining is confined principally to fossicking. I have issued during the year 68 miners' rights, 4 business licenses; received 16 gold-lease applications, comprising 83 acres, registered 5 machine sites, 1 prospecting claim, 6 ordinary claims, 2 business areas, 1 tunnel site, 2 water-rights, and 6 applications for protection areas.

Total value of mining plant in the division, £4,200.

CLARENCE AND RICHMOND DISTRICT—NANA CREEK DIVISION.

(*George Geddes, Warden's Clerk and Mining Registrar.*)

IN reply to advice of 8th December, 1888, I have the honor to forward my report upon the state of mining in the Nana Creek Division of the Clarence and Richmond District during the past year.

Nana Queen.—This is a prospecting claim owned by John Nicholson, and situated about 2½ miles in a south-south-easterly direction from Nana Creek proper. It was taken up on the 1st May, and has been since worked continuously. There are two shafts down—one 34 feet, and the other 22 feet. The reef in the former averages about 4 inches in thickness, running a direct north and south course, and that in the latter 7 inches, with a like bearing. The reefs have been stoped out for a distance of 60 feet lengthways to a depth, as stated, of 22 feet in the second shaft. There is every indication of the reef enlarging at a greater depth. Gold is found in both shafts and traced along the 60-feet stope, still continuing at both ends and under foot. The formation is granitic sandstone, very hard, and there is a likelihood of its terminating in granite. The gold got proves from the Mint returns to be of excellent quality. A crushing on the 28th August of 20¼ tons of quartz yielded 25 oz. 10 dwt. of retorted gold. There are some 14 tons at grass, but it cannot be crushed until the new year.

Lady Carrington.—A 2-acre lease of this ground has been applied for, but owing to a misunderstanding between the applicants, Messrs. Fauvel and Dargue, no further action in the matter will be taken by them jointly. The claim is now held by the former. The main shaft, down about 40 feet, underlays to the east, and the reef, 19 feet from the surface, on the average 15 inches in thickness, bears north and south, showing gold, which, it is thought, will give 1 oz. 10 dwt. to the ton. There are about 10 tons of stone at grass.

New Year's Gift.—This property is a lease of 4 acres, gold lease 156, situated near Tallewidgen Creek, and owned by Oliver Anderson. Since my last report a new shaft has been sunk to a depth of 85 feet; size of reef, 20 inches at the bottom, carrying, it is supposed, gold which will give 2 oz. to the ton; its bearing is north-west and south-east, underlaying to the east. The original shaft, 54 feet in depth, through soakage, caved in. No. 2 tunnel in this claim is now 106 feet in length, and is driven along the line of reef.

The Challenge.—This is the property of O. Anderson, and is 4 acres, gold lease 165. In this ground no further work has since my last report been done. Six months suspension of labour upon these claims was granted by the Warden to Mr. Anderson, and that time has not yet expired.

Advance Australia.—Since reporting last upon this claim an application for a gold-mining lease of 6 acres has been made by the owners, Messrs. Wilson, Forbes, and Soderberg. No. 1 main shaft, down 30 feet, has a reef about 3 inches wide, bearing north and south; shaft slabbed to about 15 feet downward. A winze shaft down 75 feet carries on the same line of reef a north and south reef 3 to 15 inches wide,

and

and stoping out 30 feet south from the 60-feet level up to the 45-feet level has been done. On the north side a drive is in of 16 feet on the 60-feet level, and stoped in 6 feet from the 45-feet level up to within 16 feet of the surface. No. 2 shaft down 50 feet, reef north and south, width on an average 4 to 20 inches, underlays to the east. Stoped out from the 25-feet level 6 feet on either side of the shaft, making in all a chamber of 20 feet by 25 feet. No. 3 shaft down 50 feet, reef north-west by south-west, width on an average 6 inches. Ground very hard from the 20-feet level. No. 4 shaft down about 90 feet, reef north and south, average thickness 3 inches, carries good gold. On the 85-feet level to the south a drive is in about 10 feet; reef here averages 1 foot, but is now pinched out nearly, work; thereon suspended for the present. The present workings are a surface leader of about, on an average, 9 inches in thickness, and a small shaft sunk on a blow in which good quartz is found, and further a reef is met with about 8 inches thick on the foot-wall. There is a tunnel driven 15 feet at, it is thought, a 40-feet level on a body of quartz, the reef bearing north and south, and averaging 9 inches in thickness. Stone at grass, about 20 tons.

Nicholson Reef.—This claim has since its abandonment been taken up by Messrs. Sharpe and Morrow as an ordinary claim. It is situated on a spur on the east bank of Tallewidgen Creek, shaft down 40 feet. The reef bearing north-east and south-west is not well defined, the gold found being got from bunches of quartz. The formation is slate and easily worked. The proprietors have at grass about 16 tons of quartz, and that they have registered. Suspension of labour was granted by the Warden for six months on the 25th July.

Day Dawn Reef.—This was taken up as an ordinary claim by the Messrs. Sharpe and Morrow, and a like suspension of labour was granted them in this claim. It is situated on a spur of the Bushman Range, in the vicinity of Tallewidgen Creek. The reef runs north and south, and is on an average 6 inches to 1 foot wide. The shaft is sunk 35 feet. Formation of ground is decomposed slate. A crushing of 4 tons of stone was put through a small 2-stamper battery erected close to the claim, driven by water-power, the result being 5 oz. 13 dwt., or 1 oz. 8 dwt. 6 gr. per ton. The plant being their own, there is no heavy outlay, as hitherto, for carting and crushing.

Jubilee.—Since my last report the owner, Mr. Alexander Nicholson, of this prospecting claim, through lack of means to carry on work, applied for, and was granted by the Warden's order of the 11th April, six months' suspension of labour. The main shaft has been sunk from 34 feet to 50 feet. The reef, bearing east and west, with an underlay to the south, averages 2 feet in width, shows fair gold, but is somewhat patchy. The tunnel at the 60-feet level has been extended 40 feet, making the full length 200 feet, penetrating a 50-feet shaft of the old Matilda line of reef workings, which, owing to heavy rains, oftentimes held, through soakage, water to a depth of from 30 to 40 feet. This is now drained, and all inconvenience in that direction stopped. There are about 20 tons of stone at grass.

Waratah.—This claim changed hands on the 25th September from E. F. Rudder to S. H. Jones, and a suspension of labour granted to the latter by the Warden's order of the 28th idem for two months. There are two shafts down—one 75 feet, and the other 50 feet. They are both well slabbed. In the former is a drive of 25 feet to the north-west, and in the latter, same bearing, one of 41 feet, both timbered. The reefs are north and south; width on the surface, 3 feet; but, in sinking, the reef is lost in one shaft and proves small in the other. A small crushing of 5 tons of quartz was, I learn, put through the Marcolino battery; but the result I cannot ascertain. It took place a short time prior to the Christmas holidays, and then the owner left for Sydney.

Nymboi.—This is a 7-acres lease, gold-mining lease 162, granted to E. F. Rudder and two others, and by them transferred on the 25th September to S. H. Jones, of Sydney. Suspension of labour was granted by the Warden's order of the 28th September for two months. No work has been done since by the lessee in this ground.

Black Dog.—This ground was worked by Messrs. Forbes and Wood. A crushing of 9½ tons quartz was taken out of the surface workings, giving 5 oz. 9 dwt. It is now abandoned. It is situated in the vicinity of John Nicholson's prospecting claim.

Jessie Smith.—This is a prospecting claim taken up by Messrs. Willoughby and Gordon. It is situated about 5 miles from Kangaroo Creek and 20 miles from Nana Creek. When I was there in July the shaft was down about 20 feet. A few tons of quartz had been taken out, a small quantity of which was sent to Sydney for assay, the particulars whereof are unknown to me. On the 24th October the Warden granted a suspension of labour for six months. On this line of reef 5 gold-mining leases have been applied for, and in the case of three of them suspension of labour has been granted by the Warden for six months.

Dargue Battery.—This was worked during the year by Mr. O. Anderson, and the results of the several crushings I give below.

Marcolino's Battery.—This was worked once only, by Mr. S. H. Jones, near to the Christmas holidays, 5 tons of quartz being put through. The yield of gold I cannot find out, but I am told it was not deemed satisfactory. Jones's stone from the Waratah was operated upon.

Sharpe and Morrow's Battery.—This is a small portable battery, weighing altogether about 16 cwt. The stamper-box is faced with a screen perforated with 144 holes to the square inch, and carries two stampers, each weighing 2 cwt. They have a drop of 11 inches. Connected with the cam shaft is an iron fly-wheel of 4 feet diameter, weighing 2 cwt., driven by a cog-wheel about 2 feet in diameter. These, in turn, are connected with a small wooden grooved wheel in which a rope runs connecting it with another wooden grooved wheel of 2 feet 4 inches diameter, which is operated upon by the main fly-wheel, 30 feet in circumference, constructed of wood and canvas; width of wheel, about 15 inches. The driving power is water running from a gorge distant about 150 feet from the machine along a bark fluming at a height of 18 feet from the ground, and giving a fall of 9 feet on to the main power wheel. The water for crushing is conveyed into the stamper-box by means of a wooden trough fed from the front of the large water-wheel. In front of the stamper-box there is a small wooden box, about 20 inches in length, tapering off to about 9 inches. In, at the foot of, the stamper-box is a small silvered plate, about 1 foot by 3 inches, upon which much of the amalgam settles. There are also, below this, two other shallow boxes, lined with copper plates, having suitable ripple-wells for catching the gold. Their dimensions are 3 feet 8 inches by 15 inches and 4 feet by 15 inches. In the first box is placed a piece of wood, 1 foot by 3 inches, in which are a number of holes This is to break the fall of the water, and thus prevent the quicksilver on the plates

plates being unduly disturbed. There are also two small blanket-tables, each about 4 feet 6 inches by 10 inches, with ripple-wells. The whole plant is, I am told, the sole design of the proprietors, the iron-work being made by Mr. Donaldson, engineer, and owner of the Star Foundry, Grafton. The entire work is certainly a credit to Mr. Donaldson, and all praise is due to Messrs. Sharpe and Morrow for the ingenuity and enterprise displayed by them. The machine works smoothly; still, it is known that some alterations are requisite, and it is intended to make such with the least possible delay. The crushings will then be effected more expeditiously and at a less cost. For one thing, the cog-wheel which drives the fly-wheel is found to be too small, its revolutions giving to the stampers but thirty drops per minute, and that is far too slow.

List of the Crushings.

Date.	Claim.	Proprietors.	Quantity crushed.	Yield.
	Dargue Battery.		Tons. cwt. qr.	oz. dwt. gr.
28 Mar., 1888...	Advance Australia	Södeberg, Forbes, & Wilson...	25 10 0	47 12 0
7 April, „ ...	Jubilee	Alexander Nicholson	20 0 0	17 4 0
17 „ „ ...	No. 1 West Jubilee Line	John Nicholson	13 11 0	18 0 0
30 June, „ ...	New Year's Gift	Oliver Anderson	6 0 0	12 0 0
17 Aug., „ ...	Lady Carrington	Dargue & Fauvel	17 11 0	10 2 12
23 „ „ ...	Jubilee	Alexander Nicholson	17 10 0	17 17 0
28 „ „ ...	Nana Queen	John Nicholson	20 5 0	25 10 0
31 „ „ ...	Black Dog	Forbes & Wood	9 10 0	5 9 0
	Sharpe's and Morrow's Battery.		129 17 0	153 14 12
1 Dec., 1888...	Day Dawn	Sharpe & Morrow	4 0 0	5 13 0
		Total	133 17 0	159 7 12

There were 15 gold-mining leases, comprising 47 acres, applied for. Three leases applied for in 1886 were executed, and on application to the Warden the lessees were granted a suspension of labour, The like was also granted to the applicants of three gold-mining leases situated near Kangaroo Creek.

I have issued 25 miners' rights; business licenses, nil; mineral licenses, nil, and have registered the following claims:—Prospecting claims, 2; machinery areas, 2; residence, 1; water-race and water-right, 1; ordinary claims, 3; tunnel sites, 2; dam-site, 1; stream water-right, 1.

Suspension of labour was granted by the Warden to the owners of 2 prospecting and 3 ordinary claims.

Most opportune rain has visited this district during the past two months, and that in abundance, accompanied by, in some instances, terrific hail and thunder storms, the lightning being dangerously near; trees were struck and scattered in all directions. I have known nothing like it for many years past. The country is looking its best—plenty of feed for cattle and water-holes filled to overflowing.

Total value of mining plant in the division, £717.

CLARENCE AND RICHMOND DISTRICT—Ballina Division.

(W. Tippett, Mining Registrar.)

I have the honor to report that very little mining is carried on in the division, with the exception of beach-mining, which is carried on intermittently along the whole of the coast in my division, the average earnings being from 30s. to £3 per week, the richer and easier-worked portions, from which splendid results were formerly obtained, having been worked out. Rich deposits of gold are known to exist behind the terraces behind the beach, but owing to the great quantity of water to contend with these deposits cannot be worked with the primitive appliances of the ordinary beach fossicker. A good deal of prospecting has been done throughout the division during the past year, but mostly by inexperienced men. In the beginning of the year, however, Mr. D. W. Munro, who has devoted a considerable amount of practical and scientific research towards the development of the mineral resources of the district, in company with William Bevan, followed a certain line of country from the dividing range between the Tweed and Brunswick Rivers, towards the coast, and discovered and took up the 25-acre lease now known as "The Black Rock," which is being worked by a small local Company. The formation is very peculiar, and is the subject of much controversy. A ton of the stuff, however, having yielded 15¼ dwt. gold at Sydney Mint, a rush set in, and a great number of leases were pegged out and applied for, but little or no work is being done on these pending the issue of leases. Some sluicing claims south of the Evans River are working with payable results. Nearly all the miners' rights for this division during the past year were issued at Lismore.

CLARENCE AND RICHMOND DISTRICT—Murwillumbah Division.

(Joshua Bray, Warden.)

No mining work is now being carried on in this district. In the early part of the year a few prospectors were out searching for gold, and a few leases were applied for, but nothing payable having been found all the leases have been abandoned.

CLARENCE AND RICHMOND DISTRICT—Casino Division.

(J. J. Campbell, Mining Registrar.)

There is no actual mining going on in this district. There are some few prospectors out, but with little success.

CLARENCE AND RICHMOND DISTRICT—Grafton Division.

(William Clarke, Mining Registrar.)

During the year several parties have been prospecting for coal and shale. Mineral claims were marked off at Coaldale, the Orara, and Chatsworth, and a good deal of searching was done, but, as yet, the samples found appear to be of too recent formation, although they looked well, and some of them burned freely.

Several

Several mineral leases for plumbago were applied for at Buchanan's Head, about 10 miles south of Yamba. The leases have not yet been granted, and work is at a standstill. I believe all these leases will be abandoned. A lease was taken up at Yarrkalkiarra for copper, and I hear that some good ore was found.

Two applications for gold-mining leases were lodged for old and abandoned ground at Chambigne. A few tons of quartz were raised and sent to Sydney to be treated, in the hope of being able to float a Company.

I issued 109 miners' rights and 84 mineral licenses, and received 2 applications for gold-mining leases and 7 for mineral leases. A number of the miners' rights were issued to persons working or interested in other divisions.

ALBERT DISTRICT—Milparinka Division.

(C. De Boos, Warden.)

The year 1888 commenced under the most favourable auspices for this district. Work was going on energetically at the several digging localities, and the miners, satisfied with the result of their labours, were working with that steadiness that showed them to be contented with the prospects before them. A copious rainfall of about 2 inches took place in the early part of January at Milparinka and Tibbooburra, still further gladdening men's hearts, giving them fresh encouragement, and leading to a universal anticipation that we were entering upon a season of general prosperity ; but the rainfall of January was the first, the last, and the only fall of the year, for the few casual showers, if such they may be called, which fell at long intervals, gave no appreciable quantity of water. Mount Browne, which unfortunately missed the January rain, has not had more than ½ inch of rain during 1888, whilst Milparinka has averaged about 2 inches, and Tibbooburra a trifle more. The natural consequence of this can very readily be understood. The population of the field, which had appreciably increased, and promised to go on increasing, was left without resource, and as the months travelled on with the same steely sky, the same parching heat, and the same stern unbroken outlook of drought, gradually betook themselves to other occupations. Tibbooburra, which from the peculiar character of the work carried on there, suffered more than any of the other fields, and was soon partially deserted. By way of showing the progress that had been made and the hopeful outlook of the beginning of the year, I may mention that up to the end of February the number of miners' rights issued for the district were within half a dozen of the total number issued in 1887. As far as Tibbooburra is concerned, the field may be said to have been virtually unproductive since the end of February, when the puddling-water gave out. The small quantities of gold that have come in from dry blowing, or from panning with soakage water, are so inconsiderable as to be hardly worth taking into account, and were certainly not sufficient to provide "tucker" for the worker.

When the water gave out at Tibbooburra a good many miners turned their attention to the reefs at the Warratta range, and House and Laws having struck a very promising-looking leader in the Elizabeth reef, took up an extended claim on that reef, and commenced working it. Others, led on by the prospects obtained, followed suit, and then came several applications for leases. An interest in the locality was awakened, and party after party settled down upon the reefs, until now there are something like 60 miners on the spot, with a population of about 120. A public-house and two boarding-houses have been opened, and altogether there seems every prospect that a settled community will be fixed upon the spot. No very large amount of work has been done as yet, most of the men awaiting the result of arrangements which are now being made for the effective working of the Milparinka Gold-mining Company's lease.

The history of this lease shows that its working has been very much mismanaged from the beginning. Money has been recklessly squandered; useless work has been performed at an enormous expense; and really useful work has been so executed as to be virtually useless. No wonder then that the Adelaide Board of Directors gave up the property with a sigh of relief. Then the property fell into the hands of the Milparinka Gold-mining Company, in whose favour it may be said that the purchase was only made to prevent the crushing plant and machinery from being taken out of the district. Still the Company made a praiseworthy effort to put things at the mine on a proper footing. An engineer was engaged, and was some three months at work putting the machinery, especially the pumping gear, in order. When this was done a manager was selected in Melbourne, at a handsome salary, for the purpose of setting the mine at work on a proper basis; but unfortunately this manager turned out to be not exactly the "man for Galway." He was not in any way up to his work, nor fitted for the position he had undertaken. After pottering about aimlessly, making a hopeless attempt to reset the tables of the machine, and wasting no small amount of the Company's funds, his services had to be dispensed with. In the meantime a gentleman who is largely interested in mining ventures in the Colony heard of these reefs, and as the best means of satisfying himself came on to the ground and closely inspected the Company's property. He was so far satisfied with this inspection, and with the manifest prospects of the mine, that he entered into a treaty for the purchase of the property, and has now bought the Company's lease, together with two areas adjoining, for which application for lease has been put in. No sooner was this done than two really competent officers were engaged in Victoria and sent up to the reefs—a manager who has had the best experience of the sister colony, and an engineer fully up to the work he has undertaken. These, with the necessary men to assist them, are now hard at work in pumping out the shaft, relaying the tables of the batteries, and generally getting the mine in order for systematic work. The tables are nearly completed, and as soon as the working shaft is pumped clear of water samples of stone will be taken from the different levels and proved by the only unfailing trial—the stampers. From the assays of several samples of stone taken from the shaft, as well as from assays of the tailings from recent crushings, the present owner of the mine anticipates a brilliant success for his venture. These anticipations are shared in by others, for as many as sixteen leases have been taken up on the Warratta range, and though some of these have doubtless been applied for for speculative purposes, still, perhaps, about half of this number may be worked legitimately when the leases are issued. The lessees will of course be strictly looked after in accordance with the practice of the Department, and if there is any hanging on such leases as are not fully worked will be reported and cancelled.

Coming now to Mount Browne, the miners here have had very hard times to go through during the past year. As I have previously stated, the rainfall for the year amounted to only about half an inch; in fact, there has been nothing like a good shower since September, 1887. Thus there has been absolutely

absolutely no surface water for washing. The underground water that was struck in the Golden Lake shaft has, however, been the great standby for the miners. For months this shaft supplied the whole of the water for household use, for watering stock, and for keeping one puddling machine going. To this machine was brought dirt from claims whose wash was rich enough to bear the cost of carting. Then came the water from the All Nations claim, and afterwards the large supply from the shafts of the Mount Browne Prospecting Company. The All Nations, the Hit or Miss, and the Sons of Freedom were all handy to the water, and could puddle almost at the mouth of their shafts; but when the Company knocked off baling they were unable to keep the water down in their shafts, and so could raise no wash. They have, however, continued to raise water, which they use for puddling for other claims. Some of the richer stuff from the deep ground at Stringer's Gully and the One-mile has thus been puddled here, and so kept the yield of gold from absolutely falling off to nothing. As regards the surfacing, the men have had to depend entirely upon dry-blowing, and leaving the balance of the dirt to be washed when the lucky time shall come which will bring them rain.

The Mount Browne Prospecting Company have got their shaft down to a depth of 241 feet. Having reached this they were compelled to knock off, as the water could not be kept down by baling, though work was carried on night and day with three relays of horses at the whim. It was evident that nothing but a powerful pump could keep the water down, and the Company lost no time in procuring one. Their manager was at once sent to Victoria to select the necessary pump and engine, and he did so without loss of time; but owing to the drought teams cannot travel on the road, and as yet only a portion of the machinery is on the ground, the remainder being stuck up between here and Silverton. Still everything that can be done has been done in the way of preparation for the erection of the machinery on its arrival, so that when it reaches Mount Browne very little more will have to be done than to put it in place. It is to be hoped that early in the year the pump will be at work, the bottom reached, and it will be known whether the venture is to be a success or not. The miners generally seem to be very sanguine about the matter. They look upon the prospects as most encouraging, as well from the indications given by the depth of the Prospecting Company's shaft, as from the actual returns given by the adjoining shafts of the All Nations and the Hit or Miss. As proof of this, five 25-acre leases have been applied for in immediate contiguity to the Company's reserve. Two of these are by large companies of working miners, who, if the prospect of the Mount Browne Company is successful, have determined to open shafts on their own account.

And here arises a very serious question. The residents at Mount Browne have been during the whole of the year entirely dependent upon the underground water for their supply for domestic use, as well as for the watering of their cattle and horses. Now, if one, or possibly two, Companies have at work pumps so powerful as to keep down the water so as to allow their claims to be workable, there will be no water for the public. The water being their own private property, the Companies will as much as possible conserve it for their own use when it comes to the surface—for their engine and for puddling. If they have no more than sufficient for these purposes, it is hardly likely that they will let the public have what they want for themselves to make their venture remunerative. The shallower shafts now used will be drained dry, and then comes the question, how is household water to be obtained? It may be said probably that a well could be sunk in some other locality beyond the reach of the draining action of the Company's pumps. But who is to do it? There is nothing in the Mining Board Regulations to provide for the taking up of a well or water-shaft. Such an idea was never mooted before the Mining Board. Their whole idea was to get rid of underground water, and the Regulations go so far as to make a man liable for a share of the cost of pumping his shaft dry. Thus a miner sinking a shaft for water purposes can get no protection for it. Such a field as Mount Browne, so different from any other in the Colony, was certainly never dreamt of in the Mining Board philosophy. If a water reserve be proclaimed it would be open to all, and no person would have a right to sink a well and claim the monopoly of the water. And even if permits were given by the Government endless disputes would arise; and, with the well-known wrong-headedness of miners, the moment the reserve was made there would be a general concurrence of opinion that there on that spot and below that reserve was to be found the best run of gold in the district. The question is one that will arise, though perhaps not immediately; but it is one that ought to be met in some shape, if the Mount Browne Company, being successful, should get into a heavy swing of work.

The quantity of gold actually purchased at Tibbooburra during the year was 664 oz. 9 dwt., 6 gr., fully five-sixths of which came to hand by the end of February. To this may be added about 100 oz., the estimated quantity taken down by private hands, making in all 764 oz. for the year, a marked falling off from last year, and showing how seriously the drought has effected us.

In Milparinka, the quantity of gold actually purchased was 1,020 oz., about nine-tenths of which came from Mount Browne and the rest from Good Friday and Warratta. In addition, 70 oz. are known to have gone down privately, and probably 30 oz. in addition, making 1,120 oz. for the year. There have been some nice nuggets found during the year,—one of 12 oz. 1 dwt. found in Murray's claim at the back of the township; one of 28 oz. 17 dwt. found in Main's claim, about 200 yards from the township; one of 9 oz. in the Hard Up claim; and several very nice pieces weighing from 1 oz. to 4 oz. There is a little history connected with the 12-oz. nugget. The man who found it tried to conceal it from his mate. However, the matter came to light, and the offender was apprehended, and, under section 89 of the Criminal Law Amendment Act, was sent to gaol for four months.

ALBERT DISTRICT—Silverton and Broken Hill Divisions.

(W. Brown, Warden.)

For the information of the Hon. the Minister for Mines, I now have the honor to submit the following report on the Silverton and Broken Hill Divisions of the Albert Mining District for the year 1888.

During the year just ended only about 3½ inches of rain fell in the district, nearly 2 inches of which fell early in February, consequently this has been without exception the driest season ever known since records have been kept, extending over several years. By reason of this continued drought nearly all prospecting over the field has been discontinued, suspension of the labour covenants having been granted on many leases, there being no water in their locality for domestic purposes.

As regards the silver-mining industry, the Broken Hill line of country still maintains the premier position, while the Thackaringa mines have been steadily developed, and in some cases with good results.

The principal mines on the Broken Hill lode are now connected by rail with ports Adelaide and Pirie, and as a considerable reduction has lately been made in the freight to these ports for low-grade ores, large consignments are daily being sent from Block 14, The Junction, Broken Hill South and North.

During the past year the Broken Hill Proprietary Company has, besides constructing the railway from the town terminus to the mine, which work necessitated the erection of an expensive bridge, paid dividends amounting to about £350,000, and are now employing about 1,600 hands. The total number of miners employed on the field I should estimate at about 4,000, and the prospects of the field in general, and the Broken Hill line in particular, look more promising than ever. A very large amount of work has been done on the British Blocks, Block 14, South Broken Hill, Junction, and the Central mines during the year, and I think that the work of development has proved that these mines are worth double the money they were twelve months ago.

Through the kindness of Mr. Mooney, the Sub-Collector of Customs, I am enabled to supply the following figures, showing the quantities and declared value of minerals and ores exported from this district during the past year

	Tons	cwt.	qr.	lb.	£	s.	d.
Argentiferous lead	17,247	12	0	25	863,467	0	0
Silver ore	10,756	2	1	18	136,800	0	0
Tin ore and oxide	55	16	0	12	1,095	0	0
Copper ore	24	15	1	0	304	0	0
Auriferous quartz	9	17	1	0	182	0	0
					£1,001,848	0	0

The above figures show the exports of minerals to be nearly double that of the year 1887, and I have no hesitation in saying the exports for the present year, with a fairly wet season, will greatly exceed in value that of the year just passed.

The amount of work done and revenue received at the Warden's offices at Silverton and Broken Hill can be gathered from the following figures.

	Silverton.	Broken Hill.
Mineral leases applications received	1,384	42
Gold-mining applications	12	.....
Mineral licenses issued	328	304
Miners' rights	89	893
Business licenses	388	4,313
Revenue received	£19,807 5 0	£4,445 15 0
Deed fees and stamp duty	717 10 0	.....
	£20,524 15 0	
	4,445 15 0	
	£24,970 10 0	

In addition to the above total, £1,635 was remitted by the Mining Registrar at Broken Hill to the Treasury for survey fees on mining tenements. The value of machinery now at work and in course of construction on this field cannot be less than £150,000.

The depth of shafts, length of levels, &c., will be found in the reports herewith, supplied by the managers of some of the principal mines. All these reports have not yet been received by me, but I will forward them to you as they arrive.

In conclusion, I may add that since the commencement of this year about 2 inches of rain has fallen generally over the district. This will enable work to be again proceeded with on mines where operations had been suspended for want of water.

ALBERT DISTRICT—Wilcannia Division.

(G. H. Gower, Warden.)

I do myself the honor to report that prospecting for gold and silver has been considerably retarded in this district from the prolonged drought, but am informed that many men are now prospecting for gold, especially since the late rains, with sanguine hopes of success on the Mount Browne road, between Milparinka and Wilcannia. I must refer you to the Mining Registrar's report for further information on the mining industry of this district, as I have had no opportunity of visiting and inspecting any of the localities where prospecting operations are being carried on.

ALBERT DISTRICT—Wilcannia Division.

(A. W. Pratt, Mining Registrar and Warden's Clerk.)

I do myself the honor to report for the information of the Minister with respect to the Wilcannia Division of the Albert Gold-field, as follows:—

The mining industry in this district has considerably improved during the past year, the returns of collections at the Warden's office, Wilcannia, showing an improvement in comparison with those of the year 1887, the collections for 1887 amounting to £17 15s. only, and for 1888, £112 5s., showing an increase of £94 10s.

In May, 1888, a find of silver was reported from Kallara Station, but although several mineral licenses were taken out and a good deal of the country prospected, nothing permanent was done towards the development of the country, the scarcity of water prohibiting work on an extensive scale.

Other discoveries both of silver and gold have been reported, and a specimen of kerosene shale was brought in from the Mount Browne District.

A week or two ago a fairly good specimen of gold-bearing quartz was brought into town. It was found only 30 miles from Wilcannia. The prospectors report that there is plenty more in sight, and the stone has been forwarded to Sydney for assay.

I may conclude my report by saying that in the opinion of some of the oldest practical miners on the field the want of water is the only bar to the district's becoming a most extensive mineral-producing country, and from the reports of prospectors considerable gold discoveries may be looked for as soon as the state of the country permits freedom of travel.

COBAR

COBAR DISTRICT.—Cobar Division.

(*Mr. T. C. K. McKell, P.M., Warden.*)

I have to forward herewith my annual report of the Cobar Mining Division for the year 1888.

Gold.

In my last report I informed you that a decided improvement had taken place in the gold-mining industry in this district through the recent discovery of gold within close proximity to the town, and it is now gratifying to know that the impetus then given has not in the least abated, but during the year 391 acres were applied for by 42 applicants. The excessive and continuous dry weather has to a great extent retarded the proper development of the field, but nevertheless large sums of money have been expended and a considerable quantity of work performed in various claims.

In several instances suspension of work had to be granted in consequence of no water being available.

Four leases at Fort Bourke Hill, viz., Houghton's 10 acres, Price's 5 acres, Chesney's 5 acres, and Fulton's 5 acres, were recently purchased by a Melbourne syndicate and floated in Melbourne into 100,000 shares, in the name of the Chesney-Cobar Gold-mining Company (No liability). This Company also purchased 100 acres of freehold land adjoining, upon which it is the intention to erect a large crushing plant as soon as the 40,000 cubic-yard tank now in course of construction is completed.

Some 22½ tons of quartz taken promiscuously from the Company's claims were forwarded to Melbourne for treatment, the result being 47 oz. 2½ dwt. of gold, valued at £4 2s. per oz. A very able and experienced manager has arrived from Sandhurst to take charge, and in a few months I hope to be able to furnish you with some practical results of the first local crushing from this and other claims.

Other leaseholders along this line of reef, and at the Peak, have had encouraging prospects, making them very sanguine of success, and in two or three instances small Companies have been formed by Sydney speculators to thoroughly prospect the land; the great drawback at present being the want of water and machinery.

Mount Billagoe.—The Mount Billagoe Prospecting Company, which was formed into 100 shares of £5 each some eighteen months ago, increased the shares to 200 at £5 each, and registered the Company here under the Limited Liability Act, but shortly afterwards the Company was wound up for the purpose of increasing the shares to 5,000, which has since been done, and registered in Melbourne under the name of the Mount Billagoe Gold and Silver-mining Company.

During the past twelve months good prospecting has been done, and from some private assays as high as 32 oz. of gold and 946 oz. of silver have been obtained. Some 30 cwt. of quartz were forwarded to Ballarat and 31 cwt. to Sandhurst, for treatment, with the following results:—Ballarat—gold, 6 oz. 850/1,000; silver, 46 oz. 47/1,000; Sandhurst—gold, 11 oz. 876/1,000; silver, 112 oz. 76/1,000. Total value, £105 8s. 5d.

I might mention that, in consequence of the rich assays, some of the original shares were sold at the high sum of £400 each. A thoroughly practical manager has arrived from Melbourne to take charge of and to open up and thoroughly test the value of the mine. The principal hindrance to the development of this valuable property appears to be the want of proper appliances for testing the ore, but no doubt that that will be shortly overcome when operations are in full working order under the new regime.

A township, known as "Billagoe," has been formed; some eighty allotments were surveyed, twenty-seven of which have been registered as business sites, and an hotel has been opened for the accommodation of the travelling public.

A few prospectors were in search of alluvial, but were unsuccessful.

Silver.

Through the splend'd assays obtained from the Mount Billagoe claim, a great improvement at once took place in this industry; 1,726 acres were applied for by 195 applicants, as against 100 acres by three applicants last year. These leases are not confined to the town of Cobar, but are in various localities in the district, the principal number being at Mount Billagoe.

The only lease worked near the town is 20 acres at Fort Bourke Hill, known as "Griffin's lease." A considerable amount of money has been expended in developing this claim. A tunnel has been driven into the hill 315 feet with a view of cutting the lode, but without any practical results as regards finding mineral. This land, properly speaking, is a quartz claim, and is on the same line of reef as other gold leases; and I am informed that as only slight traces of silver have been found, and fair prospects of gold, it is the intention to convert the holding into a gold lease.

In some two or three mineral claims at Billagoe good work has been done, some shafts having been sunk over 100 feet through solid country. Most of the land applied for near Nymagee has not proved so satisfactory as at first anticipated, therefore work has been suspended.

Machinery.

In a few months there will be two crushing plants in full working order. The Chesney Cobar Company's and the Cobar Quartz-crushing Company's tanks are now in course of construction, and the capital has been fully subscribed for the machinery.

Copper.

Nymagee mine has done good work during the year. 400 men are employed, and 12,600 tons of ore have been raised, realizing 1,300 tons of copper, valued at £93,276. This mine has for a considerable time past paid dividends.

Hermitage Plains.—Work had to be suspended in this mine through scarcity of water. A large quantity of ore is to grass, and the proprietors are now sinking a tank and erecting a small furnace to enable them to further develop the mine and smelt the ore.

Cobar Mine.—Through the returns of this mine not being completed, I am unable to give the out-put for the year. There are 400 men employed, and extensive alterations and improvements have been made in the working plant. This mine has had a great deal to contend against in procuring fuel. For a radius of about 10 miles the firewood has almost become exhausted, and the Company have been compelled to remove and relay part of their tramline to enable them to overcome the difficulty.

In

In the month of October a trial was made of about 12 tons of Dubbo coal in the reverberatory furnaces, blacksmith's shop, and locomotives, the result being highly satisfactory; and, if the long-promised railway to Cobar were completed the difficulty in procuring fuel would soon be overcome, and this mine would then be able to carry on the works more extensively.

C.S.A.—This mine is being worked by the Great Cobar Company. Two new shafts have been put down from 100 feet to 120 feet, and the drives extended in the old shaft, but no good results have yet been obtained.

There were only 6 in. of rain during the year.

The business transacted in this office during the year was exceptionally heavy, a large number of cases having occupied my attention in the Warden's Court:—miners' rights issued, 302; mineral licenses issued, 107; business licenses issued, 92; gold lease appplications issued, 42; mineral lease applications issued, 195; mining tenements issued, 7; water-rights issued, 19; business sites issued, 27; revenue received, £3,334 2s.

COBAR DISTRICT—Cobar Division.

(J. V. Foley, Mining Registrar.)

I HAVE the honor to transmit my annual report of the mining industry in this division for the year ending 31 December, 1888. Forty-two applications were lodged for leases for gold-mining purposes, and 195 applications for mineral leases. The following business was also transacted in this office during the year:—Miners' rights, 302; mineral licenses, 107; business licenses, 92; mining tenements, 7; water-rights, 19; business sites, 27. These matters, in conjunction with a large number of cases which occupied the attention of the Warden in the Warden's Court, made the business of the year exceptionally heavy.

Since the Warden reported, 2 tons 18 cwt. of stone from the Mount Billagoe Gold and Silver-mining Company's claim were forwarded to the smelting works of the Australian Smelting and Refining Company (Limited), at Dry Creek, Adelaide, South Australia, to be tested, with the following result:—

Assay value per ton, 8 oz. gold, 121 oz. silver—					
The gold realized £4 per oz	...	...	...	£84	12 0
The silver realized 3/5$\frac{5}{16}$ per oz.	...	...	...	56	8 4
			Total ...	£141	0 4

The Great Cobar Copper Mine is giving very satisfactory results. There are 400 men employed on the mine, and horizontal engines, crushing rolls, stone-crackers, locomotives, furnaces, &c., of the value of £80,000, are being worked in developing the ore. 13,210 tons of ore have been raised during past twelve months. It has been all smelted on the mine, yielding 1,005 tons of copper, which is valued in Sydney at £60,300. The shaft is 566 feet in depth, and the lode varies from 2 to 50 feet in width.

COBAR DISTRICT—Hillston Division.

(D. G. McDougall, Mining Registrar.)

THE New Mount Hope Copper Mine and the Great Central Copper Mine at Mount Hope are being worked extensively. The Great Central Mine has now been at work eleven months, and 130 hands are employed. Up to the 8th instant 142 tons 8 cwt. of fine copper has been produced; the value of the plant being about £2,000.

The New Mount Hope Mine has now been working about twelve months, 110 hands are employed, and ore to the value of £4,800 has been raised. 1,187 tons of ore has been smelted, producing 137 tons of copper, of the value of £8,900; the value of the machinery is about £7,200.

COBAR DISTRICT—Nymagee Division.

(R. T. Garland, Mining Registrar.)

I HAVE the honor to submit my annual report for the Nymagee Division of the Cobar Mining District for the year 1888.

During this year I issued 30 miners' rights and 41 mineral licenses. Three leases were applied for the latter end of the year—one for a gold-mining lease of 25 acres, and two for mineral leases of 40 acres each.

Gold.

There have been a good many prospecting for gold; but the serious drought and want of water have greatly interfered with their progress.

Copper.

The Nymagee Copper-mining Company (Limited) during the year employed 400 men. The quantity of ore raised was 12,800 tons, it having been smelted at the mine, yielding 1,297 tons of fine copper, the value of which was £91,000.

The depth of the shaft is 704 feet, the depth of deepest level being 618 feet; the width of lode is from 8 to 12 feet and 8 to 20 feet, dip or underlay south-east and north-west, and the bearing or strike 10 degrees east of south.

The plant at the mine is valued at £82,000, and consists of one 40 horse-power horizontal winding engine, and one 35 horse-power horizontal winding engine, two Tangye pumps, and one 11 horse-power Root's blower, a stone-breaker and crusher.

INSPECTOR OF MINES' REPORT.

In submitting my Annual Report for the year 1888, I have the honor to inform you that the following is a list of the accidents reported on by the Wardens, Coroners, or Mining Registrars, as having occurred during the year in the Metallic Mines of New South Wales:—

No. of Accidents.	Date.	Name of Mine or Company.	Locality.	Persons Killed	Persons seriously injured.	Occupation.	Cause of death or injury.	Fatal.						Non-fatal.	
								Fall of earth.	Through fall of slab down shaft.	Exploded shot.	Falling down shaft.	Falling down workings.	Falling out of rope down shaft.	Explosion of shot.	Fall of earth.
1	19 Mar.	No name	Temora	Chas. Donald..	.....	Miner ..	Killed by fall of earth	1	..	..	..	..	..	.	..
2	16 Apl.	,, ...	Upper Temora	John Meagher ..	.....	,, ..	Killed by falling down shaft	..	..	..	1	..	..	..	..
3	23 May	Great Central Copper Mine.	Mount Hope	Edward Caddy	.....	,, ..	Killed by explosion of shot	..	..	1	..	..	..	..	..
4	23 ,,	Great Central Copper Mine.	,,	.....	Harry Hodge	,, ..	Injured by explosion of shot	..	..	..	..	..	..	1	..
5	13 June	Alpha Silver Mine	Broken Hill..	James Slaney..	.....	,, ..	Killed by explosion of shot	..	..	1	..	..	..	..	..
6	13 ,,	,, ,,	,,	.....	W. Moore ..	,, ..	Injured by explosion of shot	..	..	..	..	..	..	1	..
7	14 ,,	Webb's Silver Mine	Emmaville ..	Robert Baulks.	.....	,, ..	Killed by explosion of shot	..	..	1	..	..	..	..	..
8	15 ,,	Bolitha Mine....	Tingha.....	....	Joseph Hay ..	,, ..	Injured by explosion of shot	..	..	..	..	..	..	1	..
9	28 ,,	Vanderbilt Silver Mines.	Captain's Flat	....	Michael Hart	,, ..	,, ,, ..	..	..	..	..	..	..	1	..
10	7 Aug.	Baker's Creek North Mine.	Hillgrove....	.....	William Luff	,, ..	,, ,, ..	..	..	..	..	..	..	1	..
11	7 ,,	Baker's Creek North Mine.	,,	.....	Arthur Cullen	,, ..	,, ,, ..	..	..	..	..	..	..	1	..
12	7 Sep.	Broken Hill Proprietary Mine.	Broken Hill..	Thomas Clynch	.....	,, ..	Killed by fall of earth.....	1	..	..	..	..	..	..	..
13	26 ,,	Robinson Mine ..	Captain's Flat	.....	Patrick Walsh	,, ..	Injured by fall of earth....	..	..	..	..	..	..	..	1
14	26 ,,	,, ,, ..	,,	.....	Stephen Walsh	,, ..	,, ,, ...	..	..	..	..	..	..	..	1
15	12 Oct.	Pioneer Mine	Thakaringa..	.....	Martin Reder	,, ..	,, ,, ...	..	..	..	..	..	..	..	1
16	5 Nov.	No name	Stony Creek, Tingha.	Wm. Mackenzie	.....	,, ..	Killed by fall of earth	1	..	..	..	..	..	..	..
17	14 ,,	White Lead Silver Mine.	Broken Hill..	Myles Byrne ..	.....	,, ..	Killed falling out of rope down shaft.	..	..	..	..	..	1	..	..
18	21 ,,	Silver Mine.....	Captain's Flat	Thomas Cook..	.....	,, ..	Killed through slab falling on his head.	..	1	..	..	..	..	..	..
19	26 ,,	Broken Hill Proprietary Mine.	Broken Hill ..	James Rolling..	.....	,, ..	Killed by fall of earth.....	1	..	..	..	..	..	..	..
20	30 ,,	Broken Hill South Mine.	,,	F. Lorenson ..	.....	,, ..	Killed falling down shaft ..	..	..	..	1	..	..	..	..
21	31 Dec.	Broken Hill Proprietary Mine.	,,	Edward Cosgrove	.....	,, ..	Killed falling down some workings in mine.	..	..	..	..	1	..	..	..
								4	1	3	2	1	1	6	3
												21			

ABSTRACT.

Killed :— 8 Silver.
2 Gold, A.
1 Copper.
1 Tin.
12

Injured :— 5 Silver.
2 Gold, quartz.
1 Copper.
1 Tin.
9

Total, 21.

NUMBER

NUMBER of Men employed in the Metallic Mines of New South Wales, and Value of Machinery, at 31st December, 1888.

Mining District.	Alluvial Gold.		Quartz Gold.	Silver.	Copper.	Tin.		Bismuth.	Other.	Total.	Value of Machinery.
	Europeans.	Chinese				Europeans.	Chinese.				
											£ s. d.
Peel and Uralla	379	31	300	.....	.....	328	988	...	10	2,036	16,650 0 0
Mudgee	765	107	82	14	64	.....	.....	...	50	1,082	23,000 0 0
Bathurst	444	57	911	400	100	.....	.....	...	352	2,264	122,585 0 0
Lachlan	364	...	581	4	.....	6	.....	...	25	980	74,070 0 0
Tumut and Adelong	412	36	685	30	.....	8	.....	...	602	1,773	63,850 0 0
Southern	649	183	392	14	40	10	.....	...	82	1,370	62,840 0 0
Clarence and Richmond	41	...	.....	112	.....	.....	.....	...	22	175	5,017 0 0
New England	315	4	359	160	.....	539	1,280	30	60	2,747	19,800 0 0
Tambaroora and Turon	280	180	485	.....	.....	.....	.....	...	.....	945	35,100 0 0
Albert	99	12	.....	2,252	.. ...	340	.....	...	.....	2,703	145,150 19 7
Hunter and Macleay	10	...	85	.....	.....	.....	.... .	...	20	115	6,465 0 0
Cobar	.....	...	30	.....	1,040	.....	.....	...	41	1,111	171,200 0 0
Total	3,758	610	3,910	2,986	1,214	1,231	2,268	30	1,264	17,301	745,727 19 7
Percentage killed	·053	..	.....	·268	·082	·081	.....	...	.....	·0693	.....
Percentage injured	.....	...	·051	·167	·082	·081	.....	...	.....	·0520	.. ..

Table No. 2 gives, in addition to the value of mining machinery, the number of persons employed and the percentage of persons killed or injured during the year in the metallic mines of New South Wales: Out of a total of 12 persons killed during the year, 8 lost their lives in silver-mining, 2 in gold-mining, 1 in copper-mining, and 1 in tin-mining. By the above it will be seen that the greatest number of persons who sustained fatal or non-fatal injuries were engaged in silver-mining, which is comparatively a new industry in New South Wales, and the majority of these fatal accidents occurred in the silver mines of the Barrier Ranges, and to persons most of whom were novices in mining, who, by their want of knowledge, were unable to lessen the danger by such precautionary measures as practical experience in mining alone can teach. I may here state that the regulations for inspection and regulation of mines, other than coal and shale mines, have been strictly enforced in all mines inspected by me throughout New South Wales.

Seldom have I had cause for complaint against any mining manager who understands his duty and values his reputation, as he knows that by keeping the mine under his charge in a secure state, and by using every reasonable caution for the prevention of accidents in his mine, he studies the interest of his employers as well as persons employed in his mine.

My inspection, as Inspector of Mines and member of the Prospecting Board, has extended during the year,—in the Southern Districts, as far as Kiandra (Snowy River), Cooma, Michalago, Queanbeyan, Captain's Flat, Goulburn, Mount Costigan, Tuena, and Young; in the Western Districts, to Dubbo, Wellington, Buckanbah, Parkes, Forbes, Orange, Grenfell, Mudgee, Sunny Corner, and Bathurst; in the Northern Districts, to Tamworth, Nundle, Walcha, Uralla, Hillgrove, Warm Corner, Armidale, Black Mountain, Glen Innes, and Vegetable Creek; in the extreme North-west, to Silverton, Broken Hill, Purnamoota, Palamaca, Wawkaroo, Euriowie, Milparinka, and Tibbooburra.

Prospecting Vote for Gold and other Minerals.

This vote has given a great stimulus to prospecting for minerals in New South Wales, although the anticipated direct results have so far not come up to expectations. The benefits accruing under the Prospecting Vote ought not to be solely judged by direct results, but the indirect benefits, such as the opening up of adjoining mines, and the impetus given to mining enterprise generally, should be taken into consideration. If this is done it will be found that the Prospecting Vote has done some permanent good.

It can, however, not be denied that the direct results of prospecting north-west of Parkes and Forbes, on the Melrose Plains, Carlyle, Yellow Mountains, and other places, have been disappointing. These districts were known to be auriferous, and were frequently quoted as favourable localities for the energetic and persevering prospector. Payable prospects of gold and platinum have often been obtained, but, after further prospecting, was found only to occur in small patches, and nothing of a permanent nature to open up a new gold-field. There is, however, still hope, and sufficient prospects that, if not an entirely new gold-field, payable leads are likely to be discovered on some of the older gold-fields by persons aided by the Prospecting Vote.

Quartz-mining seems to have fared better, as instances have been reported where Government-aided prospectors have obtained payable results.

Exception has been taken by some persons as to the mode of distributing the vote and the constitution of the Prospecting Board. It has been suggested that the money voted for prospecting purposes should be placed in the hands of local men for distribution in their particular districts. Such a system would considerably lessen the work, anxiety, and responsibility of the present members of the Prospecting Board, who have other important complicated official duties to perform, and which duties have to be carried on personally by them, whether they travel as a Prospecting Board or not. I am one of two members of the Board who averaged during a six weeks' trip somewhat over thirteen hours per day in travelling, inspecting, and reporting. Hence it will be seen that it is entirely against the personal interest of the present Board to uphold the adopted system. Nevertheless, it is to the public interest that personal inconvenience should not be considered in public matters, and that as long as public money is voted for prospecting purposes the recommendation for the distribution of such moneys should be made by a Board or persons who have practical as well as scientific knowledge of everything in connection with or appertaining to the development of mining in all its branches.

The present system, although giving a great deal of extra work to the members of the Prospecting Board, is, considering all circumstances, the best that could be adopted for the public interest, as I could cite numerous cases which have come under my notice in favour of the present system.

For instance, several parties of miners had made application to the Honorable the Minister for Mines for aid out of this year's Prospecting Vote to develop, as they stated, the quartz reefs at a place known as Boro Creek, about equal distance (being about thirty miles) from Uralla, Armidale, and Walcha, in the New England District. Accompanied by Mr. Geological-Surveyor Anderson, we inspected the place, and found about thirty men at work. Some of these men had been there for six months. Glowing accounts were given of the place by the local inhabitants of Armidale and Uralla, and we were informed that as much as £300 had been refused for a fourth interest in a four-man's claim. I proceeded down shaft after shaft, and informed the miners and applicants for aid that we could not recommend any aid being granted them, as they had no quartz reefs, but were working on beds of quartzites containing no gold, and were only wasting their time and money. The applicants appeared surprised and disappointed at the results of our visit. They have since forwarded several parcels of this quartzite to different localities in New South Wales and Victoria, results being nil, and Boro Creek is now deserted.

At the Black Mountain a party of coal-miners had applied for aid. We inspected the locality, and found applicants for aid driving into a basaltic hill through a bed of lignite in the full belief that they would discover a good seam of coal. Recommendation for aid was also refused in this instance. As stated before, I could have cited numerous instances similar to the above where local people wasted large sums of moneys in their district for want of practical and scientific knowledge in mining matters, which leaves no doubt that the present system is the best safeguard for the public interest.

Gold.

No new discoveries of any great importance have been made during the year in the alluvial working, and even sluicing had to be discontinued on account of the protracted drought. Quartz-mining is, however, steadily progressing, and in some districts were quartz-mining had been dormant for years fresh starts have been made; notable of which is Hillgrove, in the Armidale District. Here, for a number of years, the Eleanora Mine was the principal payable mine near Hillgrove; but during the year several rich quartz reefs have been opened, such as the Baker's Creek Mine, the Sun Light Mine, and others. Thousands of ounces of gold have been obtained from Baker's Creek Mine, and large dividends have been paid. There is now a flourishing township at Hillgrove, with Warden's and Police Court, Post and Telegraph Office, and Public School. Indications are not wanting which point to the belief that in the near future Hillgrove will become a very extensive auriferous quartz-reefing district; and that other discoveries of payable reefs will be made towards the Woollumlumbe and Warm Corner Falls, towards Kempsey. At Parkes quartz-reefing has now taken the place of alluvial mining, and has become a profitable permanent industry. A fresh start has also been made in the Grenfell District, where years ago the quartz reefs yielded rich returns for the fortunate shareholders; but through various causes the Grenfell reefs were nearly one and all abandoned. They have been reoccupied, and, if systematically worked, may again give payable returns. Fresh starts have also been made in the Sofala, Sunny Corner, Hargraves, Mudgee, and other districts.

Silver.

The silver-mining industry has now spread to every mining district in New South Wales, but the most extensive and richest silver deposits are situated on the Barrier Ranges, in the extreme north-western parts of this Colony. As early as 1886 galena ore containing silver was discovered at Thackaringa and Umberumberka, but with the exception of a few tons of ore having been forwarded to Europe for treatment, and of which no satisfactory results were obtained, the discovery was allowed to remain undisturbed until the year 1883, when a rush set in, and large areas for silver-mining purposes were taken up.

up. Since that time discoveries of high-quality silver ores have been made at Broken Hill, Pinnacles, Purnamoota, and other parts now known as the Silverton District. In fact, these argentiferous deposits have been discovered to extend for a distance of about 100 miles from Thackaringa in a north-westerly direction, and several miles in width, but the most extensive and richest ore deposit so far discovered is in the now famous Broken Hill Proprietary Mine, at Broken Hill.

This mine, of which Mr. W. H. Patton is the general manager, and Mr. William Harper the mining manager, is at present the most extensive and richest silver mine in Australia. The ore treated by this Company on their mine during the year is 94,125 tons, the bullion obtained therefrom 16,779 tons, yielding 3,924,192 ounces of silver and 16,658 tons of lead, of a gross value of £928,877 5s. The Broken Hill Proprietary Company consists of 16,000 shares of £20 each, and the dividends paid during the year amounted to £22 per every £20 share, or £344,000 for the year. The total dividends for the three and a half years since the Company has been in existence reach, up to the 30th November last, to the large sum of £568,000.

During the last six months, ending the 30th November, 55,846 gross tons of ore were extracted from the mine, equal to 52,896 net tons, which were treated at the smelters, yielding 9,453 tons of lead and 2,273,175 ounces of silver, as the output from 52,896 net tons of ore, or at an average of 17·7 per cent. of lead, and 42·9 ounces of silver per net ton of ore. This ore was raised and put into the mine dumps at a cost of 18s. 9·65d. per ton, as against 41,340 gross tons at an average cost of 19s. 11·97d. per ton during the previous six months.

The cost of smelting the ore and delivering the bullion at the truck of the Broken Hill tramway during the last six months has been at the rate of £1 15s. 6d. per ton, the slight increase being caused by the additional amount of flux required to treat the siliceous ores.

Mr. W. H. Patton, the general manager, has made great improvement in the mine and machinery both above and below ground. Patterson shaft has been equipped with a compound condensing pumping engine, having cylinders 16½ inches by 60 inches, and 26 inches by 60 inches, geared four to one, to a double line of 9-inch by 7-inch plunger pumps, and is of sufficient power to raise 700,000 gallons of water per day from a depth of 1,500 feet. Also with a double cylinder hoisting engine 18 inches by 36 inches, capable of hoisting from same depth, and is intended for the main hoisting and pumping engine for Blocks 12 and 13.

M'Culloch's shaft was down 382 feet, and at the completion of the pumping gear it was intended to sink it to a greater depth. This shaft is equipped with safety-cages—if not entirely of Mr. Patton's invention, they were certainly greatly improved by him and the latter gentleman informed me that he intended to fix safety-cages on all the principal shafts on the mine, so as to enable him to have the employés lowered and raised in the shafts to and from the different levels, instead of having his men tired out by climbing the ladders as at present.

Jamieson's shaft was equipped with a new pumping plant during the year, which worked very smoothly, and supplied the smelter with the necessary water. This shaft had nearly reached the depth of 316 feet, and has mainly been kept sinking to keep up the water supply.

There are also Rapp's, Broadribb's, and Knox's shaft, and No. 1 and No. 2 shafts on Block 11.

No. 1 shaft on Block 11 is situated 200 feet from the southerly boundary line, and is a large 3-compartment shaft sunk to a depth of 250 feet. At the depth of 160 feet siliceous iron ore was struck of a payable nature, and high-grade lead ore was sunk through, continuing to bottom of shaft. This discovery is of utmost importance, and adds largely to the value of the mine, more especially so as the surface indications at the site of shaft were not encouraging. This, in my opinion, is due to the fact that near No. 1 shaft on Block 10 the lode faulted, and after development the cap of the lode will be found easterly of the shaft. This fault can be traced on the surface through Block 10 into Block 11, and before the southern boundary of Block 11 is reached another fault or heave to the east occurs, leaving in a southerly direction from Block 11 nothing but beds of quartzite.

The lode in the Broken Hill Proprietary mine has now been proven to exist along the length of the three 40-acre blocks, with from 10 to 100 feet in width, with an almost unlimited supply of ore; in fact, from M'Culloch's shaft on the 316-feet level in Block 14, and the British Blocks 15 and 16, at corresponding depths, ore has been cut of the same description and quality, proving the galena ores to extend for a considerable distance in a northerly direction. There is, however, a great probability that at a greater depth the lode will fault, but will again be discovered easterly, taking its old former dip or underlay.

As stated before, great improvements have been effected since the advent of Mr. W. H. Patton to the management of this famous mine. Amongst various other matters Mr. Patton has also introduced a new system of timbering, known as square timbering; although new in the mines in New South Wales, it has been in use in the principal mines in Germany, and from there was introduced into America, and again by Mr. Patton into New South Wales. In countries were it has been made use of it is considered by mining authorities a safe and economical plan of timbering and securing extensive mine works.

No doubt this system of timbering appears dangerous, and is awkward to the miner who has only had practice in hard metallic mines; but the alluvial or even quartz miner ought to feel quite at home with it. In my opinion there is far more safety in square than in rough timbering; the only thing required is to be careful when putting in temporary sets, more especially so as the ore in all the upper levels of the Broken Hill Proprietary Mine is very friable, and may almost be taken for alluvial. Should swelling rock or side pressure be met with, such may be overcome by diagonal stays or the filling in of stuff obtained from cross-cutting or other refuse. Square timbering does away with the system, to use a miner's phrase, of kyhooting or fossicking, and promotes the exposing to view of larger masses of ore than is otherwise the case with ordinary timbering. Stopes are kept open, and room is thereby obtained for a large number of persons.

The new ore-dressing plant, which is a duplicate of ore-dressing machinery used at the Lake Superior and Annaconda Copper Mines in America, where it has proved to be economical and efficient, has been erected under the able supervision of Mr. Holly, who has had large experience in America, and this plant was successfully started by Mr. Holly before the end of the year, and with excellent results.

There is still other machinery, such as water-condensers, smelting works, sawmills, tramway, &c., on the details of which a large book could be written. Suffice it to say that the smelting works are under the immediate management of Mr. H. H. Schlapp—a capable, energetic, persevering, and successful metallurgist. Every

Every reasonable precaution is taken and everything possible is done in thoroughly ventilating and securing the mine, &c., by Mr. Patton, the general manager, Mr. William Harper, mining manager, and Messrs. Thomas and Pearse, the assistant mining managers, for the prevention of accidents to persons employed in or about the mine.

The Broken Hill Proprietary Company is to be congratulated in being so singularly fortunate in securing and retaining the services of such officers, men who thoroughly understand their respective work, and who do not try to avoid the full responsibilities appertaining thereto.

Broken Hill, Block 14, which is under the able management of Mr. Zibina Lane. There are several shafts on this mine, the main shaft being about 300 feet in depth. The ore so far obtained has contained less percentage of silver and lead than that met with in the Proprietary Mine; but I have no doubt whatever in the occurrence of rich galena and sulphite ores when greater depth is reached, and that in the near future the mine will become dividend-paying. The reason that the ore is of a lower percentage than that of the adjoining mine is owing to the characteristics of the ore deposits on the Barrier Ranges, the ores occurring in shoot or lenticular blocks, therefore the present workings may be between two different shoots. Heavy and extensive pumping machinery and concentrating plant similar to those at the Proprietary Mine have been erected. Everything in and about the mine is substantial, and Mr. Lane is not only complying with the regulation for the inspection and regulation of mines other than coal and shale mines, but he seems to leave no stone unturned to prevent accidents, which is a credit to himself and a great benefit to his employers.

The Broken Hill British Block is north of Block 14. This Company is more fortunate than that of Block 14, in as much that they have extensive deposits of high lead and galena ores; in some parts the lenticular bunches are as much as 90 feet in width. It is only a short matter of time when this Company will rank amongst the payable and dividend-paying silver mines of New South Wales. The pumping gear and concentrating plant is a *fac simile* to that of the Proprietary and Block 14 Mines. This mine is under the able management of Mr. Thomas Eyre, who for many years was manager of the Catherine Mine, Sandhurst, Bendigo, and so successfully managed the Sunny Corner Mine. Here, too, Mr. Eyre is doing everything possible for the prevention of accidents, and so far he has been singularly fortunate.

The abovenamed three mines are connected with the Silverton Tramline and South Australian Railway, so that the railway trucks can be loaded or emptied at the mouth of the shafts, whereby a great deal of labour and expense are saved.

A few hundred yards north of Block 15 of the British Blocks, and a little beyond their concentrating works, a fault occurs in the lode, and not a bend as generally appears on plans. This fault is westerly several hundred yards from the line of lode which is being worked in the British Blocks. On this part of the Broken Hill lode are the Junction and Broken Hill North Mines. The Junction Mine is being managed by Captain Jolly, formerly of the Nymagee Copper Mine, who has hardly had a fair chance to bring his undoubted ability, and practical knowledge to bear favourable results. The lenticular blocks in this mine are not as large as in the abovenamed mines; hence a great deal of dead or unprofitable work has necesarily to be carried on. The same may be said of the Broken Hill North Mine, which is under the management of Mr. Alfred Wilson.

Starting again from the southern boundary of the Proprietary Block 10, is situated Block 11, which is also under the management of Mr. W. H. Patton. Very probably part of the lode now sunk upon on Block 11 will also be obtained in Block 10, but I doubt very much whether this will be the case during the whole length of that block, as a bed of quartzite crosses the lode before the southern boundary of Block 10 is reached, which no doubt is connected with the faulting of the lode, as can be seen to the eastward in the Central Mine, and again still further east in the Broken Hill South Mine. The latter is managed by Mr. Richard Piper, who has a good reputation as mining manager, but whose ability and perseverance have so far been unsuccessful in making the South Broken Hill a payable mine. South of this are several mines, but I am afraid they will never be payable ones, as the lode seems completely split up after passing the Broken Hill south range. The Rock Well Paddock Mines were also inspected by me; so were the Pinnacles and Thackaringa Mines; at the latter place the Gipsy Girl and Pioneer are the principal. North of Broken Hill are several mines—the Victoria Cross, Bonanza, Alpha, Cosgrove, Round Hill, and others, which were all inspected by me. At the Round Hill a main shaft was sunk to, if possible, strike a payable lode at a greater depth. Captain W. H. Mathews, who has managed several mines with great credit, has so far been unfortunate in not striking payable ore in his mine. The Umberumberka, Day Dream, and Purnamoota Mines, and the Waukaroo and Palamira Tin Mines, were also inspected by me during the year.

The ore in the whole of the Barrier Ranges occurs in lenticular blocks and shoots, even in the far-famed Broken Hill Proprietary Mine; only in the latter they are of large dimensions, and occur near each other, whereas in all the mines north and south of the Proprietary, Block 14, and British Blocks, they are smaller, and in some instances so small that they will never pay, as too much unprofitable country rock has to be removed between the lenticular blocks or shoots of ore. Where these lenticular shoots of ore are large enough for profitable work, mine-owners, managers, and miners should not be discouraged by these features, which are characteristic all over the field; whether gold, silver, copper, tin, or any other mineral, but they should sink, and drive for new shoots or bunches of ore. To this characteristic of the field no doubt is due the fact that the Brisbane Block Company have not ere this intersected the Broken Hill Proprietary lode, which it was thought would have been reached between 700 and 800 feet, had the lode kept the same underlay as in the top levels. The diamond drill is now 1,300 feet in depth, with little if any more indications of the lode than were obtained in the ore brought up by the drill in the higher levels. I cannot come to any other conclusion than that the Broken Hill Proprietary lode has faulted to the east, or else taken an easterly underlay; but the former theory is the most likely. And if my theory, based on very close observation, proves to be a correct one, then the Brisbane Block Company may have to bore a very considerable depth before they will intersect the Broken Hill Proprietary lode.

There is no doubt whatever that the permanency of some of the Barrier silver mines is secured; but it is also certain that several of the smaller mines, where the bunches and shoots of ore are not extensive, will have to cease work, as the prospects will not increase, either in the size of the blocks or richness of ore, by sinking to a greater depth. The fictitious prosperity and mushroom growth of some

of

of the Barrier Ranges mines, which was caused through over-excitement (and may almost be called a mining mania), has its desponding effect on the public mind; and the time is near at hand when, instead of gambling in shares only, legitimate mining will be carried on—when *bona fide* capitalists will only invest in mines worthy of such name; and then a solid, permanent prosperity will set in.

Vegetable Creek.

Webb's Silver Mine is still being under development, and as depth is reached the mine seems to be somewhat improving.

Webb's Consols has been vigorously worked for a considerable time, in hopes that ultimate success will be the lot of the enterprising shareholders of this Company.

Webb's Centrals are also still at work, with the same hope for the future as the owners of the Webb's Consols. I am, however, afraid that, as there is no regular defined lode, but rather bunches, caused by filtration, the cost of working these bunchy deposits will be too great to prove very valuable to shareholders.

There are also the Jubilee, Webb's South, Webb's Extended, The Severn, Hill Hole, and other silver mines, some of which have lately suspended work.

Webb's would probably have been a payable mine by this time had that Company not started before they were ready, or rather had they had sufficient capital to properly open up their mine before they started with their reduction and smelting plant.

There has been a great deal of prospecting done during the year in this district for silver deposits, consequent upon the mining boom.

Mr. Thomas Chandler, J.P., one of the most able and energetic managers in New South Wales, has the management of several of the above-mentioned silver mines in the Vegetable Creek District.

At Pye's Creek there are several silver mines still at work, with varying success.

The Sunny Corner Silver Mines still add their quota to the silver-producing industry of New South Wales; and the Sunny Corner proper, whose prospects, machinery, and reduction works have been in previous reports noted by me, is being vigorously worked, with varied success.

The silver mines in the Orange District, at Lewis Ponds and other parts, are not in such flourishing condition, nor yet have they come up to such great expectation as was formed of them by those directly interested in the development of said mines. Extensive works are carried on at the Captain's Flat mines.

Tin.

Owing to the fluctuating price of tin, and protracted drought, which almost completely stopped alluvial tin-mining, the tin-mining industry has not been in such a flourishing condition during the year as it otherwise might have been.

Emmaville (Vegetable Creek).

Vegetable Creek proper being still worked, principally on the tribute system, by Chinese.

On the Deep Lead, Rose Valley, there are still parties of tributers occasionally obtaining patches. One party on the Wesley Mine are working O'Rourke's and Flannery's old ground; expect to reap a rich harvest as soon as their plant is erected and at work.

A find of some importance was made by O'Mara and party in Vincent's old ground. As yet the full extent of the patch cannot be ascertained; as it is it will be very profitable to the party, as they hold the land under a very low royalty.

On the so-called Seventeen Acres there is one party of tributers at work.

Baily & Co. have principally worked the shallow ground during the year, and it is feared have worked out the principal part of their alluvial deposits.

Cunneen & Co. have completed the working of their deep lead, and are now working in the shallow parts, which, however, is rather poor.

The Albion Company are driving across the lead.

Wesley & Co., at the Three-mile, have been prospecting, but so far have not met with much success.

At Kangaroo Flat (Hall's Bros'. mine) work is still carried on under the able management of Mr. Thomas Chandler, with payable results.

The Basaltic Lead Prospecting Company have carried on vigorous prospecting operations during the year, and have at times obtained fair prospects, but will have to get into more settled country before anything payable is struck. They have during the year sunk 77 feet, and with open cutting and trenches have driven 680 feet; a great deal of this work was done in hard granite rock at an expenditure of about £1,200 since the Company was formed. This land is supposed to contain the outlet of the basaltic lead from Rose Valley.

At Y Waterholes and at the Graveyards mining is still carried on by Chinese on the tribute system.

At Big Ben Flat a large Company has been formed to work an extensive area of land, but so far have not washed up anything.

Glen Creek still employs a number of miners, with varying success.

The Dalcoath Company have erected an engine and pump to ground-sluice their surface, which is supposed to contain payable tin.

On the Tableland and the Gulf little tin has been raised during the year, owing to the drought.

During the year a Company was formed at the Nine-mile, and are now obtaining a plant.

Tin Lodes.

The Ottery lode (Tent Hill) has been worked during the year with profitable results, and other lodes have been prospected in the vicinity, but without success.

At Butler's lode excellent stone has been raised during the year. Operations have been recommenced at the Dutchman's lode, and at the Torrington lode a few parties of tributers are still at work. At Cope's Creek (Tingha) many miners, both European and Chinese, are still employed, with varying success. Smelting works were also erected during the year.

The

The Barrier Ranges tin lodes were almost deserted during the year. This is principally due through some of the shoots and lenticular blocks containing the tin ore not being extensive enough to be worked with payable results.

A new discovery of tin was made during the year in the Barmedman District, but the severe drought at the end of the year severely interfered with its development.

COPPER.

Cobar, Nymagee, Mount Hope, Great Central, Burraga, and other copper mines extended their operations at the beginning of the year, but owing to the uncertainty in the price of copper at the end of the year prospective works were considerably curtailed.

BISMUTH.

The bismuth mine near Glen Innes was worked during the year with very encouraging results.

COBALT.

The recently-discovered cobalt deposits in the Carcoar District are likely to play an important part in the future history of the metallic mines of New South Wales.

In conclusion, I beg to state that having travelled through nearly every district of this Colony where metallic mining is carried on, I could not refrain from observing that, although a reaction has set in, consequent upon the great excitement of the public mind during the late so-called mining boom, during which time many bubbles were placed on the market, and eagerly taken up by many persons, not for the sake of legitimate mining but for gambling or trafficking in shares, legitimate mining has, nevertheless, made strides ahead for the advancement of our Colony's prosperity; and those engaged in legitimate mining will profit by the follies of the past, and no doubt demonstrate by their actions that there is not much more risk in the investment of capital in mining than there is in pastoral or other commercial pursuits, provided mining is carried on on legitimate commercial principles.

I have, &c.,
W. H. J. SLEE, F.G.S.
Inspector of Mines.

REPORT of the Examiner of Coal-fields for the Colony of New South Wales, for the year 1888.

IN accordance with the provisions contained in the 26th section of the Coal Mines Regulation Act, 39 Vic. No. 31, I have the honor to submit reports from the Inspectors of Collieries, with this my general report, for the year ending 31st December, 1888.

The information I have the honor to submit, in respect to the condition and progress, &c., of the various coal and boghead mineral mines during the year 1888, is as follows:—

Number of accidents in 1886, 1887, *and* 1888.

In 1886 there were twenty-nine fatal and forty-three non-fatal accidents; eight of the fatal accidents occurred at the Lithgow Valley Colliery.

In 1887 ninety-four fatal and forty-five non-fatal accidents; eighty-one of the fatal accidents occurred through the Bulli disaster.

In 1888, the year under notice, there have been fifteen fatal and forty-three non-fatal accidents. Three of the fatal accidents happened from falls of stone roof; the 4th and 5th, from a stone falling down shafts; the 6th, from a fall of coal and stone; 7th, through some substance falling down a shaft; 8th, from a loaded bucket falling down a shaft; 9th, through a fall of roof; 10th, through a derrick pole falling; 11th, from an explosion of fire-damp; 12th, from an explosion of powder; 13th, by a wire rope in motion; 14th, by some empty skips underground; and the 15th, through being jammed between waggons.

Twelve of the non-fatal accidents happened from falls of coal; the 13th and 16th, inclusive, through falls of stone; 20th and 22nd, inclusive, from a scaffold falling in shaft; 23rd and 24th, from an explosion of fire-damp; 25th and 26th, through a water-bag falling down shaft; 27th and 28th, from explosion of a shot; 29th and 30th, by a loaded skip; 31st, through a hammer falling down shaft; 32nd, by a surface incline waggon; 33rd, by a fall of screens; 34th, by a skip on underground main road; 35th, from a descending cage; 36th, from an empty skip; 37th, from an empty waggon; 38th, through being caught between waggons; 39th, through slipping on a rail; 40th, from an explosion of powder; and 41st and 43rd, inclusive, through a bucket falling down shaft.

All of the above fatal and non-fatal accidents have been inquired into, the scene of the accidents inspected, inquests attended and reports made thereon and forwarded for your information.

The names and occupations of the persons who died from injuries received, and those who have been seriously injured, as well as the names of the collieries where the accidents occurred, are given in the following summary.

SUMMARY

SUMMARY showing the number of fatal and non-fatal accidents in 1888, the names and occupations of the persons

Number of accidents.	Date.	Colliery.	Where situated.	Persons killed.	Persons seriously injured.	Occupation.
1	Jan. 5	Bulli	Near Wollongong		Thos. Tindall	Labourer
2	,, 6	South Waratah	Charlestown	John Simpson		Clerk
3	,, 23	Brookstown	Near Wallsend	Chas. F. Geattie		Miner
4	,, 25	Greta	Greta		Wm. Shepherd	Screenman
5	,, 26	Mount Kembla	Wollongong		John Nolan	Miner
6	,, 26	,,	,,		James Brazier	,,
7	Feb. 6	Brown's	Minmi		John Bourke	,,
8	,, 6	,,	,,		Watson Hodgson	,,
9	,, 9	Oakey Park	Lithgow		Wm. Owen	Sinker
10	,, 9	,,	,,		H. Langford	,,
11	,, 9	,,	,,		Charles Mills	,,
12	,, 17	Northumberland	Fassifern	C. Westerlund		,,
13	,, 17	,,	,,		Geo. Harrington	,,
14	,, 24	South Waratah	Charlestown		J. D. Jennings	Driver
15	,, 26	,,	,,		Thos. Hitchcock	Miner
16	,, 26	,,	,,		Robt. Haldame	,,
17	Mar. 7	Greta	Greta	John Poole		,,
18	,, 9	Wallsend	Wallsend		Ellis Leach	,,
19	,, 22	West Wallsend	West Wallsend	E. M'Carron		Sinker
20	April 3	East Waratah	New Lambton		E. O'Brien	Miner
21	,, 9	Northumberland	Fassifern	John Mansfield		Sinker
22	,, 12	Newcastle Co.'s	Newcastle		John Gray	Miner
23	,, 12	Greta	Greta		William Riley	,,
24	,, 14	Mount Kembla	Wollongong	A. Parsons		Sinker
25	,, 21	Young Wallsend	Teralba		John Benson	,,
26	,, 24	Bulli	Bulli		J. Cummingham	Miner
27	May 15	Katoomba	Katoomba		Ralph Halliday	Wheeler
28	,, 25	Co-operative	Plattsburg	P. J. J. Grant		Miner
29	,, 26	Bullock Island	Carrington		John Young	Onsetter
30	,, 28	Oakey Park	Lithgow	Wm. Tait		Bricklayer
31	June 11	Wallsend	Wallsend		B. Ashman	Miner
32	,, 12	Mount Keira	Wollongong		John Gwyne	,,
33	,, 15	Mount Kembla	,,	Hugh Dobbie		Wheeler
34	,, 27	Camp Creek	Illawarra	W. C. Turnbull		Sinker
35	,, 29	Wallsend	Wallsend		Wm. Ridley	Wheeler
36	July 2	Lambton	Lambton		James Jukes	Miner
37	,, 13	South Greta	Farley		Frank Derry	,,
38	,, 16	A. A. Co.'s	Newcastle		Edward Robson	,,
39	,, 26	Wallsend	Wallsend		Jas. Milburne	,,
40	,, 27	Osborne Wallsend	Wollongong		Thos. Fuller	Greaser
41	Aug. 4	Metropolitan	Illawarra	Charles Harper		Colliery Manager
42	,, 8	Burwood	Burwood		Thos. Smith	Miner
43	,, 18	Newcastle Co.'s	Newcastle		Thos. Sutton	,,
44	,, 21	A. A. Co.'s	,,		Jas. Bolan	,,
45	Sept. 7	Wallsend	Wallsend	Joseph Willis		Deputy
46	Oct. 4	Osborne, Wallsend	Wollongong	Robt. Kenning		Points-boy
47	,, 4	,, ,,	,,		Thomas Blake	Horse-driver
48	Nov. 7	South Greta	Farley		Wm. Richards	Wheeler
49	,, 28	Hetton	Carrington, Newcastle		Henry Toll	Miner
50	,, 28	South Wallsend	Lymington	Thomas Jones		Sinker
51	,, 28	,,	,,		John Minchie	,,
52	,, 28	,,	,,		Daniel Dansey	,,
53	Dec. 3	Burwood	Burwood		Josiah Hammond	Miner
54	,, 4	Richmond Vale	East Maitland		Archibald Gray	Sinker
55	,, 4	,,	,,		Alex. Stanton	,,
56	,, 4	,,	,,		Thomas Taylor	,,
57	,, 22	Newcastle Co.'s	Newcastle		Wm. Haase	Miner
58	,, 22	Duckenfield	Minmi		Saml. Hamilton	,,

who died or were injured, cause of death or serious injury, and the names or the collieries were they occurred.

Cause of death or serious injury.	Fatal.												Non-fatal.																			
	By loaded bucket.	Jammed between waggons.	Fall of coal and stone.	Fall of some substance in shaft.	Explosion of powder.	Stone falling down shaft.	Fall of roof.	Derrick-pole falling.	Fall of stone (roof)	By wire rope.	Empty skips underground.	Fire-damp.	By waggon on surface incline.	Fall from screens.	Fall of stone from roof.	Explosion of a shot.	Fall of bucket down shaft.	Fall of hammer from scaffold.	By loaded skip.	By fall of stone.	By fall of coal.	Water-bag falling.	By a skip on main road below ground.	By descending cage.	By empty skip.	Explosion of powder.	Empty waggon.	Caught between waggons.	Slipped on a rail.	Fall of scaffold.	Explosion of fire-damp.
Collar-bone broken by waggons on surface incline													1																		
Fatal injuries by waggon on surface		1																													
Fatal injuries by fall of roof (coal and stone)			1																												
Fracture of ribs by fall from screens														1																	
Bruised about back by fall of stone from roof															1																
Bruised about legs by fall of roof (stone)															1																
Injury to body by explosion of a shot																1															
Cut on head and back by explosion of a shot																1															
Injury to arm and leg broken by bucket in shaft																	1														
Back bruised by the bucket in shaft																	1														
Legs bruised by the bucket in shaft																	1														
Killed in shaft by fall of some substance				1																											
Skull fracture by a hammer falling from scaffold																		1													
Severe flesh wound on leg by a loaded skip																			1												
Fractured ribs and other injuries by fall of stone																				1											
Leg fracture by fall of stone																				1											
Fatal injuries by an explosion of powder					1																										
Severe injuries to body by fall of coal																					1										
Fatal injuries by loaded bucket falling down shaft	1																														
Leg fracture by fall of coal																					1										
Fatal injuries by a piece of stone falling down shaft						1																									
Internal injuries by fall of roof (stone)															1																
Leg fracture by a fall of coal																					1										
Killed by a fall of stone in sinking shaft						1																									
Leg fracture by a water-bag falling down shaft																						1									
Leg fracture by a fall of coal from the roof																					1										
Leg broken by a skip on main road under-ground																							1								
Fatal injuries by a fall of roof							1																								
Internal injuries by descending cage																								1							
Fatal injuries by a derrick-pole falling								1																							
Leg fracture by a fall of coal																					1										
Bruised about the back and ribs broken by a skip on main road.																			1												
Killed by a fall of stone (roof)									1																						
,, ,, ,,									1																						
Leg fracture by an empty skip																									1						
Crushed about hips by a fall of coal																					1										
Fractured collar-bone by a fall of coal																					1										
Serious burns by an explosion of powder																										1					
Leg fracture by a fall of coal																					1										
Leg broken by the wheel of an empty waggon																											1				
Thrown over an embankment by a wire-rope slipping										1																					
Leg fracture by a fall of stone																				1											
Thigh fracture by a fall of stone																				1											
Injury to left hand and back by a fall of coal																					1										
Fatally injured by a fall of stone									1																						
Killed by empty skip under-ground											1																				
Leg broken by riding on buffer of a waggon																												1			
Leg fracture by slipping on a rail																													1		
Injury to hips by a fall of coal																					1										
Fatal injuries by ignition of fire-damp												1																			
Serious burns by ignition of fire-damp																															1
,, ,, ,,																															1
Leg fracture by a fall of coal																					1										
Arm fracture by fall of scaffold in shaft																															
Severe scalp wound by fall of scaffold																														1	
Fracture of both legs and injury to head by fall of scaffold.																														1	
Loss of right arm by a fall of coal																					1										
Loss of right leg and fracture of collar-bone by fall of coal.																					1										
Total fatal accidents, 15.	1	1	1	1	1	2	1	1	3	1	1	1	1	1	3	2	3	1	2	4	12	2	1	1	1	1	1	1	1	3	2
Total non-fatal accidents, 43.																															

The returns which have been collected and forwarded to me by the Mining Department show the following figures for the year 1888 :—

COAL RETURN.

	Northern District.	Southern District.	Western District.	Total.
Tons of round and small coal raised	2,067,042	796,806	339,594	3,203,442
Value of round and small coal raised	£1,022,022	£338,039	£95,136	£1,455,197
Persons employed above ground	5,736	1,244	642	7,622
Persons employed under ground	1,137	432	110	1,679

PETROLEUM OIL CANNEL COAL OR BOGHEAD MINERAL RETURNS.

Western and Southern Districts.

Tons of boghead mineral or petroleum oil cannel coal	34,869
Value of boghead mineral or petroleum oil cannel coal raised	£73,612
Persons employed above ground.....	148
Persons employed under ground	105

Comparative statement of Returns for 1887-8.

	Men above ground.	Men below ground.	Tons of round and small coal.	Value.
NORTHERN DISTRICT.			Tons. cwt. qr.	£ s. d.
Australian Agricultural, Newcastle, Wallsend, Newcastle Coal, Lambton, Co-operative, Brown's Duckenfield, New Lambton, New Duckenfield, South Waratah, East Waratah, Ferndale, Wickham and Bullock Island, Hetton, Burwood, Stockton, Maryville, Pride of Ferndale, Goose, Brookstown, Hillside, Linwood, West Burwood, Great Northern, West Wallsend, New Lambton Coal Pit, Thornton, Sunderland, Bloomfield, Thornley, Rathluba, South Greta, Greta, New Anvil Creek, Rix's Creek, Ellesmere, New Park, Rosedale, Dulwich, Gladstone, Springfield, Black Jack, and M'Coskers	1,137	5,736	2,067,042 4 3	1,022,022 8 10
Total in 1888	1,137	5,736	2,067,042 4 3	1,022,022 8 10
,, 1887	1,070	5,217	2,243,792 0 0	1,096,720 0 7
Increase in 1888	67	519	.....	.....
Decrease in 1888	.....	.....	176,749 15 1	74,697 11 9
SOUTHERN DISTRICT.				
Metropoliton, Coal Cliff, North Illawarra, Bulli, South Bulli, Osborne, Wallsend, Illawarra Coal Co., Mount Kembla, Wollongong Coal Co., Mittagong, Australian Kerosene Oil and Mineral Co., Great Southern	432	1,244	796,806 10 0	338,039 12 3
Total in 1888	432	1,244	796,806 10 0	338,039 12 3
,, 1887	331	982	376,568 0 0	170,684 1 10
Increase in 1888	101	262	420,228 10 0	167,355 10 5
WESTERN DISTRICT.				
Katoomba, Main Camp, New South Wales Shale and Oil Co., Oakey Park, Vale, Zig Zag, Vale of Clwydd, Lithgow Valley, Eskbank, Eskbank Old Tunnel, Hermitage, Cooerwull, Lidsdale, Carlo's Gap, and Rawden	110	642	339,594 9 0	95,136 3 0
Total in 1888	110	642	339,594 9 0	95,136 3 0
,, 1887	58	340	302,137 0 0	79,036 0 2
Increase in 1888	52	302	37,457 9 0	16,100 2 10

From these returns we find that in the Northern District, in the year under notice, there has been a decrease of 176,749 tons in the quantity of coal raised, and £74,697 in the value of it, whilst in the previous year (1887) there was an increase of 65,676 tons, and in the value of the coal raised, £12,165. This large decrease in the output of coal from the Northern District is entirely owing to the Newcastle strike of thirteen weeks' duration.

In the Southern District there has been an increase of 420,228 tons, and in the value of £167,355, whilst in the previous year (1887) there was only an increase of 5,738 tons, and in the value of £20,690. For this large increase in the output of coal in 1888 the Southern collieries are indebted to the Northern District thirteen weeks' strike.

In

In the Western District there has been an increase of 37,457 tons, and in value of £16,100, whilst in the previous year (1887) there was only an increase of 21,908 tons, and in the value of £10,420. This year's larger increase in the output of the Western collieries has also occurred through the strike in the Northern District.

The following table shows comparisons between the year under notice and two preceding years, as regards the exports of coal to foreign and intercolonial ports; the quantity used for home consumption; total output and value; tons of round and small coal raised for each person employed in and about the collieries; value of round and small coal raised for each person so employed; and the quantity of coal raised for each life lost.

Years.	Exports to Intercolonial Ports.			Exports to Foreign Ports.			Total Exports.			Home consumption.
	Quantity.	Average per ton.	Value.	Quantity.	Average per ton.	Value.	Quantity.	Average per ton.	Value.	
	Tons.	£ s. d.	£	Tons.	£ s. d.	£	Tons.	£ s. d.	£	Tons.
1886	1,027,775	0 10 7·22	544,824	708,000	0 11 4·31	402,178	1,735,865	0 10 10·93	947,002	1,094,310
1887	1,077,270	0 10 5·89	565,084	713,172	0 11 1·08	395,455	1,790,442	0 10 8·70	960,539	1,132,055
1888	1,039,764	0 10 10·25	564,293	884,108	0 11 3·77	500,179	1,923,872	0 11 0·79	1,064,472	1,279,570
	3,144,809	0 10 7·76	1,674,201	2,305,280	0 11 3·11	1,297,812	5,450,179	0 10 10·87	2,972,013	3,505,935

Years.	Total Output and Value.			Coal raised per each person employed in and about the Mines.			Value of Coal raised per each person employed in and about the Mines.			Tons of Coal raised per each life lost.		
	Quantity.	Average per ton.	Value.	Quantity.	Average tons per each person employed.	Persons employed.	Value.	Average value per each person employed.	Persons employed	Quantity.	Average tons per each life lost.	Lives lost.
	Tons.	£ s. d.	£	Tons.	Tons.	Number.	£	£ s. d.	Number.	Tons.	Tons.	Number.
1886	2,830,175	0 9 2·53	1,303,164	2,830,175	364	7,847	1,303,164	169 17 10	7,847	2,830,175	97,592	29
1887	2,922,497	0 9 2·57	1,346,440	2,922,497	365	7,998	1,346,440	168 6 1	7,998	2,922,497	31,090	94
1888	3,203,442	0 9 1·06	1,455,197	3,203,442	344	9,301	1,455,197	156 9 1	9,301	3,203,442	213,562	15
	8,956,114	0 9 1·99	4,104,801	8,956,114	356	25,146	4,104,801	163 4 9	25,146	8,956,114	64,899	138

Northern District.

Number of persons employed in and about the mines	6,873
Number of persons employed underground	5,736
Quantity of coal raised in tons	2,067,042
Number of non-fatal accidents	32
Number of lives lost by accidents	9
Persons employed per each non-fatal accident	214
Persons employed per each life lost	763
Tons of round and small coal raised per each non-fatal accident	64,595
Tons of round and small coal raised per each life lost	229,671
Tons of coal raised per each person employed in and about the mines	300
Tons of coal raised per each person employed underground	360
Value of coal raised	£1,022,022 0 0
Value of coal raised per each person employed in and about the mines	£148 14 0
Value of coal raised per each person employed underground	£178 3 6

Southern District.

Number of persons employed in and about the mines	1,676
Number of persons employed underground	1,244
Quantity of coal raised in tons	796,806
Number of non-fatal accidents	7
Number of lives lost by accidents	5
Persons employed per each non-fatal accident	239
Persons employed per each life lost	335
Tons of round and small coal raised per each non-fatal accident	113,829
Tons of round and small coal raised per each life lost	159,361
Tons of coal raised per each person employed in and about the mines	475
Tons of coal raised per each person employed underground	640
Value of coal raised	£338,039 0 0
Value of coal raised per each person employed in and about the mines	£201 13 10
Value of coal raised per each person employed underground	£271 14 0

Western District.

Number of persons employed in and about the mines	752
Number of persons employed underground	642
Quantity of coal raised in tons	339,594
Number of non-fatal accidents	4
Number of lives lost by accidents	1
Persons employed per each non-fatal accident	188
Persons employed per each life lost	752
Tons of round and small coal raised per each non-fatal accident	84,898
Tons of round and small coal raised per each life lost	339,594
Tons of coal raised per each person employed in and about the mines	451
Tons of coal raised per each person employed underground	528
Value of coal raised	£95,136 0 0
Value of coal raised per each person employed in and about the mines	£126 10 2
Value of coal raised per each person employed underground	£148 3 8

The

The following table shows comparisons between the year under notice and the preceding year, as regards the proportion the accidents and deaths bear to the persons employed, the quantity and value of the coal for each person employed in and about the mines and underground, in the Northern, Southern, and Western Districts.

	Northern District.		Southern District.		Western District.	
	1887.	1888.	1887.	1888.	1887.	1888.
Number of persons employed in and about the mines	6,287	6,873	1,313	1,676	398	752
Number of persons employed underground	5,217	5,736	982	1,244	340	642
Quantity of coal raised in tons	2,243,792	2,067,042	376,658	796,806	302,137	339,594
Number of non-fatal accidents	37	32	8	7	Nil.	4
Number of lives lost by accident	7	9	87	5	Nil.	1
Persons employed per each non-fatal accident	169	214	164	239	No non-fatal accident.	188
Persons employed per each life lost	898	763	15	335	No life lost.	752
Tons of round and small coal raised per each non-fatal accident.	60,632	64,595	47,082	113,829	No non-fatal accident.	84,898
Tons of round and small coal raised per each life lost	320,541	229,671	329	159,361	No life lost	339,594
Tons of coal raised per each person employed in and about the mines.	356	300	287	475	759	451
Tons of coal raised per each person employed underground.	430	360	383	640	888	528
Value of coal raised	£ s. d. 1,096,720 0 0	£ s. d. 1,022,022 8 10	£ s. d. 170,684 0 0	£ s. d. 338,039 12 3	£ s. d. 79,036 0 0	£ s. d. 95,136 0 0
Value of coal raised per each person employed in and about the mines.	274 5 10	148 14 0	129 19 10	201 13 10	198 11 7	126 10 2
Value of coal raised per each person employed underground.	210 4 4	178 3 6	173 15 3	271 14 0	232 9 2	148 3 8

The following statistical return, furnished me by Mr. W. R. Logan, the Collector of Customs at Newcastle, shows that the greatest increase in the export of coal from that port has been:—To United States, 66,268; Chili, 53,478; Sandwich Islands, 9,318; Peru, 9,186; South America, 7,696; South Sea Islands, 3,383; and Euccusland, 5,074; and the greatest decrease to South Australia, 49,268; Hongkong, 46,402; Victoria, 41,612; Queensland, 15,668; Java, 13,825; Fiji, 13,822; India, 13,572; and Singapore, 13,074 tons.

NEWCASTLE.—New South Wales export of Coal during the years 1887 and 1888.

Countries.	1887.	1888.	Increase.	Decrease.
	Tons.	Tons.	Tons.	Tons.
Victoria	708,559	666,947	.....	41,612
New Zealand	150,108	138,007	.....	12,101
South Australia	123,518	74,250	.....	49,268
Western Australia	13,786	11,814	.....	1,972
Queensland	15,668	.....	.....	15,668
Tasmania	38,974	33,514	.....	5,460
Fiji	21,081	7,259	.....	13,822
Mauritius	8,846	7,081	.....	1,765
Hongkong	83,355	36,953	.....	46,402
China	1,366	.....	.....	1,366
South America	7,126	14,822	7,696	.....
Java	46,113	32,288	.....	13,825
India	48,215	34,643	.....	13,572
Mexico	2,310	2,193	.....	117
South Sea Islands	249	3,632	3,383	.....
Humboldt Bay	433	.....	.....	433
Cape of Good Hope	1,292	.....	.....	1,292
Singapore	30,953	17,879	.....	13,074
Sandwich Islands	12,100	21,418	9,318	.....
Chili	47,153	100,631	53,478	.....
United States	248,325	314,593	66,268	.....
Phillipine Islands	36,256	33,084	.....	3,172
Solomon Islands	307	.....	.....	307
New Caledonia	12,293	9,108	.....	3,185
New Guinea	.....	485	485	.....
Indo China	.....	1,367	1,367	.....
Penang	.....	1,130	1,130	.....
Euccusland	.....	5,074	5,074	.....
Peru	.....	9,186	9,186	.....
New Hebrides	.....	894	894	.....
Africa	.....	400	400	.....
Ceylon	.....	1,685	1,685	.....
	1,658,386	1,580,337	160,364	238,413
Total decrease for 1888 is 78,049 tons.				

EXPORT of Coke from Newcastle for the year 1888.

Countries.	Tons.	Value.
South Australia	11,460	18,196
Victoria	2,606	3,914
United States	398	641
United Kingdom	150	263
India	4	6
	14,618	23,020

DECENNIAL RETURN.—Port of Newcastle.—Foreign and Intercolonial Ports.

Year.	Vessels cleared outwards for Foreign and Intercolonial Ports.		Total value of Imports from Foreign and Intercolonial Ports.	Quantity and value of Coal exported to Foreign and Intercolonial Ports.		Total value of Exports (inclusive of Coal) to Foreign and Intercolonial Ports.	Total amount of Revenue collected.
	No. of Vessels.	Tonnage.		Tons.	Value.		
			£ s. d.		£ s. d.	£ s. d.	£ s. d.
1879	1,330	651,501	340,501 0 0	860,375	591,090 0 0	648,427 0 0	57,477 18 9
1880	1,023	516,480	527,905 0 0	673,393	372,378 0 0	477,486 0 0	57,883 4 6
1881	1,121	654,543	482,845 0 0	899,369	343,931 0 0	407,212 0 0	77,543 10 7
1882	1,143	737,772	632,073 0 0	1,080,446	527,575 0 0	618,586 0 0	76,799 12 7
1883	1,305	926,956	658,601 0 0	1,359,505	722,428 0 0	1,440,752 0 0	87,844 12 0
1884	1,433	1,066,462	788,653 0 0	1,505,395	835,070 0 0	1,699,047 0 0	108,720 0 0
1885	1,388	1,076,346	930,200 0 0	1,552,136	832,495 0 0	1,927,626 0 0	108,834 18 6
1886	1,335	1,097,382	843,474 0 0	1,544,694	828,189 0 0	1,398,728 0 0	119,131 15 0
1887	1,334	1,154,439	781,796 0 0	1,658,386	886,921 0 0	1,788,664 0 0	117,543 7 10
1888	949	815,516	758,586 0 0	1,580,337	852,083 0 0	2,067,460 0 0	126,036 7 9

RETURN showing the quantity raised, price per ton, and value of the boghead mineral or petroleum oil (cannel coal), commonly called kerosene shale, from 1865 to 1888 inclusive.

Year.	Tons.	Average price per ton.	Value.	Year.	Tons.	Average price per ton.	Value.
		£ s. d.	£ s. d.			£ s. d.	£ s. d.
1865	570	4 2 5·47	2,350 0 0	1877	18,963	2 9 0·82	46,524 10 0
1866	2,770	2 18 10·48	8,154 0 0	1878	24,371	2 6 11·49	57,211 0 0
1867	4,079	3 14 9·21	15,249 0 0	1879	32,519	2 1 10·96	66,930 10 0
1868	16,952	2 17 7·11	48,816 0 0	1880	19,201	2 6 7·03	44,724 15 0
1869	7,500	2 10 0·00	18,750 0 0	1881	27,894	1 9 2·59	40,748 0 0
1870	8,580	3 4 3·18	27,570 0 0	1882	48,065	1 15 0·00	84,114 0 0
1871	14,700	2 6 3·91	34,050 0 0	1883	49,250	1 16 10·77	90,861 10 0
1872	11,040	2 11 11·91	28,700 0 0	1884	31,618	2 5 7·85	72,176 0 0
1873	17,850	2 16 6·55	50,475 0 0	1885	27,462	2 8 11·62	67,239 0 0
1874	12,100	2 5 1·48	27,300 0 0	1886	43,563	2 5 10·79	99,976 0 0
1875	6,197	2 10 2·22	15,500 0 0	1887	40,010	2 3 10·43	87,761 0 0
1876	15,998	3 0 0·00	47,994 0 0	1888	34,896	2 2 2·26	73,612 0 0

Complaints made of deficient ventilation, &c.—I have, as usual, inquired into sundry complaints made with respect to deficient ventilation and non-compliance with the requirements of the provisions of the Coal-mines Regulation Act, 1876. Proceedings, where necessary, have been taken to enforce the provisions of the Act, and reports furnished thereon.

NEW MINES OPENED OUT OR IN COURSE OF DEVELOPMENT DURING THE YEAR 1888.

Irondale Colliery, near Wallerawang.

On January 22nd, Mr. D. Lawson notified the Examiner of Coal-fields that he was preparing to restart, and expected to be at work in about three months.

Young Wallsend Colliery, Teralba.

On January 23rd, Mr. A. Fairly gave notice that he had commenced, on behalf of the Young Wallsend Coal Co., their main shaft, situated at Teralba.

Mr. Thomas Garrett's property, near Raymond Terrace

On February 28th, Mr. T. Garrett notified that he had sunk a shaft on his land, about 6 miles from Raymond Terrace, and cut a seam of coal.

Old Adit, near Mittagong.

On March 26th, Mr. Peter Murphy notified that he had commenced to reopen the old adit which was driven by Mr. Chalders about four years ago, in the parish of Jellore, county of Camden, and adjoining the Mittagong Coal Co.'s property, 4 miles from Mittagong.

On April 10th, Mr. Joseph Holt notified that he intended to re-open a coal-mine that was formerly worked by Mr. Mitchell, to supply the neighbours about Wallerawang, and for his own use, situated at Lidsdale, near the Mudgee Road.

Linwood Colliery, Newcastle.

On May 3rd, Mr. Hugh Walker gave notice of his intention to sink a shaft on the Linwood Estate, at Wickham, on that portion of the Wickham and Bullock Island Coal Co.'s lease.

Trial Shaft, near New Lambton A Pit.

On May 10th Benjamin Tonks and David Hughes notified that they were sinking a trial shaft about 120 yards from the New Lambton A Pit, to prove whether the coal is workable or not.

Katoomba Colliery, Katoomba.

On May 17th, Mr. Edwards, colliery manager, notified that he had commenced a drive or heading in the shale at Ruin Castle.

West Burwood Colliery, Newcastle.

On May 29th, Mr. Evan Lewis notified that a tunnel had been opened, to mine for coal, situated at the Glebe Hill, Newcastle.

On June 6th, Mr. Donald Shaw, for himself and two others, gave notice of their intention to mine for coal on Mrs. Price's land, parish of Stockrington, near East Maitland.

Hillside Colliery, Newcastle.

On June 13th, Mr. Wilde notified that he had commenced to put in a new tunnel on the Burwood Estate.

Portion 98, parish of Stockrington, near East Maitland.

On June 23rd, Mr. James A. Hollings, for Shaw and party, notified that they were preparing to break ground by sinking a shaft to search for coal on portion 98, being part of mineral lease No. 13, near East Maitland.

South Greta, Farley.

On July 10th, notice was received from Mr. D. A. W. Robertson, notifying that the colliery formerly known as Homeville, near Farley, is now designated South Greta Colliery.

The Northumberland Land and Coal Company (Limited), Fassifern.

On August 1st, Mr. John W. Crawford notified that he had opened up a seam of coal about 16 ft. 6 in., in the ranges above their shaft, 40 ft. from surface.

Port Waratah, near Newcastle.

On August 3rd, Mr. Henry Harper notified that he would use his best endeavours to sink a shaft near Port Waratah, with a view of opening out a small colliery at some future time.

Dulwich Colliery, Singleton.

On August 22nd, Mr. W. Longworth, on behalf of the Singleton Coal and Coke Co., notified having commenced to open out work at the above new mine, situated near the Great Northern Railway, and about 7 miles from Singleton.

Leconfield Colliery, near Greta.

On August 24th, Mr. D. A. W. Robertson notified, on behalf of the Greta Coal Co., having commenced operations on the Leconfield Estate for the purpose of working the coal in these lands.

Burwood Colliery, near Newcastle.

On September 8th, Mr. W. B. Pendleton, manager, notified having started to sink a shaft on their 320-acre leasehold block.

Tulip's Pits, West Maitland.

On September 28th, Mr. Matthew Tulip gave notice of his intention to sink a prospecting shaft on the Government land at West Maitland, about 10 chains in a N.-N.-West direction from his last pit on said land.

Langlands Estate, County of Durham.

On October 1st, Messrs. Willis and Lonsdale, contractors, on behalf of Mr. J. C. H. Baass, notified that they intended sinking a trial shaft, prospecting for coal, on the Langlands Estate, Williams River, parish of Uppington, county of Durham.

Grice's Land, Buttai, near East Maitland.

On October 8th, Mr. Donald Shaw and others notified that it is their intention to sink another shaft on the land at Buttai, specified in his last communication.

Monkwearmouth Colliery, near Minmi.

On October 10th, Mr. A. M'Kinnon, contractor, notified that he had commenced operations; diameter of shaft, 16 ft. 6 in.

The South Wallsend Coal Co. (Limited), Lymington, Lake Macquarie.

On October 20th, Mr. John Johnston notified having resumed work—formerly known as the Lymington Colliery, Winding Creek.

Richmond Vale Colliery, near East Maitland.

On October 25th, Mr. John R. Rigg gave notice that he had commenced operations for sinking a shaft for the Richmond Vale Coal Company.

Summer Hill Colliery.

On October 9th, Mr. Andrew Sneddon gave notice of having opened a new tunnel in the municipality of Plattsburgh, off Minmi Road.

South Burwood and New Wallsend Collieries.

On December 5th, Messrs. Alex. M'Kinnon and John Corbett notified having opened two new collieries—one at South Burwood, and one at New Wallsend.

Cullen Bullen Coal and Coke Company's Colliery.

On December 6th, Mr. J. Bryant notified, on behalf of the Company, of having opened two new mines on two different payable seams of coal, situated about 6 and 15 chains respectively east of the eastern boundary of Sir J. Jamison's 2,000-acre grant, Cullen Bullen, County of Roxburgh.

North

North Stockton Colliery.

On December 31st, Mr. Henry Wright notified, on behalf of the North Stockton Coal Company (Limited) that it is their intention to sink a pair of pits on their coal property, Hexham Island, Kilcoy and Kennington Park Estates, parishes of Hexham and Raymond Terrace respectively.

Australian Agricultural Company's New Winning Colliery, Newcastle.

On December 18th, Mr. Wm. Turnbull gave notice that in future the A. A. Company's new colliery will be called the New Winning, instead of Sea Coal-pit, as previously notified.

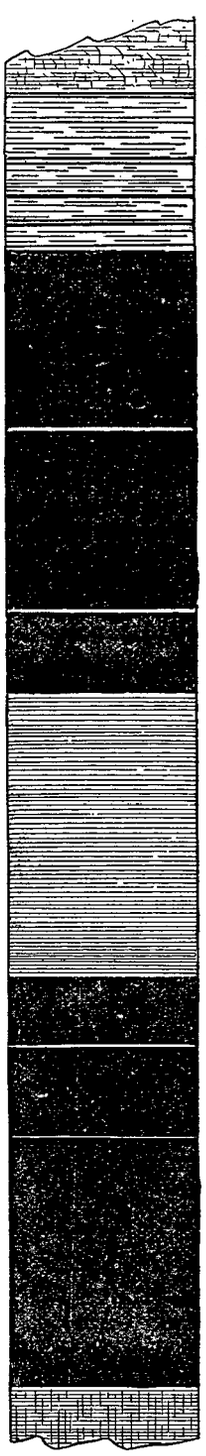
Adams Coal-mine, West Maitland.

On December 22nd, Mr. H. J. Adams notified that he was working a coal-mine near Maitland.

COAL-MINES ABANDONED DURING THE YEAR 1888.

Matthew Tulip, on December 5th, notified that he had abandoned the coal-pit worked on Tulip's freehold, on account of stone.

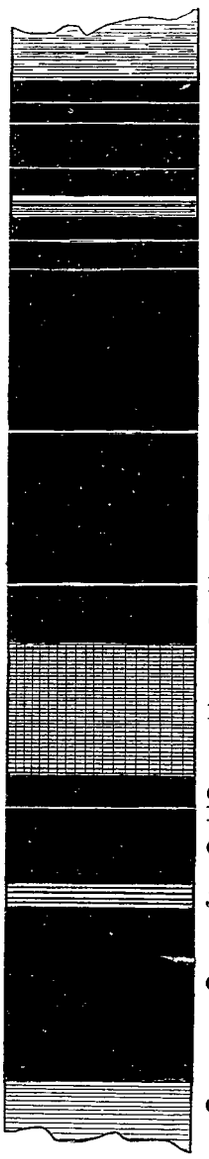
SECTION showing the thickness and character of the Borehole coal-seam at the Stockton Colliery, Stockton, near Newcastle, taken March 5th, 1889, by Mr. Inspector Dixon and myself.



	ft.	n.
Post and shale	0	0
Brown shale	0	0½
Inferior coal	0	5½
Stone band	0	0½
Inferior coal	0	11
Band, soft clay	0	0¾
Inferior coal	0	4
Soft clay	0	2
Black shale	0	3½
Coal	0	6
Soft clay	0	0½
Inferior coal	0	5½
Clay	0	1
Coal, bright bituminous	3	10
Band	0	1
Coal, bright bituminous	3	9
Band	0	0⅜
Coal, bright bituminous	1	9
Morgan ..... 10 to	6	0
Bright bituminous coal	1	4
Stone band	0	1
Bright bituminous coal	1	10
Parting	0	0⅛
Br ght bituminous coal	5	8
Grey (post).		
	27	9⅝

Section

SECTION showing the thickness and character of the Borehole coal-seam at the Hetton colliery, Bullock Island, Newcastle, taken March 4th, 1889, by Mr. Inspector DIXON and myself.

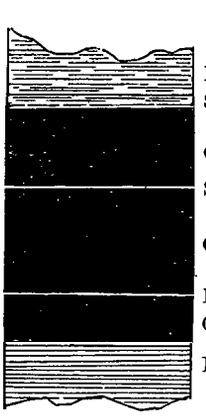


	ft	in.
Post and shale.		
Black shale	0	1
Coal	0	7
Band	0	0½
Coal	0	4
Parting	0	0½
Coal	0	10
Band	0	0½
Coal	0	6
Soft clay band	0	1½
Black stone	0	0½
Coal	0	5½
Indurated clay	0	0½
Coal	0	7
Parting	0	0½
Coal	3	5
Band	0	1
Coal	3	3
Band	0	1
Coal	1	4
Morgan	3	0
Coal	0	6
Band	0	1
Coal	1	5
Jerry	0	7
Coal	3	6
Grey (post).		
	21	4¾

Durham Colliery

SECTION, taken by Mr. Inspector DIXON, showing the thickness and character of the Borehole coal-seam sunk through and being worked by the Scottish Australian Mining Company, on Water Reserve No 4, near Redhead, and about 12 miles by rail from Newcastle Harbour. The Company hold about 3,214 acres of land, on mineral lease, from the Crown, at a royalty of 6d per ton on large and 3d per ton on small coal raised

Durham shaft Borehole coal-seam section



	ft	in.
Roof shale		
Splint coal or myrtle	0	3
Good coal	2	0
Stone band	0	1
Good coal	1	11
Band	0	0½
Good coal	1	0
Floor.		
	5	3½

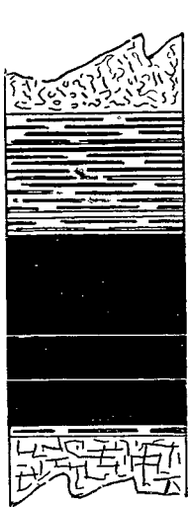
AN

AN account of Strata and Coal-seams sunk through by the Scottish Australian Mining Company at their Durham Colliery (No. 1 pit), near Redhead, in the county of Northumberland. Furnished to the Department of Mines by Mr. Wilson Rennie, who was in charge of the sinking operations for the Company:—

Name of Stratum.	ft	in.
Sand	54	0
Red rock	6	0
Pebbly stone (soft conglomerate)	3	0
White rock	15	0
Grey shale	13	0
Black streaky rock	5	5
Coal	0	6
Pipeclay	0	1
Coal	1	7
Pipeclay	0	2
Black shale	0	3
Indurated clay	0	7½
Black shale and coal	1	8
Pipeclay	0	6
Black shale	0	6
Pipeclay	1	3
Black shale	2	9½
Streaky band	0	4
Black shale	1	3
Blue shale	10	1
Grey shale	4	0
Coal	1	1
Blue shale	0	8
Pipeclay	0	4
Foul coal	0	7
White shale	3	0
Hard blue metal	5	3
Grey post	6	0
Conglomerate	3	9
Dark-grey shale	6	0
Hard grey post	13	10
Ironstone band	0	2
Dark-grey metal	1	9
Ironstone band	0	2
Grey metal	3	9
Basaltic rib	0	2
Grey post	9	4
Brown rock	2	0
Black streaky shale	3	8
Hard blue streaky shale	6	0
Blue shale, with ironstone	4	4
Pipeclay	0	0½
Coal	0	8½
Dark shale	0	5
Coal	0	4
Dark shale	0	4
Coal	0	6
Pipeclay	0	0½
Coal	1	2
Pipeclay	0	0½
Coal	1	7
Pipeclay	0	5
Coal	0	8
Fireclay	0	4
Coal	3	8
Pipeclay	0	3
Coal	3	1
White rock	0	11
Blue shale	1	5
White rock	2	0
Dark shale	3	1
White rock	3	6½
Grey shale	1	2
Dark-blue shale	4	6
Grey metal	1	2
Grey post	37	8
Light hard shale and ironstone	9	9
Band, with coal-pipes	0	11
Coal	0	6
Band, with coal-pipes	0	4
Coal	0	6
Band	0	1
Coal	0	6
Band and coal-pipes	1	0
Chert	0	6
Grey post	8	6
Dark shale	2	6
Coal and jerry	0	4
Dirty coal	1	10
Jerry band	0	2
Coal	1	6
Indurated clay	0	3
Coal	0	2½
Pipeclay	0	0½
Dark shale	0	8
Coal	0	2
Pipeclay	0	1
Coal and bands	0	7
Light-grey post	1	0
Dark shale	0	8
Dark-grey post	0	8
Blue shale and sandstone and ironstone bands	26	3
Coal	0	10
Blue shale	0	6
Grey post and shale	1	11
Coal	1	3
Dark shale	2	6
Grey metal	0	4
Conglomerate	25	0
Post and shale	3	6
Freestone	2	6
Black shale	6	0
Freestone and shale	4	6
Post and shale	32	0
Grey post	3	6
Dark shale and ironstone	4	6
Grey post	1	1
Shale and ironstone	0	8
Grey post	1	9
Dark shale	7	0
Bituminous shale	1	0
Pipeclay band	0	0¼
Bituminous shale	0	8
Pipeclay band	0	0¼
Bituminous shale	1	0
Dark shale	0	8
Good coal	2	2
Band	0	0½
Good coal	1	11
Band	0	0½
Good coal	1	3
Morgan	1	0
Good coal	0	4
Coal and jerry, mixed	4	0
Dark-grey shale	2	6
Grey post	22	0
Total depth sunk	461	8

Borehole coal-seam.

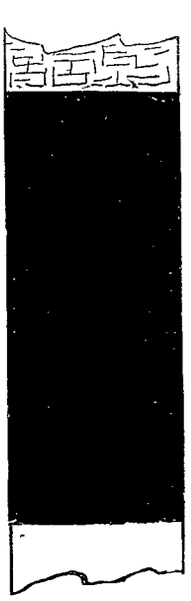
THESE are sections of the No. 1 (Burwood and Great Northern) and No. 2 coal-seams opened out by adits, by Mr. Crawford, at the Northumberland Coal and Land Company's Colliery, Fassifern.



No. 1.

Coarse conglomerate.	ft.	in.
Heavy splint coal	1	10
Clay band	0	1½
Splint coal	3	4
Stone band	0	0½
Splint coal	0	11
Stone band	0	1
Splint and bituminous coal	5	0
Band	0	1
Coal	2	1
Parting	0	0¼
Coal	2	9
Coarse coal	0	8
	16	11

Chert, &c., 50 to 60 feet.



No. 2.

	ft.	in.
Coal and bands	23	0

An

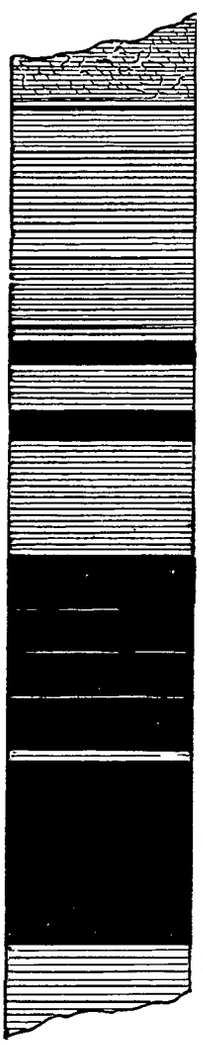
An account of Strata and Coal-seams sunk through by the Northumberland Coal-mining Company, near Teralba. Furnished to the Department of Mines by Mr. T. W. Crawford, the Company's colliery manager :—

Name of Stratum.	ft.	in.
Chert	29	0
Black shale and fireclay bands	2	11
Black shale	3	0
Black shale and fireclay bands	0	5
Coal	0	6
Fireclay	0	1
Coal	1	2
Coal	0	9
Fireclay	0	2
Coal and shale	2	3
Fireclay	0	2
Coal and shale	2	3
Black shale and fireclay bands	5	7
Coal and shale	3	9
Fireclay	0	9
Coal	2	3
Grey metal	3	5
Post girdle	0	4
Grey metal	5	2
Fireclay	0	9
Post	6	3
Fireclay	1	3
Coarse conglomerate	10	0
Fine conglomerate	5	4
Conglomerate	96	8
Fine conglomerate	5	0
Post	1	3
Conglomerate	11	3
Dark-grey post	3	0
Conglomerate	13	10
Grey post	6	2
Blue shale	0	2
Grey post	5	8
Hard flinty post	5	0

Name of Stratum.	ft.	in.
Black shale	0	7
Grey metal	2	1
Hard post	22	6
Chert	9	6
Coal, shale, and fireclay bands	2	8
Post	0	3
Coal, shale, and fireclay bands	0	6
Hard dark post	1	10
Chert	2	6
Coal and shale	1	6
Chert	0	6
Coal	1	4
Black shale	1	4
Fireclay	0	1
Black shale and ironstone	6	3
Grey metal	31	6
Black shale	0	11
Coal	1	0
Black shale	0	9
Grey metal	1	6
Coal and shale	4	4
Brown fireclay	0	5
Black shale	0	8
Grey metal	0	1
Black shale	1	0
Grey metal	2	6
Black shale	0	8
Coal	0	11
Black shale	0	6
Coal	2	0
Post	0	4
Black shale	0	5
Grey metal	2	2

Name of Stratum.	ft.	in.
Black shale	0	6
Coal	0	6
Black shale with grey metal band	3	10
Hard post	50	0
Black shale	0	9
Coal	1	0
Fireclay	0	6
Coal	1	10
Black shale	0	8
Grey metal	13	6
Black shale	0	5
Coal	0	6
Black shale	0	2
Blue metal	4	6
Post with blue metal post girdles	6	8
Blue metal	0	2
Black shale	0	2
Coal	0	5
Fireclay	0	1
Blue metal and post girdles	5	6
Blue metal	5	6
Grey metal	0	6
Black shale	0	2
Grey metal	0	2
Coal and black shale	1	0
Fireclay	0	0½
Coal and black shale	3	0
Grey metal	0	1
Coal	0	6
Post and fine conglomerate	33	0
	476	2

Section showing the thickness and character of the Great Northern (No. 1), Cardiff, Burwood, and Victoria Tunnel seam opened out by Mr. Heppel in an adit 143 feet above sea-level, on Mr. Black's land at Teralba, situated about 14 miles by rail from the Newcastle Harbour. Taken by Mr. Inspector Dixon and myself.



	ft.	in.
Coarse conglomerate.		
Pipeclay	0	1
Black stone	0	10
Very inferior splint	1	8
Clay band	0	7
Bands and coal	1	7
Band clay	0	2½
Coal	0	5
Coal with bands	1	0
Coal	0	8
Bands and coal	2	6
Coal	1	1¾
Band	0	1
Coal	0	8
Band	0	1½
Coal	0	10
Band	0	0½
Coal	1	3½
Clay band	0	3¼
Coal	3	10
	17	10

Portion of seam worked.

Black stone and bands.

An

AN account of Strata and Coal-seams sunk through on Black's 2,560 acres of land at Cockle Creek, near the Sydney and Newcastle Railway, Teralba. Furnished to the Examiner of Coal-fields by Mr. Hepple, manager:—

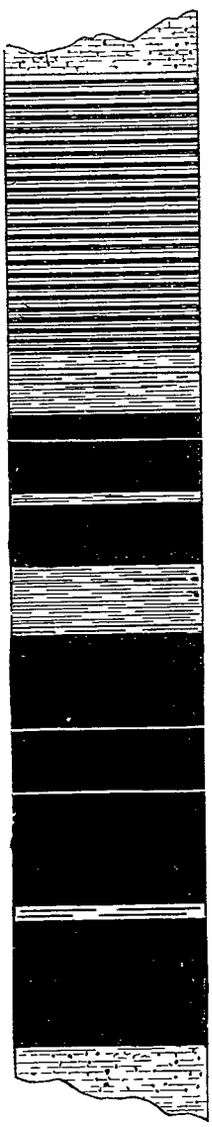
Name of Stratum.	ft.	in.
Soil and gravel	6	0
Clay	4	0
Sandstone and clay bands	5	6
Blue metal	0	11
Grey metal	1	6
Sandstone	22	4
Shale and coal bands	9	2
Bastard post	3	0
Coal, with bands	0	9½
Pipeclay—water	0	4½
Coal and bands	1	8
Pipeclay	2	4½
Coal, with bands	2	6
Post	6	10
Slate	0	2
Clean coal	1	10
Chalky rock	1	9
Grey metal	1	1
Post	2	10
Grey metal	5	2½
Freestone	5	11
Grey metal post	3	4
Sandstone	14	0
Black metal	0	11
Grey metal	1	9
Post and sandstone	5	4½
Grey metal	0	11
Pipeclay and chert	2	11
Black shale and coal	1	4
Pipeclay and chert	0	8
Black shale and coal	1	10
Pipeclay and chert	1	10
Black shale and coal bands	1	9
Coal and bands	1	2
Blue metal, with glossopteris	3	10
Clean coal	1	2
Band	0	0½
Clean coal	1	0
Black shale band	0	2½
Clean coal	0	7½
Band	0	0½
Coal	0	1
Stone band	0	0½
Coal	0	7½
Blue shale	0	2
Grey metal	0	11
Grey post	2	1½
Grey, dark, and grey metal	3	7
White post, with glossopteris	6	0
Ironstone band	0	6
Blue shale	0	6
Grey metal	3	0
Grey post	4	0
White post	19	10½
Fireclay	0	7
Chert	3	4½
Black band	0	2
Good coal	0	9
Grey metal, with post beds	5	2
Post	0	5½
Grey metal	0	3
Post	2	4
Good coal	0	9
Blue shale, with glossopteris	4	10
Post	2	0
Grey metal and blue shale	1	10½

Name of Stratum.	ft.	in.
Post	1	10
Blue metal	0	6
Post	0	10
Grey metal	1	1
Post, with fossils	0	4
Blue and grey metal	7	1
Blue shale	0	7
Coal	0	7
Fireclay	0	1½
Blue shale	0	1½
Fireclay	1	10
Coal—good	0	3½
Fireclay	0	2
Coal—good	0	3
Stone band	0	0¼
Coal and bands	0	4
Coal—good	1	0
Stone band	0	1
Coal and bands	0	4
Coal—good	0	3½
Stone band	0	2
Coal—good	0	10
Hard black shale, with glossopteris	8	0
Coal	1	0
Coarse coal, with shale bands	2	5
Fireclay	0	1
Black shale	0	2½
White chert	10	0
Whinstone	0	9
Felspar and greenstone mixed	0	9½
Black shale—fossiliferous	4	5¼
Ironbands	0	5
Blue shale	2	0
Post rock	2	0
Grey shale and post	2	10½
Grey metal	0	7½
Grey shale	0	1
Post	1	7½
Grey shale	0	3
Post	0	6
Grey shale	0	11
Grey whinstone	5	1
Leafy post	1	1
Grey shale	0	9
Post	0	6
Blue shale	4	0
Blue shale (slaty and stratified)	10	11
Blue shale	4	0
Blue shale (soft)	1	10
Shale and chert	2	4
Blue shale	5	2
Chert	4	2
Bituminous shale	4	2
Shale and fireclay	6	0
Coal	1	3
Black shale	0	11
Fireclay	0	5
Black shale	0	6
Fireclay	0	5
Black shale	0	6
Fireclay	0	1
Coal	1	0
Fireclay	0	4
Coal	1	2
Fireclay	1	0

Name of Stratum.	ft.	in.
Coal and bands	4	11¾
Black shale	0	2
Chert	0	4
Dirty coal	0	7½
Chert	0	9
Coal and bands	2	3½
Chert	3	10
Post	3	0¾
Black shale	0	2
Coal	0	10¼
Band	0	0¼
Coal	0	2¾
Chert	1	2½
Coal	0	7½
Band	0	0¼
Coal	0	9½
Chert band	0	1
Coal	0	11
Chert band	0	4
Coal (dirty)	1	3½
Black shale and coal bands	2	8½
Chert band	0	0¾
Black shale	0	9
Chert	0	5
Black shale	0	3½
Coal (clean)	0	9
Post	0	4
Chert	1	8½
Black shale	0	8
Chert	2	4
Post	5	9
Hard black shale	1	7½
Fireclay	0	4½
Coal	1	1
Band	0	0½
Coal	0	2
Band	0	1
Coal	0	7½
Band	0	0½
Coal and bands	0	8½
Fireclay	0	3
Coal	0	10½
Band	0	1
Coal	1	1
Stone band	0	0½
Coal	0	1
Stone band	0	1¼
Coal	1	4
Stone band	0	1
Black shale	1	3½
Dark-grey post	0	10
Grey post	9	7
Gritstone	0	10
Grey post and gritstone	11	3
Chert	2	5
Flintstone	2	2
Grey shale (metal)	6	4
Blue shale and ironstone	1	0
Post with fossils	7	0
Chert and post with ironstone bands	7	0
Chert	14	0
	420	4

Section

SECTION showing the thickness and character of the Great Northern (No 1), Cardiff, Burwood, and Victoria Tunnel seam, opened out by the South Wallsend Coal Company, in an adit at Lymington, county of Northumberland. Taken by Mr. Inspector Dixon and myself.



	ft	in.
Very soft sandstone		
Inferior coal and bands	6	0
Indurated clay	0	4
Black shale and coal	0	3
Indurated clay	0	9½
Black band	0	1
Coal	0	6
Indurated clay	0	2
Bright bituminous coal	1	0
Indurated clay	0	4
Bright bituminous coal (streaky)	1	3
Indurated clay	1	2
Black shale	0	1½
Bright bituminous coal	2	2
Band	0	0½
Bright bituminous coal	1	4½
Band	0	1
Coal (streaky)	2	6
Band	0	4½
Bright bituminous coal	2	1½
	20	8
Sandstone		

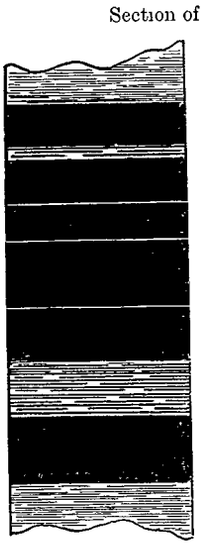
Young Wallsend

THESE are sections showing the thickness and character of the Borehole coal-seam, sunk through at the Young Wallsend Colliery, situated about 2½ miles, by rail, from the Cockle Creek Railway Station, and 13 miles from the Newcastle Harbour A shaft, 15 feet in diameter and 512 feet in depth, has been sunk through it, and a substantial pit top, with four screens, has been erected, also a manager's house and workshops, and the Company anticipate sending coal to market in July next.

Section of second seam over Borehole coal seam

ft	in	
		White sandstone
435	3	To coal
1	10	Hard splint coal
0	0½	Band
1	11	Bright bituminous coal
0	0½	Band
4	-	Bright bituminous coal
0	4	Clay band
1	6	Bright bituminous coal
9	10	

Section of Borehole coal seam.



	ft	in
Bright bituminous shale	1	0
Soft coal	0	3
Bright bituminous coal	1	0
Parting	0	0½
Bright bituminous coal	0	8
Band	0	0½
Bright bituminous coal	1	6
Band	0	0½
Bright bituminous coal	1	0½
Coal and shale (jerry)	1	2
Bright bituminous coal	1	4½
	8	1½

SECTION

SECTION of main shaft at Young Wallsend Colliery, county of Northumberland.

Nature of Stratum.	ft.	in.
Surface (sandstone)	50	0
Grey shale	1	6
Coal seam (dirty)	56	0
Grey post (sandstone)	15	3
Grey shale	5	3
Clay	0	6
Coal seam (dirty)	5	6
Grey shale	28	0
Clay	1	0
Coal seam (dirty)	14	0
Stone and clay	1	0
Hard grey shale	22	0
Coal	1	0
Conglomerate	50	0
Grey shale and coal pipes	5	0
Grey shale	5	0
Conglomerate	66	0
Grey shale	1	0
Fireclay	1	6
Black shale	2	3
Fireclay	1	6
Coal and fireclay	2	0
Shale	1	3
Fireclay	1	3
Coal	1	3
Black shale	2	0
Hard grey shale	18	0
Grey shale, with coal pipes	8	0
Shale, with coal bands	3	0
Grey sandstone	45	0
Grey shale	3	9
Coal	0	6
Grey shale	11	0
White sandstone	5	0
Coal seam (7 feet of good clean coal)	10	0
Grey shale	7	0
Coal seam (mixed with bands)	5	0
Grey shale	47	0
Black shale	1	0
Coal seam (main coal seam)	6	9
Sandstone post (pavement)	7	0
Total depth	520	0

LAKE MACQUARIE.

Account of works in progress at the Wallarah Coal-mining Company's Colliery, at Swansea, Lake Macquarie. This Company have purchased from Messrs. Parbury, Saddington, Lamb, and others, 1,200 acres of freehold property, and an adit is being opened out in the No. 1 seam, and Mr. Thomas Parton, F.G.S., the Company's manager, informs me that they are preparing for an output of 120,000 to 150,000 tons per annum. A railway (Government gauge) is being constructed from the mouth of adit to jetty in Catherine Hill Bay, a distance of 2 miles 10 chains.

The jetty is already completed for a length of 720 feet from the shore, and it is proposed to carry it another 230 feet, where a depth of 28 to 32 feet of water at high tide is obtained. The jetty is well sheltered from the south-east and southerly winds.

GUNNEDAH

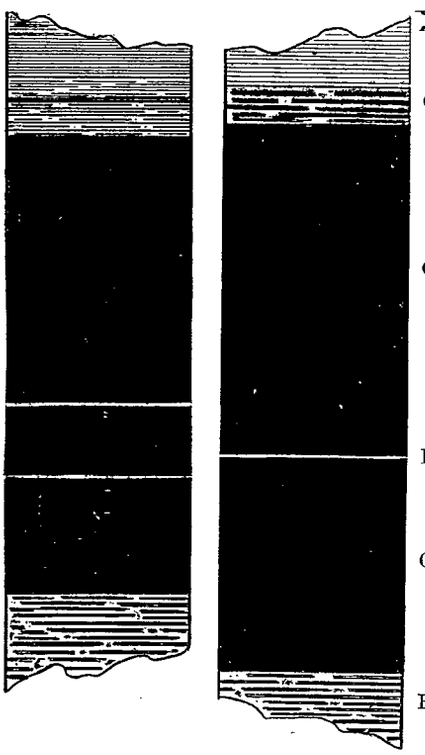
During the year four mines have been opened out, and coal raised and sold therefrom, in the Gunnedah District, viz., Black Jack, Melville, Springfield, and Centennial Colleries, situated about 5 miles from the Government railway. These new mines I purpose visiting and taking sections thereof at an early date, an account of which will be given in next yearly report.

SECTION of bore at Blue Gum Flat, Ourimbah, county of Northumberland. Diameter of bore, 2½in.; diameter of core, 1·7⅛in.

Surface	ft.	in.
Soft sandstone shale, fine conglomerate	433	4
Light sandstone	13	8½
Green shale	0	4
Red shale	1	9
Green shale	0	5
Red shale	1	10
Red and green mottled shale	4	11
Red shale	3	0
Green shale	0	5
Red shale	1	6
Green shale	0	7½
Red and green mottled shale	4	0
Red shale	6	8
Green shale	0	7½
Grey sandstone	2	6
Red shale	1	6
Red and green mottled shale	1	11
Red shale	11	10
Grey sandstone	1	0
Red and green shale	3	0
Red shale	4	3
Red shale	13	7
Grey post	1	3
Blue post	0	3
Red shale	1	4
Green sandy shale	17	0
Green sandy post	3	11
Red shale	10	0
Green sandy post	2	7
Grey sandstone	4	10½
Red shale	12	0
Red shale	1	5½
Grey sandstone	0	8
Red shale	17	2
Green sandy shale	2	8½
Red shale	4	3½
Red shale	7	4
Green sandy shale	5	9½
Red shale	7	1½
Red and green shale	1	0
Grey sandstone	1	0
Red shale	11	1½
Red shale	8	2
Red and green sandstone	1	6
Sandstone	1	7
Red and green shale	11	0
Sandstone	2	6
Red shaly sandstone	2	10
Light sandstone	10	4
Red shale	1	6
Green shale	4	1
Green shale	1	0
Red shale	3	0
Light sandstone	4	7½
Red shale	9	2
Green post	4	6½
Red shale	2	2
Grey sandstone	1	4
Red shale	0	3
Greenish shaly sandstone	4	9
Red shale	2	7½
Red shale	2	5
Green sandy shale	25	10
Red shale	5	0½
Red shale	33	4
Red shale lightly mottled	33	4
Red shale	1	4
Red mottled sandstone	1	0
Grey sandstone	1	3
Green shale	0	6
Grey sandstone	0	10
Sandstone	7	2
Sandstone	22	3
Sandstone	4	9
Green shaly sandstone	1	6
Red shale	2	6
Light shaly sandstone	2	5
Light sandstone	22	3
Red mottled shale	2	2
Green sandstone	8	11
Soft green shale	2	9
Red shale	15	9
Light shaly sandstone	3	9
Light sandstone	3	2
Green shale	1	2
Light sandstone	7	4
Green shale	10	8
Green shale	11	1½
Green shale	3	8½
Light sandstone	24	4
Grey shaly sandstone	1	10
Light sandstone	2	4
Green shale	1	1½
Green shale	1	0
Light sandstone	1	2
Red mottled shale	9	0
Red shale	6	3
Green mottled shale	4	11
Green sandstone	11	1
Light sandstone	33	4
Light sandstone	33	4
Light sandstone	68	0
Sandstone slightly conglomerated	5	0
Red and green sandstone or shale	45	0
Beds of sandstone and conglomerate, with coal pipes	103	4½
Red shale	108	2
Sandstone broke into blue shale	25	0
Total depth reached	1,425	0

Metropolitan Coal Company.

SECTIONS showing thickness and character of the No. 1 Coal Seam, sunk through near Helensburgh, by the Metropolitan Coal Company, adjacent to the Illawarra Railway, and distant 28 miles from Sydney.



ft. in.	200 yards from shaft.		Near shaft.	ft. in.
	Hard grey shale			
	Roof.....			
0 5	Soft shale			
0 10	Coarse coal and bands .....A		Coarse coal	0 10
5 10	Coal ... .B		Coal	7 0
0 1½	Stone band			
1 5	Coal C		Band	1½
0 ½	Parting			
2 7	Coal ....D		Coal	4 5½
	Floor—Black shale		Floor—Black shale.	
10 9½				12 5

THE following analyses have been made by Mr. Mingaye of coal taken by Mr. Inspector Rowan and myself from the upper, middle, and lower part of the seam.—*Vide* letters A, B, C, and D.

Splint Coal, A on Section.

Moisture	0·83	Sulphur, 0·562 per cent.
Volatile hydrocarbons ...	17·47	Specific gravity, 1·402 per cent.
Fixed carbon	70·10	Coke, 81·7 per cent. Not much swollen, dull and firm.
Ash	11·60	Ash, dark-grey.
	100·00	

Splint Coal, B on Section.

Moisture	1·02	Sulphur, 0·508 per cent.
Volatile hydrocarbons ...	16·63	Specific gravity, 1·372 per cent.
Fixed carbon	72·95	Coke, 82·35 per cent. Slightly swollen, dull and firm.
Ash	9·40	Ash, light-grey.
	100·00	

Semi-bituminous Coal, C on Section.

Moisture	0·78	Sulphur, 0·535 per cent.
Volatile hydrocarbons ...	19·52	Specific gravity, 1·428 per cent.
Fixed carbon	65·20	Coke, 79·7 per cent. Well swollen, very bright, and fairly firm.
Ash	14·50	Ash, light-grey.
	100·00	

Semi-bituminous Coal, D on Section.

Moisture	0·77	Sulphur, 0·343 per cent.
Volatile hydrocarbons ...	19·13	Specific gravity, 1·502 per cent.
Fixed carbon	62·35	Coke, 80·10 per cent. Well swollen, lustrous, and firm.
Ash	17·75	Ash, light-grey
	100·00	

The Company hold 1,800 acres of land on mineral lease from the Crown, at a royalty of 6d. per ton on large and 3d. per ton on small coal raised.

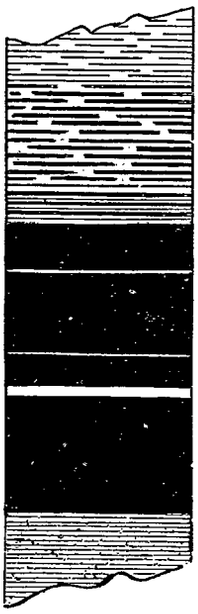
The winding-shaft is 451 feet above sea level, 16 feet in diameter, 1,098 feet to the No. 1 Coal Seam, and 46 feet additional to the No. 2; and is situated 24 chains from the Government Railway, to which a branch line has been constructed.

An air-shaft, 15 feet in diameter, is in course of sinking to the No. 1 coal, where a large fan, for ventilating purposes, is proposed to be erected.

A winding-engine, with two coupled 34-inch cylinders and 5 feet 6 inch stroke, three Lancashire boilers, 26 feet 2 inches x 8 feet 2 inches, and three screens, are in course of erection; and the Company expect to be raising 800 tons of coal per day shortly, to be ultimately increased to 1,000 tons per day.

SECTION

SECTION of a lower coal seam sunk through at the bottom of the Bulli Company's incline, and about 120 feet above sea-level. Measured by Mr. Inspector Rowan.



Roof—Dark grey shale.

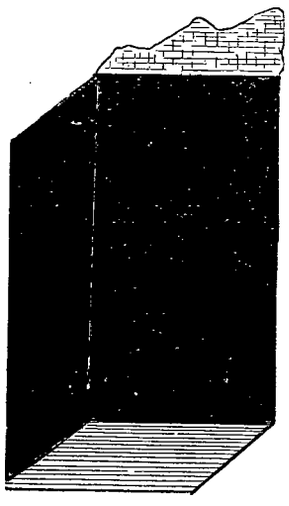
	ft.	in.
Coal—coarse	2	3
Band	0	2
Coal and bands	0	8
Coal	0	11
Band	0	1½
Coal	1	8
Band	0	1
Coal	0	7
Band	0	4
Coal	2	4
Fine s ndstone.	0	1½

SECTION of the No. 1 or uppermost coal seam opened out by Mr. Pringle on the Southern Coal Company's property, near Mount Kembla, and about 8 miles from Wollongong. Taken by Mr. Inspector Rowan and myself. It is owned by an English Company, who are constructing a jetty at Five Islands, and an incline tramway from there to the mine. They have also erected coke ovens.

Roof—Grey shale, 4ft.

	ft.	in
Very heavy splint coal	0	4
Coal—soft and mixed with splint	4	6
Band	0	0½
Coal	0	4
Dark-grey shale.	5	2½

THIS is a section of the uppermost or No. 1 coal seam, 7 feet 6 inches in thickness, of clean coal, opened out by an adit, by Messrs. Wiley and others, near Mount Kembla, Wollongong. It lies very flat, and is similar in quality to that worked at the old established collieries.



Shale and sandstone.

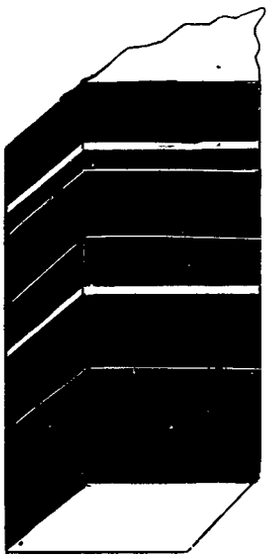
	ft.	in.
Coal	7	6

Fireclay

7 6

THIS

THIS is a section of the seam of coal opened out on Mr. Styles' property on the south-west side of Mount Kembla, near Dapto. It is identical with Mount Kembla, Mount Kiera, Mount Pleasant, Bulli, &c., No. 3 thick coal, commonly called the upper thick or coal seam.



	ft.	in.
Coal	1	6
Black shale	0	4
Coal	0	4
Band	0	2
Coal	2	2
Band	0	0½
Coal, with several ⅛″ partings	1	6
Coal and bands	0	2½
Coal, with several thin partings	1	6
Band	0	1½
Coal, with several thin bands and partings	2	8
	10	6½

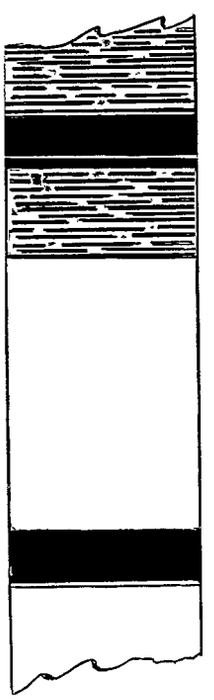
SEAMS of coal and strata proved by adits, &c., by Mr. Biggar, on his property near Dapto, and adjacent to his authorities to mine.

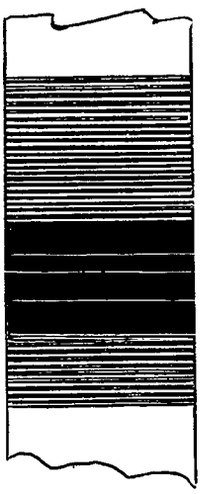
No. 1.

ft.	in.	
		Black friable shale
1	8	Black friable shale
0	2	Smut
2	0	Bituminous coal
0	1	Band
0	5½	Coarse coal
	0	Black shale
15	0	Sandstone (soft)

No. 2.

2	7	Bright bituminous coal
0	3	Black shale
40	0	Various strata





No. 3 (or upper thick coal).

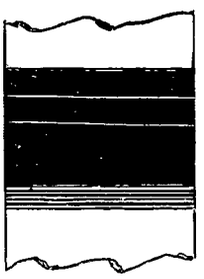
	ft.	in.
Coal and bands	8	0
Coal	1	6
Band	0	0½
Coal	0	10½
Band	0	0½
Coal	1	2
Band	0	1
Coal	1	6
Band	0	0½
Coal and bands	4	0

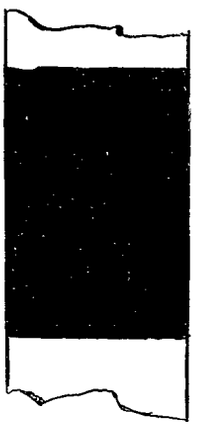
Various strata 168

No. 4.

No. 4.

ft.	in.	
1	2½	Coal (heavy coarse) *a* ....
0	1	Band ...
1	6	Coal (heavy anthracite) *b* ..
0	1	Band ...
3	8	Coal
1	0	Very heavy splint coal *c*
75	0	Various strata (about)



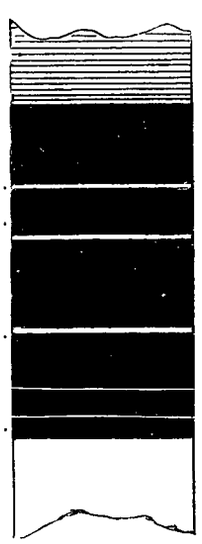


No. 5.

	ft.	in.
Anthracitic seam of coal (about)	14	0

SECTIONS showing the workable portion of the No. 1 coal-seam opened out at the No. 4 and No. 7 adits in Joadja and Wanganderry Creeks, distant about 4 miles from the Australian Kerosene Company's Joadja Creek tramway, and about 13 to 14 miles from the Mittagong Railway Station, on the Great Southern Railway.

ft.	in.	
		Black metal
		Roof
1	7	Coal
0	2	Indurated clay
1	0	Coal
0	2	Band and Coal
1	10	Coal
0	2	Black metal
1	3	Coal
0	0½	Black metal
0	6	Coal
0	0½	Indurated clay
0	4	Coal
7	1	



	ft.	in.
Roof—Indurated clay.		
Coal	1	0
Black metal	0	2
Coal	3	0
White clay	0	0¼
Coal	1	0
Black metal	0	0½
Coal	0	3
	5	5¾

Area of land held under permits.—The property consists of 4,000 acres of Crown land, held under applications for authorities to mine for coal and shale, by Joseph Markby, at a royalty of 6d. per ton on large and 3d. per ton on small coal.

The largest portion of area shows no signs of disturbance.—The area, exclusive of creeks and gullies, is table-land (Hawkesbury sandstone), having an elevation of about 2,300 feet above the sea-level, through which are found a few intrusive dykes of diorite and trachytic rocks, the majority of the area showing no signs of disturbance whatever.

No. 1 coal-seam, of any commercial value.—Two coal-seams have been proved by Mr. Philip Winchester to exist under about 300 acres in and adjacent to the Joadja and Wanganderry Creeks. The upper or No. 1, lying immediately under the bottom of the Hawkesbury sandstones, is the only one which is of any commercial value. They lie very flat, with a slight dip in an easterly to north-easterly direction.

The character of No. 1 coal-seam proved in seven adits along an outcrop of over a mile.—The upper, or No. 1 coal-seam, has been opened out by seven adits driven into it in the Joadja and Wanganderry Creeks, along an outcrop of over 1 mile in length (*vide* numbers 1 to 7 on tracing annexed). The lower portion, about 5 ft 6 in in thickness, of this seam, where proved, is a free-burning bituminous, caking, and coking coal, of superior quality to any I have hitherto seen in the Mittagong or Berrima districts.

Impossible by present provings to estimate area under which coal of a similar quality is likely to be found.—As the coal seams in the Mittagong and Berrima districts are very variable in their character and workable thickness, it is quite impossible for me to give an approximate estimate of the area under which coal, of a similar quality to that proved, is likely to underlie the area granted to Messrs. J. Markby and others.

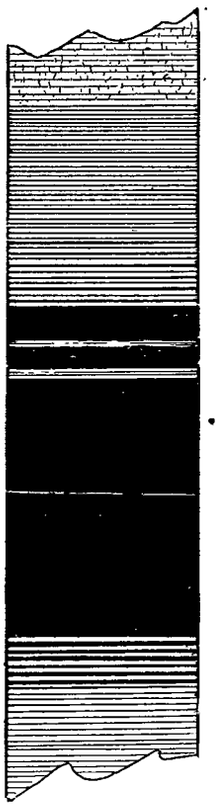
Further operations by boring would prove an area of 2,000 acres.—By putting down three bore-holes, at A, B, and C on tracing, the value of the coal seam under about 2,000 acres could be proved. These bore-holes would pierce the No 1 coal at a depth of probably not more than 300 feet. They will all be in creeks where there is a plentiful supply of water, and a diamond rock-drill boring machine can easily be carted there.

Best place for mining the coal after borings put down.—The place for sinking the shafts and winning the coal is near to No. 3 borehole, from whence a tramway of about 10 miles in length, running alongside the Joadja Creek tramway, could be easily constructed, to the Great Southern Railway, at or near to the Mittagong Railway Station

OAKEY

Oakey Park Colliery.

Section showing thickness and character of the Lithgow Valley coal-seam (lowest in the series) at the abovenamed colliery, Taken by me adjacent to the winding-shaft.



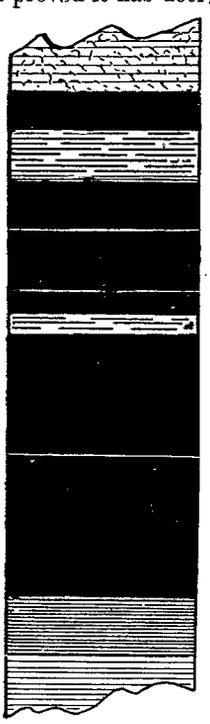
	ft.	in
Sandstone and conglomerate.		
Blackstone	3	0
Blackstone and coal bands	1	5
Coal	0	7
Blackstone	0	2
Coal	0	5
Blackstone (roof)	0	4
Coal (worked)	2	3
Band	0	0½
Coal (worked)	3	2½
Coal inferior (floor)	1	0
	12	5

The Oakey Park Colliery is situated north of the Vale Mine in Lithgow Valley, and will shortly be connected with the Great Western Railway by a branch line.

The winding-shaft is 327 ft. in depth to the bottom of the Lithgow Valley coal-seam, and a winding engine has been erected with two coupled 11-inch cylinders and a 3-ft. stroke, and two screens, &c. This mine would have been sending coal to Sydney early in 1889 if some obstruction had not been thrown in their way to delay the construction of a branch line.

Vale Colliery.

Section showing thickness and character of the Lithgow Valley coal-seam (lowest in the series) at the abovenamed colliery. Taken by me adjacent to the winding-shaft. In a southerly direction as far as at present proved it has decreased considerably in thickness.

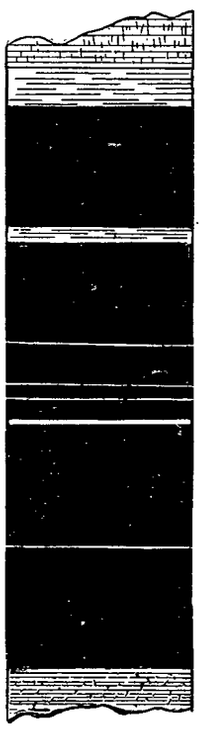


	ft.	in
Sandstone and conglomerate.		
Coal	0	10
Blackstone	1	0
Indurated clay	0	1
Coal	1	1
Band	0	0¼
Coal	1	4
Band	0	0⅛
Coal	0	6
Blackstone (roof)	0	5
Coal (worked)	2	6
Band 2" to	0	0½
Coal	3	1
Heavy coal (floor)	1	3
	12	1⅞

The Vale Colliery is situated east of the Vale of Clywdd in Lithgow Valley, and is connected with the Great Western Railway by a line of about 250 yards. The winding-shaft is 333 feet in depth to the floor of the Lithgow Valley coal-seam, and a winding engine has been erected with two coupled 14-inch cylinders and a 2 feet 6 inch stroke, three screens, &c. A furnace shaft is in course of sinking to the coal-seam, and the Company anticipate raising a considerable quantity of coal in 1889. Cullen

Cullen Bullen Colliery.

Section showing thickness and character of Deihm's Kerosene Vale coal-seam, opened out by an adit at Cullen Bullen, in the county of Roxburgh, distant about 117 miles from Sydney.



	ft.	in.
Blue shale and indurated clay	6′	0″
White clay		0″
Coal	2	5½
Indurated clay	0	3½
Coal	2	2
Band 0½″ to	0	1
Coal	0	0
Band	0	0½
Coal	0	3
Band	0	0½
Coal	0	6
Band	0	1½
Coal (worked)	2	0
Band	0	0¼
Coal (worked)	2	8¾
Sandstone.	12	0

The Company hold 3,000 acres of land, on mineral lease from the Crown, at a royalty of 6d. per ton on large and 3d. per ton on small coal raised.

Two tunnels have been driven into the seam at a height of about 3,000 feet above sea-level. Pit bank, screens, workshops, and a branch line 1¼ miles in length to the Mudgee Railway, are nearly completed, and the Company expect to be sending coal to market early in 1889. The following analyses of the coal have been made by Mr. Mingaye :—

No. 1 Adit—Bituminous coal.

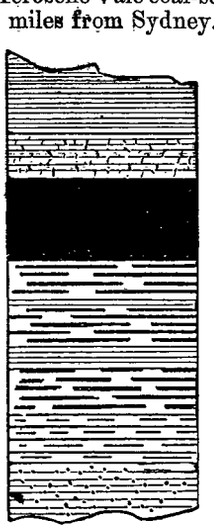
Moisture	2·04	Sulphur	·782%
Volatile hydroc.	37·36	Specific gravity	1·312%
Fixed carbon	51·05	Coke	60·6% Well swollen, bright, and firm.
Ash	9·55	Ash, white	
	100·00		

No. 2 Adit—Bituminous coal.

Moisture	2·53	Sulphur	1·08%
Volatile hydroc.	37·87	Specific gravity	1·314%
Fixed carbon	54·10	Coke	59·6% Well swollen, lustrous, and firm.
Ash	5·50	Ash, light grey	
	100·00		

Shepherd and Massey's Coal-mine.

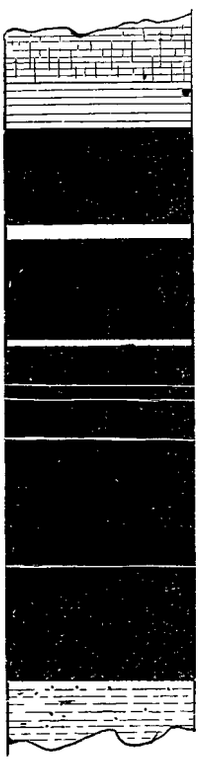
Section showing thickness and character of Shepherd and Massey's upper coal-seam, 54 ft. above their Deihm's Kerosene Vale coal-seam, opened out by an adit at Cullen Bullen, in the county of Roxburgh, about 117 miles from Sydney.



	ft.	in.
Indurated clay.		
Conglomerate	1′	1″
Coal—Bituminous and coking	1	9
Indurated clay	0	2
Coal—Inferior	0	8½
Band	0	0¼
Coal—Inferior	0	11
Indurated clay and coal	0	7
Coal—Inferior	0	11
Black coal and shale	1	1
	6	1¾

Section

SECTION showing thickness and character of Shepherd and Massey's Deihm's Kerosene Vale coal-seam, opened out by an adit on their 2,040 acres of mineral lease land held on a royalty of 6d. per ton on large and 3d. per ton on small coal, at Cullen Bullen, in the county of Roxburgh, distant about 117 miles from Sydney.



	ft.	in.
Blue shale and indurated clay.		
Indurated clay	1′ 0″	
Coal	2	0
Indurated clay	0	5
Coal	2	1
Band	0	2
Coal	0	9
Band	0	0¾
Coal	0	0¼
Band	0	9
Coal	0	1½
Band		
Coal (worked)	2	7
Band	0	0¼
Coal (worked)	2	4½
	11	7

The coal is similar to and equal in quality to that being worked by the Cullen Bullen Company, and the following are analyses of it made by Mr. Mingaye:—

Bituminous coal from the 1 ft. 9 in. of the upper seam.

Moisture	1·85	Sulphur	·686%
Volatile hydrocarbons	41·85	Specific gravity	1·274%
Fixed carbon	51 93	Coke	56 3% Well swollen, fairly light and firm.
Ash	4·37	Ash, white.	
	100 00		

Bituminous coal from Deihm's seam.

Moisture	2·69	Sulphur	·686%
Volatile hydrocarbons	36·71	Specific gravity	1 324%
Fixed carbon	49 85	Coke	60 6% Fairly swollen, bright, and firm.
Ash	10·75	Ash, pink.	
	100 00		

During the last few years numerous new coal-mines have been opened out on reserved Crown lands, for which the Crown has a royalty of 6d. per ton on round and 3d. per ton on small coal raised, and who will thus receive a very considerable sum of money in 1889 and subsequent years.

In conclusion, I have only to add that there were 91 collieries under inspection, and that notices have been received of 30 new mines having been opened out, against 72 collieries under inspection in the preceding year, and 8 opening out, and that the year's returns show a decrease in the Northern District of 176,749 tons of round and small coal raised and £74,697 in value; in the Southern an increase of 420,228 tons and £167,355 in value; and in the Western District an increase of 37,457 tons and £16,100 in value.

I have, &c.,
JOHN MACKENZIE, F.G.S.,
Examiner of Coal-fields.

Section

Shewing Coal Seam's proved on Stockton Peninsula by Mr R. Thomas Colliery Manager, Stockton to Examiner -

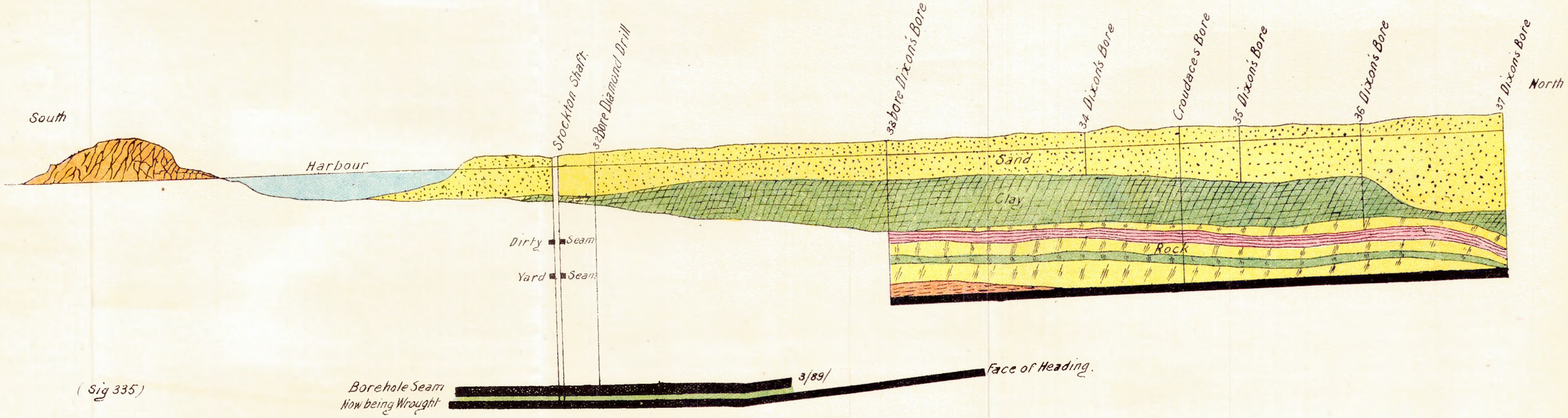
Horizontal Scale of Chains

0 8 16 24 32 40 48

Vertical Scale of Feet.

0 100 200 300 400 500 600

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

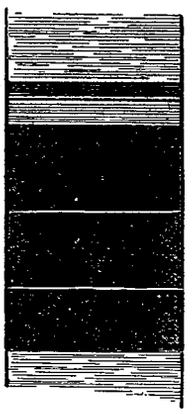


(Sig 335)

SECTIONS of the Borehole Coal Seam, worked at West Wallsend and Young Wallsend, and proved by borings at Brooks' Bore, Cockle Creek, and Northumberland Co's. Bore, at Fassifern. Taken by John Mackenzie, F.G.S., Examiner of Coal-fields, and John Dixon, Inspector of Collieries, February, 1889.

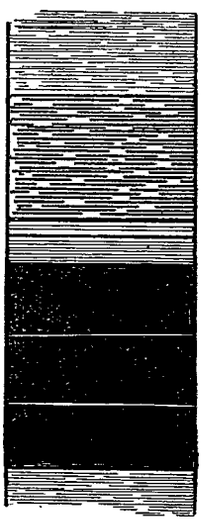
West Wallsend Coal Company.

No. 1 Measurement.



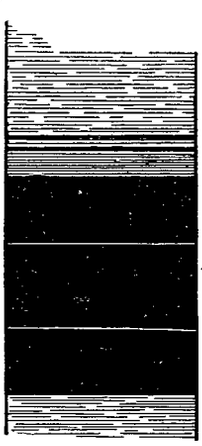
ft.	in.		′	″
		Coal	0	3
		Band	0	0½
		Coal—coarse	0	6
		Roof—parting	0	0⅛
1	8½	Coal—good		
0	0¾	Band		
1	6¼	Coal—good		
0	0¾	Band		
1	4¾	Coal—good		
4	9	Coal worked.		

No. 2 Measurement.



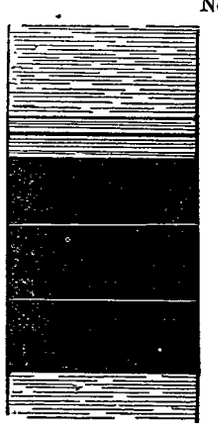
	′	″	ft.	in.
Shale and coal ...	2	9		
Coal	0	3		
Parting	0	0½		
Coal	0	6		
Roof Band	0	0½		
Coal—good			1	6
Band			0	1
Coal—good			1	6
Band			0	0¾
Coal—good			1	4½
Coal worked			4	6¼

No. 3 Measurement.



ft.	in.		′	″
		Coal	0	3½
		Band	0	0½
		Roof—Coal, coarse	0	6½
1	7½	Coal—good		
0	0¾	Band		
1	6¾	Coal—good		
0	0½	Band		
1	3½	Coal—good		
4	7	Coal worked.		

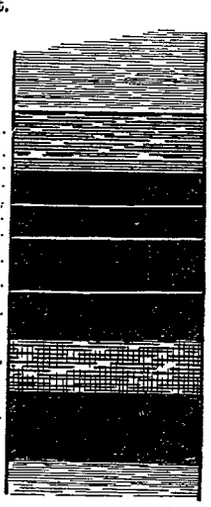
No. 4 Measurement.



	′	″	ft.	in.
Coal	0	3		
Band	0	0½		
Coal—coarse	0	6		
Roof—parting	0	0⅛		
Coal—good			1	7⅜
Band			0	0½
Coal—good			1	7
Band			0	0½
Coal—good			1	4
Coal worked			4	7¾

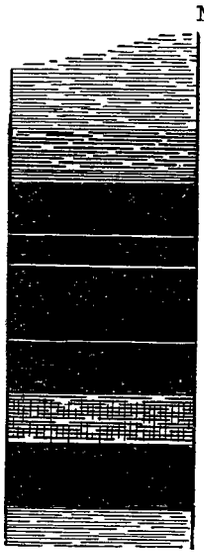
Young Wallsend.

No. 5 Measurement.



ft.	in.		′	″
		Bituminous shale	1	0
		Soft coal	0	3
		Roof		
0	9	Coal—good		
0	0⅛	Parting		
0	8	Coal—good		
0	1	Band		
1	5½	Coal—good		
0	0¾	Band		
0	11	Coal—good		
		(Coal worked, 3 ft. 11g in.)		
1	2½	Coal and shale (jerry)		
1	4	Coal		
6	5⅞	Coal worked.		

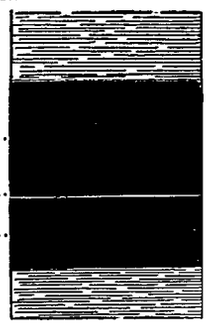
No. 6 Measurement.



	′	″	ft.	in.
Bituminous shale	1	0		
Roof—soft coal	0	3		
Bright bituminous coal			1	0
Parting			0	0⅛
Bright bituminous Coal			0	8
Band			0	0¼
(Coal worked 4 ft. 3g in.)				
Bright bituminous coal			1	6
Band			0	0½
Bright bituminous coal			1	0½
Coal and shale (jerry)			1	2
Bright bituminous coal			1	4½
Total thickness			6	10⅛

Brooks' Bore, Cockle Creek.

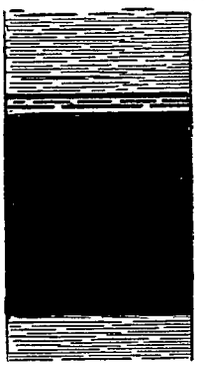
No. 7 Measurement.



ft.	in.	
2	6	Coal.....
0	1	Band .....
1	6	Coal.....
4	1	Coal worked.

Northumberland Coal Co.'s Shaft and Bore.

No. 8 Measurement.



	ft.	in.
Bituminous shale..... 3″		
Bright bituminous coal..	4	4¾
(0′ 6¾″ Coal and shale).		
Coal worked	4	4¾

The Half-yearly Report on the Collieries in the Northern District in New South Wales, and Accidents therein investigated by the Inspector of Collieries during the six months ending 31st December, 1888.

The Examiner of Coal-fields, Sydney,— Newcastle, 31 January, 1889.

Sir,

Pursuant to the provisions of clause 26 in the Coal-mines Regulation Act, 1876, we have the honor to transmit to you this our six-monthly report on the state of the various collieries in the Northern District for the half-year ending December 31, 1888.

The total number of collieries under inspection in the Northern District during the term embraced in this report is fifty-five, being an increase of eleven during the last six months, viz.:—West Burwood, Summer Hill, Monkwearmouth, Richmond Vale, Buttai, Leconfield, Dulwich, Centennial, Springfield, Gladstone, Melvilles.

The New Lambton B pit has been abandoned; and, in addition to the above, one shale mine has been under inspection.

Present state of Mines.

A. A. Co's. No. 2 and Hamilton Pits.—About 600 men, &c., are employed in this colliery on the day-shift, and supplied with about 100,000 cubic feet of air per minute. The face workings are divided into separate and distinct districts, and in none of the districts are there more men than the Act allows. The provisions of the Act are also complied with in other respects.

New Winning.—There are about 70 men, &c., employed in this colliery. A Schiele fan is being erected for the purpose of ventilating the workings. The provisions of the Act are complied with.

Wallsend Colliery.—About 800 men, &c., are employed in this mine in the day-time; the total quantity of air introduced into the mine per minute is about 170,000 cubic feet. In connection with the face workings there are thirteen splits or districts, each district being supplied with a separate and distinct current of fresh air. In one district there are more men than the Act allows. The Act in other respects is complied with.

Newcastle Co's. Colliery.—About 360 men, &c., are employed in this mine during the day-time, and the total quantity of air introduced into the mine per minute is about 86,000 cubic feet. The face workings are divided into separate and distinct districts, and the number of men in each district is in keeping with the provisions of the Act. In other respects also the Act is complied with.

Co-operative Colliery.—About 400 men, &c., are employed in this mine during the day, and the total quantity of air circulating in the mine per minute is about 100,000 cubic feet. The face workings are divided into separate and distinct districts, and the provisions of the Act are complied with in every particular.

Lambton Colliery.—About 400 men, &c., are employed in this mine in the day-time, and about 80,000 cubic feet of air per minute is available for the several districts. The face workings are divided into ten districts, and the number of men in each is in keeping with the provisions of the Act. The Act in other respects is complied with.

Burwood Colliery.—About 300 men, &c., are employed in this mine on the day-shift, and the total quantity of air entering the mine per minute is about 80,000 cubic feet. The number of districts, and the number of men in each district, are according to the Act. The provisions of the Act are complied with in other respects also.

Stockton Colliery.—About 280 men, &c., are employed in this mine during the day-time, and the total quantity of air entering the mine per minute is about 100,000 cubic feet. During the six months a new ventilating furnace has been erected, and the ventilation throughout the workings has been considerably increased. The furnace shaft has also been lined with brick for some distance up from the bottom, which is a great improvement. The face workings are divided into separate and distinct districts, and in none of the districts are there more men than the Act allows. The provisions of the Act are also carried out in other respects.

Wickham

Wickham and Bullock Island Colliery.—About 200 men, &c., are employed in this mine during the day-time, and supplied with about 60,000 cubic feet of air per minute in three separate and distinct currents, and preparations are being made for another distinct current of air in the dip workings. The ventilation has been greatly improved in this mine during the six months by the erection of a large ventilating fan, which is giving good results. The provisions of the Act are complied with in other respects also.

Brown's Colliery.—About 200 men, &c., are employed in this mine on the day shift. The total quantity of air introduced into the mine per minute is about 50,000 cubic feet. The face districts are according to the Act, and the provisions of the Act in other respect are complied with.

Duckenfield Colliery.—About 170 men, &c., are employed in this colliery, and the total quantity of air circulating in the mine per minute is about 48,000 cubic feet. The number of districts and number of men in each district are according to the Act. The Act is also carried out in every other respect.

Hetton Colliery.—About 80 men, &c., are employed in this colliery during the day-time. For this number the ventilation is only barely in keeping with the provisions of the Act at the present time. However, improvements are being effected, and the second opening to the day or surface is being sunk as quickly as possible. The provisions of the Act are fully complied with in other respects.

South Waratah Colliery.—About 100 men, &c., are employed in this mine during the day-time, and supplied with about 18,000 cubic feet of air per minute in two separate and distinct currents. The Act is also complied with in other respects.

Great Northern Colliery.—There are about 160 men, &c., employed in this mine, and supplied with about 16,000 cubic feet of air per minute in three separate and distinct currents. Another shaft is being sunk for ventilating purposes. The provisions of the Act are complied with.

Maryville Colliery.—Only about 40 men, &c., are employed in this mine at the present time. The ventilation is up to the requirements of the Act, and the provisions of the Act are otherwise complied with.

Linwood Colliery.—About 48 men, &c., are employed in this mine during the day. The ventilation is satisfactory, and the Act complied with in other respects also.

Clay Cross Colliery.—About 16 men, &c., are employed in this mine during the day. The ventilation is satisfactory, and the Act complied with in other respects also.

East Waratah Colliery.—Only about 8 men, &c., are employed in this mine at present. The ventilation is satisfactory, and the Act complied with in other respects also.

Ferndale Colliery.—About 85 men, &c., employed in this mine during the day. The ventilation is up to the requirements of the Act, and the provisions of the Act complied with in other respects.

New Lambton C Pit.—About 70 men, &c., are employed in this mine, and are supplied with about 26,000 cubic feet of air per minute in three separate currents. In the adit in connection with this colliery about 55 men, &c., are employed, and supplied with about 14,000 cubic feet of air per minute. The Act is also complied with in other respects.

West Burwood Colliery.—About 10 men, &c., are employed in this mine during the day. The provisions of the Act are complied with.

Hillside, Burwood.—Only about 6 men, &c., are employed in this mine in the day-time. The Act is complied with.

New Duckenfield Colliery.—There are about 26 men, &c., employed in the two mines in connection with this colliery. The ventilation is good, and the requirements of the Act carried out.

Old Waratah.—There are about 12 men, &c., employed in the two tunnels. The ventilation is good. No cause for complaint.

Goose Colliery.—About 7 men, &c., are employed in this mine. The ventilation is good, and the Act complied with.

Hillend Colliery.—Only a few men occasionally employed. The Act is complied with.

Pride of Ferndale Colliery.—About 9 men, &c., are employed in this mine. The ventilation is satisfactory, and the Act complied with.

Brookstown Colliery.—There are only 9 men, &c., employed in this mine. The ventilation is satisfactory, and the Act complied with.

Summerhill Colliery.—This mine has been opened out during the six months. Four men, &c., are employed, and everything is satisfactory.

West Wallsend Colliery.—About 71 men, &c., are employed in this colliery during the day-time, and supplied with about 25,000 cubic feet of air per minute in two separate and distinct currents. The provisions of the Act are also complied with in other respects.

Monkwearmouth Colliery.—The main shaft in connection with this colliery is now being sunk. About 30 men are employed in and about the shaft. Everything is in good order, and the provisions of the Act observed.

Young Wallsend Colliery.—About 30 men are employed in and about this new winning. The main shaft is now down a considerable depth, and everything in and around the shaft is most satisfactory, and the provisions of the Act strictly complied with.

Durham Colliery, Redhead.—The main shaft at this colliery has been sunk to the Borehole seam of coal, and the work of opening out has been commenced, and about 10 men are at present employed. The provisions of the Act are complied with.

South Wallsend (late Lymnington) Colliery.—The shaft is at the present time being unwatered for the purpose of further sinking. In the adit in connection with this colliery 10 men, &c., are employed. The ventilation is satisfactory, and the Act complied with.

Teralba Colliery.—Sinking operations are being carried out at this new winning. There are about 30 men employed in connection with the shaft. No cause of complaint.

Northumberland Colliery.—Sinking operations at this colliery are for the present suspended, and a diamond-drill bore is being put down for the purpose of testing the property. About 14 men are employed, as it is deemed necessary to keep the water down on account of the timber lining in the shaft. The provisions of the Act are complied with.

Rathluba Colliery.—There are only 6 men employed in this mine. The ventilation is good, and the Act complied with.

Thornleigh Colliery.—There are 9 men employed in this mine. The ventilation is satisfactory. No cause of complaint.

Bloomfield Colliery.—Only 4 men are employed underground at this colliery. The ventilation is good, and the Act complied with.

Sunderland Colliery.—Only 2 men employed at this colliery. The ventilation is satisfactory, and the provisions of the Act complied with.

Bulli Colliery.—Prospecting operations have been carried on during the past six months, and three small shafts have been sunk to a seam of coal. All work is at present suspended.

Richmond Vale Colliery.—This new winning is situated about 9 miles south-east from East Maitland. Sinking operations are carried on day and night, and about 15 men are employed in connection therewith. No cause of complaint.

South Greta Colliery.—There are about 40 men employed in the coal tunnel. The cannel seam is being opened up, and will shortly be at work. The ventilation is satisfactory, and the Act complied with.

Anvil Creek Colliery.—There are only 9 men at present employed in this mine. No cause of complaint.

Greta Colliery.—In this colliery about 230 men, &c., employed on the day shift. The total quantity of air introduced into the mine per minute is about 50,000 cubic feet. None of the districts are overcrowded. A Guibal fan is being erected in connection with this colliery for the purpose of improving the ventilation. The requirements of the Act are complied with.

Leconfield Colliery.—A new colliery is being opened out on the Leconfield Estate. There are about 10 men at present employed underground, and everything is satisfactory.

Ellesmere Colliery.—About 28 men, &c., employed in this mine. The ventilation is satisfactory, and the Act complied with in every respect.

New Park Colliery.—There are 25 men employed underground at this colliery. The ventilation is good, and the Act complied with.

Elliott's Colliery.—Only 1 man and boy employed in this mine. The Act is complied with.

Rosedale Colliery.—There are 8 men, &c., employed in this mine. The ventilation is satisfactory, and the Act complied with.

Dulwich Colliery.—A new colliery is being opened out on the Dulwich Estate, in the Singleton district. There are 4 men employed underground. The ventilation is good, and the provisions of the Act complied with.

Gladstone Colliery, near Gunnedah.—This mine has been under inspection during the past six months. About 7 men are employed. The ventilation is good, and the Act fully carried out.

Springfield Colliery.—This mine is also situated near Gunnedah, and has been under inspection during the past six months. Only a few men at present employed; everything satisfactory.

Black Jack.—This colliery is now being opened out, and about 5 persons are employed. The provisions of the Act are observed.

Centennial Colliery, Curlewis.—Prospecting operations for coal have been carried on in connection with this colliery for some time past. Only a few persons are employed. No cause for complaint.

Great Northern Shale and Oil Company's Mine.—This mine is situated at Doughboy Hollow, near Murrurundi, and has been under inspection during the past six months. About 4 men have been employed. The ventilation is satisfactory, and the provisions of the Act fully observed.

Accidents in Mines.

The accidents investigated by us in the Northern District during the six months ending 31st December, 1888, are thirty-four in number. Of this number, nineteen were fully reported on at the time, and fifteen were found to be of a minor character, and full reports were not written thereon.

Of the nineteen accidents in the annexed tabulated list two proved fatal—one being by a fall of stone (roof), and the other by the ignition of fire-damp.

The majority of the non-fatal accidents were caused by falls of coal, but none of them were of a very serious nature.

The first of the fatal accidents happened to a deputy named Joseph Willis by a fall of roof (stone) in the Wallsend Colliery on 7th September. On the day of the accident the District Coroner, G. C. Martin, Esq., held an inquest on the body of deceased, which inquest was also continued on the following day. Inspector Bates was present at the inquest each day and heard all the evidence, and fully agrees with the verdict of "accidental death," as returned by the jury on that occasion.

The second fatal accident happened to a sinker named Thomas Jones, by the ignition of a quantity of fire-damp, in the South Wallsend sinking pit, on 28th November last. The injuries in this case did not prove fatal at the time, but the poor sufferer lingered for fourteen days after receiving the accident, and expired on the 12th December last. On the 14th of same month the District Coroner held an inquest on the body of deceased. Inspector Dixon attended the inquest and heard all the evidence, and fully agrees with the verdict of "accidental death," as returned by the jury.

The first of the non-fatal accidents happened to a miner named James Jukes, by a fall of coal in the Lambton Colliery, on 2nd July, and resulted in rather severe injuries to hips.

The second was a fracture of collar-bone to a miner named Frank Derry, by a fall of coal in the South Greta Colliery, on 13th July last.

The third resulted in very serious burns to face, arms, and body of a miner named Edward Robson, by an explosion of powder in the A. A. Co.'s No. 2 pit, on 16th July last.

The fourth was a severe fracture of the left leg, to a miner named James Milburne, by a fall of coal in the Wallsend Co.'s Colliery, on 26th July last.

The fifth happened to a miner named Thomas Smith, by a fall of roof (stone) in the Burwood Colliery, on 8th August, and resulted in fracture of right leg.

The sixth resulted in fracture of left thigh and very severe wounds about head and face, to a miner named Thomas Sutton, by a fall of roof (stone) in the Newcastle Co.'s Colliery, on 18th August.

The seventh happened to a miner named James Bolan, by a fall of coal in the A. A. Co.'s Hamilton pit, on the 21st August, by which injuries to left ankle and back were sustained.

The eighth was a leg fracture to a wheeler named William Richards, by slipping on a rail in the main tunnel, South Greta Colliery, on 7th November last.

The ninth happened to a miner named Henry Toll by a fall of coal in the Hetton Colliery on 28th November, and resulted in injury to hips.

The tenth was caused by the ignition of a quantity of fire-damp in the South Wallsend sinking pit on 28th November, and resulted in very severe burns to head, face, neck, and body, also arms and hands, to a sinker named Daniel Dawsey. A sinker named John Minchie was also severely burnt at the same time in the same shaft.

The

The twelfth happened to a miner name Josiah Hammond, by a fall of coal in the Burwood Colliery, on the 3rd December last, and resulted in fracture of left leg.

The thirteenth was caused by the falling of a scaffold in the Richmond Vale Colliery sinking pit on 4th December last. Three sinkers named Archibald Gray, Alex. Stanton, and Thomas Taylor were working on the scaffold when it fell. Gray sustained fracture of arm, Stanton a severe scalp wound, and Taylor fracture of both legs and injury to head.

The sixteenth happened to a miner named William Haase, by a fall of coal in the Newcastle Co.'s Colliery on 22nd December, and resulted in amputation of right arm close to the shoulder.

The seventeenth and last non-fatal accident happened to a miner named Samuel Hamilton, by a fall of coal in the Duckenfield Colliery on the 22nd December. The injuries in this case were very severe, being fracture of the left collar-bone and so severe a fracture of right leg as to necessitate amputation above the knee.

The usual tabulated list of accidents is hereto appended.

We have, &c.,
JOHN DIXON,
THOS. L. BATES,
Inspectors of Collieries.

TABULATED LIST of fatal and non-fatal Accidents in the Northern Collieries of New South Wales, investigated by the Inspectors of Collieries during the half-year ending 31st December, 1888.

No.	Date.	Colliery.	Sufferer.	Occupation.	Remarks on nature and extent of injuries.	Non-fatals.						Fatals.			
						Falls of coal.	Explosion of powder.	Falls of stone.	Slipping on rail.	Ignition of fire-damp.	Fall of scaffold.	Fall of stone.	Ignition of fire-damp.	Total non-fatals.	Total fatals.
1	July 2	Lambton	James Jukes	Miner	Crushed about hips by a fall of coal	1								1	
2	,, 13	South Greta	Frank Derry	Miner	Fractured collar-bone by a fall of coal	1								1	
3	,, 16	A. A. Co.	Edward Robson	Miner	Serious burns by explosion of powder		1							1	
4	,, 26	Wallsend	James Milburne	Miner	Leg fracture by a fall of coal	1								1	
5	Aug. 8	Burwood	Thomas Smith	Miner	Leg fracture by a fall of stone			1						1	
6	,, 18	Newcastle Co.	Thomas Sutton	Miner	Thigh fracture by a fall of stone			1						1	
7	,, 21	A. A. Co.	James Bolan	Miner	Injury to left ankle and back by a fall of coal	1								1	
8	Sept. 7	Wallsend	Joseph Willis	Deputy	Fatally injured by a fall of stone							1			1
9	Nov. 7	South Greta	William Richards	Wheeler	Leg fracture by slipping on a rail				1					1	
10	,, 28	Hetton	Henry Toll	Miner	Injury to hips by a fall of coal	1								1	
11	,, 28	South Wallsend	Thomas Jones	Sinker	Fatal injuries by ignition of fire-damp								1		1
12	,, 28	,, ,,	Daniel Dawsey	Sinker	Serious burns by ignition of fire-damp					1				1	
13	,, 28	,, ,,	John Minchie	Sinker	Serious burns by ignition of fire-damp					1				1	
14	Dec. 3	Burwood	Josiah Hammond	Miner	Leg fracture by a fall of coal	1								1	
15	,, 4	Richmond Vale	Archibald Gray	Sinker	Arm fracture by fall of scaffold in shaft						1			1	
16	,, 4	,, ,,	Alex. Stanton	Sinker	Severe scalp wound by fall of scaffold						1			1	
17	,, 4	,, ,,	Thomas Taylor	Sinker	Fracture of both legs and injury to head by fall of scaffold.						1			1	
18	Dec. 22	Newcastle Co.	Wm. Haase	Miner	Loss of right arm by a fall of coal	1								1	
19	,, 22	Duckenfield	Samuel Hamilton	Miner	Loss of right leg and fracture of collar-bone by fall of coal.	1								1	
					Total	8	1	2	1	2	3	1	1	17	2

The Half-yearly Report of the Inspector of Collieries on the state of the various Collieries in the Southern and Western Districts of the Colony of New South Wales, and accidents therein, for the half-year ending 31st December, 1888.

The Examiner of Coal Fields,— Wollongong, 6 February, 1889.

Sir,

In compliance with the requirements of clause 26 in the Coal Mines Regulation Act 1876, I have the honor to transmit to you this my six-monthly report on the state of the various collieries for the half-year ending 31st December, 1888.

The total number of collieries under inspection in the Southern and Western Districts during the last six months is thirty-six. Four new collieries have been added to the number during the last six months, viz., Cullen Bullen Colliery (near Wallerawang), Massey and Sheperd's Mine (near Cullen Bullen), Holt's Prospecting Mine (near Wallerawang), Woonona Colliery (near Bulli), making in all 36 collieries.

Western District	18 coal mines and 2 shale mines.	
Berrima ,,	2 coal mines and 1 shale mine.	
Southern ,,	13 coal mines.	
	33	3 = 36 collieries.

PRESENT STATE OF MINES.

Western District.

Rawden Colliery.—About 28 men are employed underground. The colliery is worked in two shifts, about 14 men being on each shift, and served with 7,800 cubic feet of air per minute. The intake and return air-ways in good order. The Act in all respects complied with.

Carlo's Gap Colliery.—During the last six months only 2 men have been employed underground, getting a few tons of coals weekly. The ventilating current is about 1,000 cubic feet of air per minute. The Act in other respects complied with.

Vale

Vale Colliery.—About 36 men have been employed underground, and served with about 4,500 cubic feet of air per minute. The ventilating current is produced by a steam jet in the upcast side of No. 1 shaft. The new air-shaft is down about 100 feet, and is expected to reach the workings of the No. 1 pit in about three months. Preparations are also being made to build a large ventilating furnace. The shaft and furnace, when completed, will produce a great current of ventilation throughout the colliery. The Act in other matters complied with.

Eskbank Pit.—An average of about 65 men and horses have been employed underground, and served with 22,000 cubic feet of air per minute in one current. During the last six months the "tail-rope system" of haulage has been introduced underground, and is a great improvement upon the former system, viz., the haulage being done by horses. The intake and return airways, travelling road, and second way to the day have been kept in good order. The Act in all respects complied with.

Eskbank Old Tunnel.—About 6 men are employed underground, and served with about 8,000 cubic feet of air per minute. The Act in other respects complied with.

Lithgow Valley Colliery.—An average of 60 men and horses have been employed during the last six months, the same being served with about 21,000 cubic feet of air per minute in two separate splits. The intake and return airways, travelling road, and second way to the day have been kept in excellent order. The Act in all respects complied with.

Hermitage Colliery.—About 6 men employed underground, and served with about 18,000 cubic feet of air per minute. The colliery is in a healthy condition throughout. The Act in all respects complied with.

Oakey Park Colliery.—During the last six months little or no work has been done underground. The surface arrangements are completed, but the Company is waiting on the Government to pass a Bill to enable them to construct a tramway from the pit to the Government Railway. Meanwhile about 8 men are employed underground driving the two main headings, and are served with about 4,000 cubic feet of air per minute. The Act in all respects complied with.

Zig-Zag Colliery.—An average of 50 men has been employed underground, and served with about 18,000 cubic feet of air per minute in one current. The ventilating current is well sustained throughout the workings. The intake and return airways in good order. The Act complied with.

Vale of Clwydd Colliery.—About 50 men have been employed underground, and served with about 12,000 cubic feet of air per minute. During the last six months heavy falls of roof have occurred on the western side of the colliery, but the men were withdrawn, and are now working in the eastern division of the mine. The Act in other respects complied with.

Main Camp Colliery.—An average of 12 men are employed underground, and supplied with about 19,000 cubic feet of air per minute. The intake and return airways and second way to the day are kept in good order. The Act in all respects complied with.

New South Wales Shale Mines.—About 43 men are employed underground, and served with 14,000 cubic feet of air per minute. Hartley, New Tunnel.—This tunnel has been lately opened in order to reclaim a portion of shale supposed to have been left in the old abandoned workings; 12 men are employed, and served with 4,000 cubic feet of air per minute.

Katoomba Colliery.—About 50 men have been employed during the last six months, and served with about 8,000 cubic feet of air per minute. The colliery is fairly ventilated throughout, and the Act complied with.

Katoomba Shale Mines.—Are situated about 2¼ miles from the Katoomba Colliery. About 30 men are employed driving adits proving the thickness and quality of shale. Nos. 3 and 4 adits are opened out on the longwall system, and a good current of air is passing along the faces. About 1,400 tons of shale has been worked out of the several adits. The mode of haulage from the mines to the top of the Katoomba Colliery incline is by means of a pendant wire tramway, which spans gullies and deep ravines. Over 2 miles has been constructed, at a cost of about £11,000.

Shepherd & Massey's Colliery, near Cullen Bullen, situated about 9 miles west from Wallerawang.—Two adits are driven into the mountain. No. 1 is 10 feet wide, 6 feet high, and is driven in a distance of 50 yards. About 5 yards from the face of the drive an air-shaft has been put down in the No. 1 back heading. The seam which is opened out in the No. 1 adit is, in my opinion, what is known as the 12-feet seam. About 6 feet of the bottom portion of the seam is a bright hard coal, and judging from its appearance should be a good marketable coal for house-fire, steam, and gas-making purposes.

Cullen Bullen Colliery.—This is a new colliery opened out in the 17-feet seam in the parish of Cullen Bullen, county of Roxburgh, about 10 miles west from Wallerawang, No. 1 adit is opened out on a spur of the mountain and driven in a distance of 120 yards. About 6 feet of the bottom portion appears to be good marketable coal. An air-shaft has been sunk and connected with the south heading. About 10 men are employed underground, and served with about 6,000 cubic feet of air. Several gangs of men are busily engaged making the tramway, which is to be connected with the Mudgee railway. The Act complied with.

Retort Coal Mine (Hartley Vale).—About 4 men employed, and served with 5,000 cubic feet of air per minute. Travelling road and second way to the day in good order. The Act complied with.

Cooerwull Mine.—One man employed. A good current of air is passing through the tunnel. The Act complied with.

Irondale Colliery.—About 5 men are employed underground, and served with 7,000 cubic feet of air per minute. The Act complied with.

Berrima District.

Great Southern Colliery (late Berrima).—An average of 10 men has been employed during the last six months, and served with 10,000 cubic feet of air per minute. The intake and return airways in good order. The Act complied with.

Mittagong Colliery.—An average of 30 men is employed underground, and served with 14,000 cubic feet of air per minute. The Act complied with.

Australian Kerosene Oil Company Shale Mines, Joadja.—About 60 men are employed underground, and supplied with about 15,000 cubic feet of air per minute. The workings are the longwall system, and the ventilation well sustained round the working faces.

Southern

Southern District.

Metropolitan Coal Company.—About 10 men are employed underground, and supplied with 3,000 cubic feet of air per minute. The mode of ventilation is by one of "Gracie's Patent Fans," worked by an engine on the surface, and conducted down the shaft and into the headings by 10½-inch diameter pipes. A new air-shaft is being sunk about 10 chains from No. 1 pit, 16 feet in diameter, sunk to a depth of 150 feet, and expected to reach the seam at a depth of 1,000 feet from the surface. All the ordinary precautions are being taken to ensure safety. The Act in all respects complied with.

Mount Kembla Colliery.—About 200 men and horses are employed underground, and served with 33,000 cubic feet of air per minute in four splits. The ventilation in fair condition throughout the colliery. None of the districts were worked with more men than that prescribed by the Act. The Act in other respects complied with.

Osborne Wallsend Colliery.—About 140 men and horses are employed underground, and served with 35,000 cubic feet of air per minute, in three separate splits. During the last six months the return air-ways have been shortened by means of air-crossings. The Act in all matters complied with.

Mount Pleasant Colliery.—About 112 men and horses employed, and served with 26,000 cubic feet of air. The roof in some divisions is very jointy and bad, but the bords, as a rule, are exceptionally well timbered. The Act in all respects complied with.

Southern Colliery (near Kembla).—10 men are employed underground, and served with about 5,000 cubic feet of air per minute. The surface arrangements and jetty are being pushed on vigorously. The manager intends to have coals in the market in three months. The Act in all respects complied with.

Coal Cliff Colliery.—About 90 men and horses are employed underground, and served with about 18,000 cubic feet of air per minute in two separate splits. The currents are well sustained throughout the workings. Intake and return airways and second way to the day in good order. The Act in other matters complied with.

South Bulli Colliery.—About 57 men are employed underground, and served with 14,000 cubic feet of air per minute, in three separate splits. Intake and return airways in good order. The Act in other matters complied with.

Bulli Colliery.—About 90 men and boys are employed underground, and served with about 40,000 cubic feet of air per minute, in three separate splits. The miners in the Hill-end district are working with locked safety-lamps. The Act in all respects complied with.

North Illawarra Colliery—No. 2 Tunnel.—About 240 men and horses employed underground, and supplied with about 63,000 cubic feet of air per minute, in seven separate splits. The several currents are conducted by each one having an air-crossing and a regulating door on the return, so that no doors are required on the main roads, which is an advantage over the many interruptions of trap-doors.

Broker's Nose Colliery.—3 men are employed underground. The surface arrangements will soon be completed for the output of coal.

Woonona Old Tunnel.—About 6 men are employed underground driving a main heading to connect with the old workings. Several gangs of men are working on the tram-line, but it will be about three months before the surface arrangements are completed.

Biggar's Prospecting Mines (near Dapto) *and Wiley's* (near Kembla).—Little or no work has been done during the last six months.

No. 1 *North Illawarra Tunnel.*—6 men employed underground, and served with 6,000 cubic feet of air per minute. The Act in all respects complied with.

Accidents in Mines.

During the last six months I have investigated four separate accidents, two of which were fatal, and two non-fatal. The first fatal accident happened to Charles Harper, Manager of the Metropolitan Coal Company's colliery on the 4th of August, by the tackling slipping off the wire rope, whilst he was in the act of removing a boiler. An inquest was held on the day following the accident on the body of deceased by the District Coroner, C. F. Smith, Esq., at the Company's colliery office. I was present at the inquest, and fully agree with the verdict of "accidental death," as returned by the jury.

The second fatal accident happened to a lad named Robert Kenning, on the 4th of October, at Osborne Wallsend Colliery, by an empty set of skips getting "a-main" on the underground incline, one of the skips ran over him and killed him on the spot. On the day following the accident the District Coroner held an inquest on the body of deceased. I attended the inquest and heard all the evidence, and fully agree with the verdict of "accidental death."

The first non-fatal accident, on July 27th, to a lad named Thomas Fuller, employed to grease waggons at Osborne Wallsend Colliery; had his leg broken by falling before an empty waggon. The second non-fatal accident happened at the Osborne Wallsend Colliery on October 4th, to a horse-driver named Thomas Blake; leg broken by slipping off the buffer of a waggon.

I have also examined a few other accidents which were not of a serious nature, and are not included in this report. The usual tabulated list of accidents is hereto appended.

I have, &c,

JAMES ROWAN,

Inspector of Collieries.

Tabulated List of fatal and non-fatal Accidents in the Southern and Western Districts of New South Wales Collieries, investigated by the Inspector of Collieries during the half-year ending 31 December, 1888.

No.	Date.	Colliery.	Sufferer.	Remarks, &c., on the nature and extent of injuries.	Occupation.	Fatal injuries by a wire rope.	Fatal by an empty skip.	Leg broken by a waggon.	Leg broken by a waggon.	Fatal.	Non-fatal.
1	Aug. 4	Metropolitan	Charles Harper	Fatal injuries by being thrown over an embankment by a wire rope slipping.	Colliery Manager	1	..	..	..	..	..
2	Oct. 4	Osborne Wallsend	Robert Kenning ..	Killed by empty skips underground	Point's boy	..	1	..	..	..	..
3	July 27	,, ,,	Thomas Fuller	Leg broken by the wheel of an empty waggon ..	Greaser ..	..	..	1	..	..	..
4	Oct. 4	,, ,,	Thomas Blake	Leg broken by riding on the buffer of a waggon..	Horse-driver.	..	..	..	1	..	..
						1	2	3	4	2	2

GEOLOGICAL SURVEY OF NEW SOUTH WALES.

Report of Progress for 1888 by the Geological Surveyor in charge.

Sir,

I have the honor to submit the following report of progress of the Geological Survey for the year 1888.

During the year various parts of the Colony have been examined by the Geological Surveyors. Many localities were inspected in dealing with the applications for aid out of the Prospecting Vote. As a member of the Prospecting Board, I accompanied the Under Secretary for Mines to Mudgee, Appletree Flat, Gulgong, Meroo, Two-mile Flat, Hargraves, Tambaroora, Hill End, Pyramul, and Windeyer. Also, with Mr. Slee, Inspector of Mines, I visited the Sunny Corner, Turon, Bathurst, Crookwell, Taralga, Bungonia, Captain's Flat, Michelago, Bredbo, and Kiandra mining districts. I inspected and reported upon certain coal lands near the Fitzroy Falls, and the syenite quarries on the Gib, between Bowral and Mittagong. (*See Appendix No.* 1.)

Besides the ordinary duties of the office, much of my time, and that of my staff, has been occupied in connection with the arrangements which the Department of Mines was requested by the Exhibition Commissioners to make for the display of the mineral resources of New South Wales at the Adelaide, Melbourne, and other Exhibitions. (*Vide the Report of the Curator, Appendix No.* 5.)

By direction of the Minister for Mines, I proceeded to Queensland and inspected the Mount Morgan Gold-mine, near Rockhampton, with the object of ascertaining if similar deposits are likely to be found in New South Wales.

The auriferous deposit consists chiefly of siliceous iron ore. It forms the summit of Mount Morgan, which occupies a surface area of about one and a half acres. It is evidently a geyser deposit, as was first pointed out by Mr. R. L. Jack, F.G.S., Government Geologist of Queensland, in his official report in 1884, and has resulted from the action of thermal mineral water holding gold, iron, manganese, &c., in solution, issuing from fissures in the metamorphic siliceous rocks of which the mount is composed. These altered rocks have iron pyrites more or less disseminated through their mass, and are traversed by porphyritic and kaolin dykes. There are several similar deposits in different parts of the Mount within a width of half a mile. One which is likely to become of considerable importance has been cut through in the Freehold Tunnel; another, in which, however, only a small amount of gold has hitherto been proved, occurs at Callan's Nob. The surrounding formation is shales and sandstones of Lower Carboniferous age which have been much metamorphosed by the intrusion of igneous rocks.

Similar Carboniferous formations occur in New South Wales, forming a considerable portion of the eastern and western slopes of the Dividing Range north of the Hunter River; and it is not improbable that, as this country has been subject to intrusions of igneous rocks, auriferous geyser deposits, like that of Mount Morgan, may exist. Their surface indications would be siliceous ironstones, and they could be readily prospected by finely pulverizing the stone and washing it in the ordinary way in a tin dish, when the gold, being in a free state, would be at once seen. The occurrence of gold which has been deposited from solution has for many years been known in this Colony, at Brown's Creek, Barraba, &c., but the auriferous rocks in these places are not geyser deposits. At Mount Morgan the gold-bearing stone is quarried bodily from about the summit of the Mount, and sent down for treatment at the dry-crushing and chlorination works. The ore is richer in some places than in others; but for convenience of treatment the rich and poor qualities of ore are mixed together, so as to produce a yield of about 5 ounces of gold per ton. Mr. Wesley Hall, the able manager, states that half an ounce to the ton will pay working expenses, and leave a good profit. A fuller description of this remarkable mine will be given in my report for the Records of the Geological Survey.

My report on the syenitic granite quarries between Mittagong and Bowral, on the Great Southern Railway line, is given in Appendix 1.

Mr. T. W. E. David, Geological Surveyor, has been unable to complete his map of the Maitland District, as his services were urgently required for other work. His progress report forms Appendix No. 2. He has examined and reported upon the southerly extension of the Newcastle Coal-measures, and the probable depth at which the seams of coal occur in them, in the vicinity of the Great Northern Railway line from Teralba, at the north-western end of Lake Macquarie, to Gosford. (*See Appendix No.* 2 *B.*) He also traced out the extension of the West Maitland Coal-measures in a southerly direction, from Homeville towards Richmond Vale, and thence westerly to Deep Creek; his report thereon forms Appendix 4. Mr. David witnessed the diamond-drill operations during the boring of the seams of coal at Hexham Island, and examined the Carboniferous formation at Seaham; he also reported on the new discovery of cobalt ore at Carcoar (*see Appendix No.* 2, *G*), and commenced an examination of the coal formations in the Port Stephens District, with the view of reporting as to the advisability of boring for coal.

It is gratifying to know that the coal seam, which was first made known through Mr. David's geological survey, near West Maitland is now being opened by three coal-mining companies, from whose operations the Government may soon derive a considerable revenue, apart from the rent of the land.

In connection with the Prospecting Board, Mr. David inspected certain claims in the following gold-fields:—Gundagai, Adelong, Tumut, Tumbarumba, Tarcutta, Junee, Temora, Barmedman, Cowabbie, Shoalhaven River, Sofala, Sally's Flat, Albury, Wood's Flat, Canowindra, Scrubby Rush, Wangoola, Mittagong, Trunkey, Rockley, and Burraga.

Mr. W. Anderson, Geological Surveyor, has inspected and reported on the Bingera and Barraba Gold-fields (*Appendix No.* 3 *A.*); the Molong District (*Appendix No.* 3 *B.*); the Coal Measures at Spicer's Creek and Ballimore, near Dubbo (*Appendix No.* 3 *C*); the remarkable Pleistocene deposits containing fossil bones, at Myall Creek, near Bingera (*vide Report in Records of Geological Survey, Part II*); the important discovery of fossil fish in the Hawkesbury formation at Talbragar, in Mudgee District (*vide Report in Records of Geological Survey, Part II*); and certain lands for alienation near Gunning and Tumut.

Mr.

Mr. Anderson also assisted the Prospecting Board in dealing with the applications for aid in the Nundle, Hanging Rock, Bowling Alley Point, Moonbi, Uralla, Tia Reef, Armidale, Booralong, Eversleigh, Herbert Park, Warm Corner, Hillgrove, Gyra, Glen Innes, and Vegetable Creek mining districts.

Mr. Robert Etheridge, junior, Palæontologist, in his progress report (*see Appendix No.* 4), refers to the important work that he has been engaged upon. His Monograph of the Permo-Carboniferous fossils of New South Wales is in hand. His work on the Invertebrate Fauna of the Hawkesbury-Wianamatta Series, forming No. 1 of the Palæontological Memoirs of the Survey, has been published; and, under his editorship, Memoir No. 2 has also been issued from the Government Printing Office; this is a valuable work by Baron von Etingshausen, of Gratz, on the Tertiary Flora of Australia. The works of Dr. Ottoker Feistmantel, on the Palæozoic and Mesozoic Flora of Australia, and of Professor de Koninck on the Devonian and Carboniferous Fauna, will shortly be issued.

Amongst the various collections examined, Mr. Etheridge has determined a Selachian fish-spine, found by Mr. Geological-Surveyor Anderson in the Siluro-Devonian limestone of Wellington; Upper Silurian fossils, from between Cobar and Nymagee, sent by Rev. J. Milne-Curran; bones of the extinct gigantic struthius bird, Dromornis, found by Mr. Cotter, on the Paroo. In conjunction with Mr. David, Mr. Etheridge has been conducting important ethno-geological investigations. Their first paper, on the discovery of human remains at Long Bay, near Botany, is published in Part I of the records of the Geological Survey.

From the report (*Appendix No.* 5) by the Curator of the Mining and Geological Museum, Mr. J. E. Carne, it will be seen that much important work has been done. At the request of the New South Wales Exhibition Commission that this Department should prepare and arrange for the display of collections representative of the mineral resources and geology of the Colony at the Melbourne Centennial Exhibition, Mr. Carne was deputed to carry out the work. He deserves great praise for the efficient manner in which he accomplished it; also for similar duties in connection with the Adelaide Jubilee the Sydney Agricultural Society's, and the Sydney Centennial Exhibitions. Mr. Carne has written a descriptive paper on the mineral collections exhibited at Melbourne, which will be published in Part II of the Geological Records. This paper will be found useful for reference, as it contains information relating to the formations and localities in which the different minerals occur.

During the year the Mining and Geological Museum has received numerous additions from both the officers of the Geological Survey and from private contributors. (*See Appendix No.* 5 A.) Many of these donations comprise exhibits from the Adelaide and Melbourne Exhibitions.

The department is now in possession of splendid mineral and geological collections, and I would urge that museum accommodation for their display be provided as soon as possible, for this important means of promoting the great and increasing mining industry of the Colony is at present lost to the public. Many additions have been made to the library, including useful works of reference upon mining, geology, and palæontology. (*See Appendix No.* 5 B.)

The number of mineral samples submitted during the year to the Department for examination and report amounted to 5,245, as against 2,222 received in 1887. In consequence of this large increase, which, of course, entailed an increase in the correspondence with the persons seeking the information, Mr. G. A. Stonier, Assistant Geological Surveyor, was instructed to do duty for Mr. Carne, who was for a considerable portion of the year engaged upon the work connected with the Exhibition.

In dealing with this large number of samples for assay or analysis the resources of the small laboratory of this office were quite overtaxed; and though Mr. Mingaye, the Assayer and Analyst, did his utmost with the means at his disposal, he was quite unable to meet the increased amount of work, which involved 10,123 separate assays, besides 86 analyses of coals, water, &c. It was therefore necessary to give him an assistant analyst, Mr. White, F.C.S., being appointed to the position, and to provide the larger laboratory at present occupied, which has been well fitted up under Mr. Mingaye's supervision. Mr. Mingaye's progress report (*see Appendix No.* 6) states in detail the important work carried out in the laboratory.

During the year improvements have been made in the Jenolan, Wombeyan, Wellington, and Yarrangobilly caves for the protection of the natural objects therein, and for the safety and convenience of visitors. These are referred to in the progress report of Mr. W. S. Leigh, the Superintendent of Caves (*see Appendix No.* 7). The number of visitors to the caves in 1888 was—at Jenolan, 1,829; Wombeyan, 400; Wellington, 1,679; and at Yarrangobilly, 200.

Mr. A. H. Tayler has efficiently carried out his clerical duties; and during the Curator's absence at the Adelaide Exhibition he ably assisted in determining the mineral samples submitted to the Department for examination.

Mr. Charles Cullen, the Geological Collector, has succeeded in procuring large and valuable collections of fossil remains of extinct animals from the Pleistocene deposits at Myall Creek, and of fossil fish and plant remains from the Hawkesbury formation on the Talbragar River. He also collected from the Carboniferous formations in the Illawarra and Shoalhaven Districts.

It is with deep sorrow that I have to record the death of Mr. H. T. Wilkinson, J.P., clerk and draftsman of this office. He was a very able officer, and had been connected with the Department since its commencement. As Visiting Magistrate for the Government, he paid quarterly visits to Lord Howe Island, and on the occasion of his first visit, in 1882, he made a geological sketch-map and report on the Island, which were published in that year. On behalf of His Excellency the Governor, he proceeded to Norfolk Island as Commissioner in reference to the proposed transfer of the Island to the Government of New South Wales. In November last, at the request of the Hon. the Minister for Justice, Mr. Wilkinson was deputed to act as City Coroner. He continued to perform his official duties until the morning of the day of his death, 31st December.

APPENDIX No. 1.

On the Syenitic Granite Quarries, " Gib Rock," Bowral.

Geological Survey Branch, Department of Mines, Sydney, 29 December, 1888.

MEMORANDUM.—Since reporting upon the quality of the sample of syenitic granite from the " Gib " hill, near Bowral, submitted by Mr. McCourt, M.P., I have inspected the quarry whence the sample was taken, and also the other quarries which have been opened up on the same hill. The stone has been

 worked

worked chiefly in three places. Very little actual quarrying or excavation has as yet been carried on, for the large solid masses lying loose upon the surface have afforded good material ready to hand for cutting up. The largest quantity of this stone hitherto supplied for building purposes in Sydney, &c., has been raised from the property of the New South Wales Trachyte Stone Quarrying Co., formerly belonging to Mr. Charker, of Bowral. The quarry is situated on the south-western side of the "Gib," where the slope of the hill rises abruptly for about 150 feet covered with large boulder-like masses of fine-grained granite, one of which measured 15 feet in diameter, while here and there the rock *in situ* crops out. In one place a sloping face of rock 75 feet high and 80 feet wide is exposed. It is intersected by nearly vertical and horizontal joint-fissures, which divide the rock into solid masses from 10 to 30 feet high, and from 30 to 50 feet wide—that is, compact blocks of stone of those dimensions could be obtained. The occurrence of these natural fissures will prove of advantage, as they will enable excavations upon a large scale to be made in a regular manner.

Besides the joints which cross each other nearly at right angles, there are others which intersect them obliquely. The stone, which is generally of a finely-crystalline even texture, occasionally contains small patches, sometimes cavernous, and veins of the same material coarsely crystallised. The latter, at first sight, might be mistaken for lines of weakness in the stone, but they are not really such, for the larger crystals are so interblended with those of the finely-crystallised rock as not to affect its compactness.

The stone cleaves with a straight clean fracture in any direction when skilfully struck, and consequently may be readily shaped into rectangular blocks of all sizes down to cubes for street-paving.

At present the stone has to be carted about three-quarters of a mile to the Bowral Railway Station for transit to Sydney or elsewhere; but the quarry is so favourably situated as regards elevation that a self-acting inclined tramway, about 600 yards in length, might be easily constructed to the Great Southern Railway Line. No doubt this will become a work of necessity when quarrying operations are carried out on an extensive scale.

About 30 chains from the Company's quarry, and on the south-east point of the "Gib," Mr. T. Loveridge has commenced to open a quarry on the property of Mr. Angus, where the rock stands out prominently as a large rounded mass, about 300 feet long and over 50 feet high.

It is traversed by three different sets of joint-fissures, one dipping east at 50°, another S. 10° E. at 80°, and the other is vertical, and strikes N.N.E. These joints in places intersect the mass at such distances apart that solid blocks of stone 40 feet long and 10 feet high could be cut out. It cleaves well into rectangular blocks, and is similar in quality to that already described, though rather paler in colour.

An inclined tramway could also, without difficulty, be constructed from this quarry to the main railway line.

On the west side of the "Gib," on the slopes towards Mittagong, the same kind of rock has been quarried by Messrs. Amos Bros. and others, where it occurs in large blocks, some 30 feet in length, lying scattered about the base of the hill, which rises almost precipitously for about 250 feet in huge exposed masses. It forms the north-western point of the same great body of irruptive rock that has been opened in the above-mentioned quarries; so that this excellent stone occurs in unlimited quantity.

When its durability and other important qualities become more widely known there will be an increasing demand for it, especially for the construction of works subject to severe exposure, such as piers and retaining-walls in sea-water; also for kerbing, door-steps, pillars, &c.

I am informed that the stone can be delivered in Sydney at less cost than the Melbourne bluestone.

C. S. WILKINSON,
Geological Surveyor-in-charge.

The Under Secretary.

APPENDIX No. 2

Progress Report for 1888 by Geological Surveyor T. W. E. David.

Sir, Sydney, 30th April, 1889.

I have the honor to report as follows with regard to the work done by me during 1888:—

From the beginning of January until February 22nd, I was engaged in office work, chiefly in compiling my Maitland field-notes and preparing my geological map of the Maitland District. I append a memorandum, *Appendix No.* 2A, showing the relative positions of the coal-seams at Leconfield, near Greta. From February the 22nd to the 26th, and from March 12th to the 16th, I was engaged in an examination of the Coal-measures and their overlying rocks from Teralba, at the head of Lake Macquarie, as far south as Gosford, with a view to determine the extension of the Northern Coal-field in this direction, and the probable depth of the upper coal-seams. My report thereon forms *Appendix No.* 2B. On March 28th I proceeded to Liverpool and made a section of the diamond-drill core on the Moorbank Estate. From April 30th to May 5th, and May 10th to May 13th, and May 18th to May 25th, I was engaged in the Maitland District in tracing the extension of the Greta Coal-measures in a southerly direction from Homeville, near West Maitland, towards Richmond Vale, and thence westerly to Deep Creek. My report on this forms *Appendix No.* 2C. From May 30th to June 21st, with your authority, I accompanied the Under Secretary when visiting the mining districts of Gundagai, Adelong, Tumut, Tumberumba, Tarcutta, Junee, Barmedman, Temora, Cowabbee, Yass, Dalton, and Gunning, as an acting member of the Prospecting Board, and in conjunction with him reported on a large number of applications. From July the 6th to July the 8th, I was engaged in reporting on the Coal-measures at Hill Top, near Mittagong. (*See Appendix No.* 2D.) From July 23rd to July 26th, according to instructions, I was engaged in travelling to and from Hexham Island, and being present there during the boring through with the diamond drill of the Tomago thick seam. (*See Appendix No.* 2E.) On July 27th and 29th. I was engaged at Albury with the Under Secretary dealing with applications in connection with the Prospecting Vote. On August 7th and 8th, I proceeded to Woodford to witness the boring through of a seam of coal. From August 10th to 13th, I was again engaged at Albury with the Under Secretary for Mines, dealing with Prospecting Vote applications. On August 15th to 19th, I was engaged at Port Stephens, reporting as to the advisability of boring for coal in certain localities. My report was made verbally at the time, but my written report will be furnished as soon as my general examination of that district is completed, as I am still under instructions to deal with two similar applications in the same locality. From August 22nd to the 26th, I was employed in examining the strata near Seaham, in relation to an application from Mr. Baas for the selection of a suitable site to bore for coal

coal with the Government diamond drill. My report thereon has been furnished. (*Appendix No.* 2 F.) From September 3rd to September 7th, I was engaged in a further geological examination of the Port Stephens District. From September 7th to September 11th, I was engaged in reporting on the new discovery of cobalt ore at Carcoar. My report thereon forms *Appendix No.* 2 G. From September 14th till September 19th, in company with the Under Secretary, I reported on applications for aid out of the Prospecting Vote at Wood's Flat, Canowindra, Cowra, Scrubby Rush, and Wangoola. From September 26th to October 17th, I was absent on leave. From November 16th to November 19th, I accompanied the Under Secretary to Mittagong and the Shoalhaven River, and reported with him on applications relating to the Prospecting Vote; and from December 3rd to December 10th was engaged by myself on similar work at Trunkey, Rockley, and Burraga. The rest of the time during the year I was employed in official work at the Geological Survey Office in Sydney, with the exception of six days in December, when I was again absent on leave.

I have, &c.,

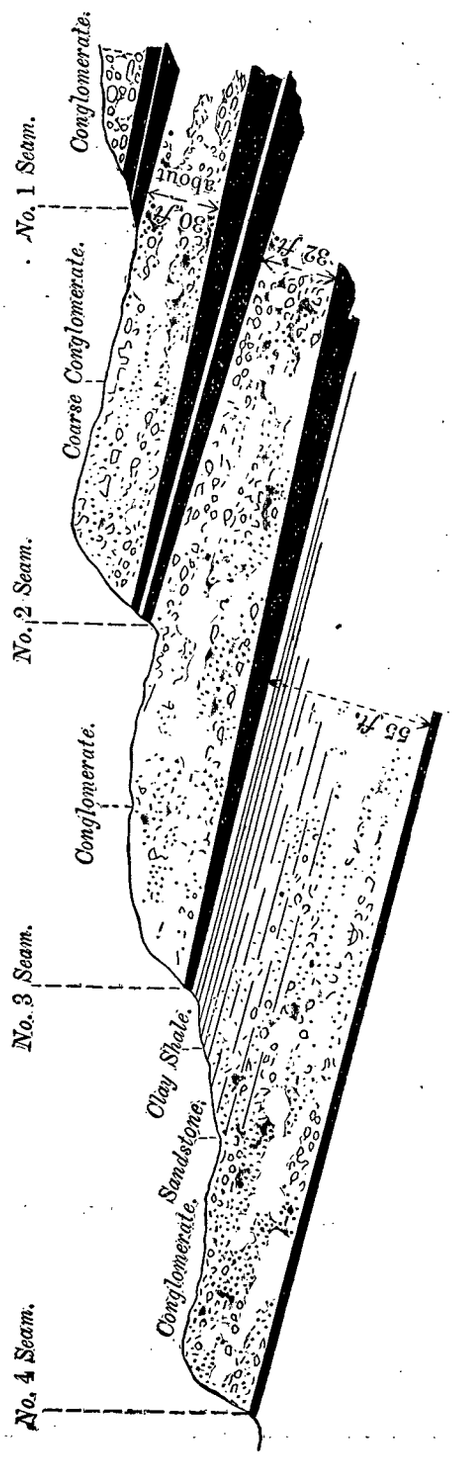
T. W. EDGEWORTH DAVID,
Geological Surveyor.

The Geological Surveyor-in-charge.

APPENDIX No. 2A.

February 18, 1888.

MEMORANDUM.—With reference to the coal-fields at Leconfield, near Branxton, the outcrops of four seams have been proved at a point about ½ a mile southerly from Leconfield House, occurring in the following manner:—



All

All these seams were much perished at the outcrop, as is usual with the Greta seams, the perishing extending back from the outcrop towards the dip of the coal for over 150 feet. At the time of my inspection three of the tunnels had not been sufficiently far advanced to penetrate the solid coal in the seams, beyond the soft perished coal near the outcrop, so that the sections measured by me show less coal than actually exists in the seams.

No. 1 Seam.

ft.	in.	Soft clayey sandstone and shale.
0	2	Perished *coal.*
0	0½	Clay shale
0	3	Perished *coal.*
0	0½	Clay shale.
0	2½	Perished *coal.*
0	0½	Brown clay.
0	3	Perished *coal.*
0	6½	Stony white fire-clay.
0	7	Perished *coal.*
Total ... 2	1½	

[Correct Section of this seam from diamond-drill bore is published in the Annual Report for 1885, p. 156, as follows :—

ft.	in.	
1	10½	*Coal.*
0	1½	Band.
1	3	*Coal.*
0	1½	Band.
1	1	*Coal.*
0	0½	Band.
1	6	*Coal.*
Total *coal*... 5	8½	]

About 30 feet below the No. 1 seam is the No. 2 or main seam. At the time my measurement was taken at the end of the tunnel the tunnel had been driven 165 feet on the seam, following its dip approximately from the outcrop. The whole seam, with the exception of the top, had made into solid coal at this point. The following is the section :—

ft.	in.	
		Roof, fine conglomerate.
1	9	Perished *coal.*
0	1½	Clayey *coal.*
0	11	Clay shale.
0	11	*Coal* (a trifle softer than underlying coal through perishing).
0	0–0½	Intermittent clay band.
5	9	*Coal*, very hard, clean, bituminous coal, of good quality.
Total coal 8	5	

About 32 feet below this is the No. 3 seam. At about 113 feet from the outcrop this seam showed a thickness of 1 foot 9 inches of coal, but the upper part of the seam was still perished, so the above cannot be considered to be the full thickness of the seam.

About 55 feet below the No. 3 seam is the No. 4 seam, which at 80 feet from the outcrop showed a thickness of 8 *inches* of partly-perished coal. This seam will, therefore, be somewhat thicker when followed 100 feet further in the direction of its dip, when the perished coal will make into solid coal.

I have, &c.

T. W. E. DAVID.

The Geological Surveyor-in-charge.

APPENDIX No. 2 B.

Progress report on the southerly extension of part of the Great Northern Coal-field towards the Hawkesbury River.

Sir, Geological Survey Branch, Department of Mines, Sydney, 23 March, 1888.

In accordance with your instructions, I have made a preliminary examination of the Coal-measures and their associated rocks between Teralba and Gosford, along the Great Northern Railway line, and have the honor to report as follows, on the country between Dora and Wyong Creeks. The country between these two creeks consists of low undulating hills of sandstone and conglomerate, and shallow sandy valleys and swamps. Some of the low-lying alluvial ground has been selected for and is devoted to agricultural purposes. The sandstone country is at present useless except for coal-mining. The country is moderately timbered and partly covered with scrub. As seen in the railway cuttings, the country between Dora and Wyong Creeks consists chiefly of soft fine-grained sandstones, purplish-red and pale greenish-grey shales and conglomerates. From Dora Creek to Wyong the general dip is south-westerly, varying from S.S.E. to N.N.W.; the general amount of dip is from $1°\frac{1}{2}$ to $2°\frac{1}{2}$, though from the 63 miles 65 chains to the 63 miles 54 chains, as marked on the railway, the dip is 10°. Small faults occur at intervals, as shown on the accompanying plan, but on the whole the strata appear to be free from heavy faults.

Basalt dykes from 1 ft. to 18 ft. in thickness occur between the 66 and 68 railway mile-marks at the places shown on the plan. One diamond-drill bore for coal has been made at Dora Creek, and two on Mr. Alison's property; near Wallarah and Wyong Creeks respectively.

**Dora Creek bore.*—This bore was put down to a depth of 475 ft. 10 in., and at a depth of 372½ ft. struck the following seam of coal :—

ft.	in.	
		Roof, chert, stone and shale.
4	1½	Coal.
0	2	Band.
2	0	Coal.
Total 6	3½	

Assuming the specific gravity of this coal to be 1·32, and taking the thickness of coal as 6 ft., and allowing one-third for waste in getting, faults, &c., and one-fourth of the remainder as small coal, the yield per acre, in round numbers, would be 4,800 tons of large coal and 1,600 tons of small coal. This bore is upon the property of Sir Edward Strickland.

† *Alison's Wallarah Bore.*—The distance from Dora Creek to Alison's No. 1 bore, near Wallarah Creek, is about 8¼ miles, bearing about S. 17° E.

This bore is situated about 70 chains easterly from the 68-mile mark on the Great Northern Railway. The

*See Annual Report of Department of Mines for 1883, p. 186. † See Annual Report of Department of Mines for 1882, p. 129.

The following three seams of coal were struck in this bore:—

535 ft. *Coal*, 5 ft. thick.
641 ft. *Coal and bands*, 8 ft. thick.
778 ft. *Coal and bands*, 12 ft. thick.

The Government Examiner of Coal-fields, Mr. J. Mackenzie, F.G.S., states that he did not see these seams bored through, but examined the cores in the core-boxes, and considered the coal in the top and bottom seam of excellent quality. He states also that the bottom seam when struck gave off gas which rose to the top of the borehole, and I was lately told the same by a local resident, who said that he had seen the gas burning at the mouth of the borehole.

The cores from these bores were exhibited at the Garden Palace Exhibition Building, and you inform me that the coal in the bottom seam was a bituminous coal of good quality.

These cores were unfortunately destroyed by the fire which burned the Garden Palace in 1882.

* *Alison's Wyong Bore.*—Alison's No. 2 bore, near Wyong, is situated 2 miles south-west from the Wallarah bore, and is about 10 chains distant from the railway line, opposite the 66 miles 30 chains mile-mark.

The following two seams were struck in this borehole:—

Depth from surface. ft.	in.	
787	6½	*Coal seam* (3 feet thick).
892	2½	*Coal seam* (4 feet 10½ inches thick).

This seam was composed as follows:—

ft.	in.	
2	4½	*Coal.*
1	1½	Band of sandstone.
0	4½	*Coal.*
0	0½	Band.
0	11½	*Coal.*
4	10½	

Mr. Mackenzie states that he witnessed the boring through of these seams.

Summary of Alison's bores.—The Wyong bore is the southernmost point to which the coal has actually been proved in the Northern Coal-field.

The surface at the Wallarah bore is about 29 feet above the sea, and that of the Wyong bore 66 feet, which, on the assumption that no faults intervene, gives the seam a dip of about 113 feet per mile in a south-westerly direction.

Mr. Alison's bores have therefore proved the existence of three seams of coal, the top seam from 3 to 5 feet thick, the middle seam from 4 feet 10½ inches to 8 feet thick, and the bottom seam 12 feet thick.

The cores from these seams, as already stated, were lost in the Garden Palace fire. Mr. Mackenzie, however, is of opinion that the bottom, 12-feet seam, contained about 10 feet of workable coal of good quality. According to this estimate of the thickness of workable coal in the seam, viz., 10 feet, this seam should yield, after allowing one-third for waste in getting, faults, &c., and one-quarter of the remainder for small coal, about 8,000 tons of large coal and 2,660 tons of small coal per acre. The top seam in the Wallarah bore, as stated in the official report above quoted, is 5 feet thick, and the same seam is 3 feet thick at the Wyong bore. Taking the mean thickness of this seam as 4 feet, and the specific gravity of the coal as 1·32, and allowing one-third for waste in getting, faults, &c., and one-fourth of the remainder for small coal, the yield per acre, in round numbers, would be 3,200 tons of large and 1,060 tons of small coal.

The middle seam in the Wallarah bore is evidently unworkable, owing to the number of bands in it.

Adjoining Mr. Alison's property on the north, close to his Wallarah bore, Mr. W. Elsdon and Mr. A. S. Robertson have leased a large area of ground on both sides of and adjoining the Great Northern Railway.

From my geological examination of this country, I am of opinion that the seams proved in the Wallarah bore will underlie the greater part, if not all, of the area now under consideration; but as it has been proved in many places in this coal-field that where coarse conglomerate overlies the coal there is a possibility of contemporaneous erosion having caused a "wash away" of the coal, it would be unsafe to assert positively that the three seams proved at the Wallarah bore underlie the whole of this area. The bottom thick seam (12-feet seam) is, however, less liable to have been locally eroded in this way than the two upper seams, because it is protected from the conglomerate at Wallarah by a thickness of from 40 to 49 feet of chert.

Besides the coal already proved to exist under this area, several of the seams near Newcastle, or their equivalents, including the Wallsend (Borehole) seam, probably underlie this country, but at what depth cannot be stated, even approximately, until the completion of the geological survey now in progress. The Wallsend seam, near Newcastle, has been found to vary so much in quality and thickness that it is impossible from a mere surface examination of the country to say whether or not this seam would be workable at any given point in an unproved area like the present. This question can only be settled by boring with the diamond drill, or by sinking shafts. As the seams between Dora and Wyong Creeks are lying very flat, they could be worked inexpensively, and sufficient timber exists on the ground for all mining purposes.

I have, &c.,

T. W. E. DAVID,
Geological Surveyor.

The Geological Surveyor-in-charge.

APPENDIX No. 2C.

PROGRESS Report on the extension of the Greta Coal-measures from the Homeville Colliery, near West Maitland, to Deep Creek, near Bishop's Bridge, 8½ miles south-west of West Maitland.

Sir,

Department of Mines, 29 May, 1888.

In the course of my survey of the Maitland District, I have geologically examined the country between the Homeville Colliery and Deep Creek, with a view to mapping the line of outcrop of the Greta coal-seams. As already pointed out by yourself, an immense anticline exists between Homeville, near West Maitland, and Greta.

This anticline lies for the greater part on the south side of the Great Northern Railway, and dies out in a southerly direction. The

* See Annual Report of Department of Mines for 1882, pp. 102 and 130.

The Greta Coal-measures were once continuous over the area now occupied by the anticline, but in the course of long periods of geological time have been completely denuded off its summit, and the whole anticline has been worn down to a tolerably uniform level, so that the present outcrop of the Greta Coal-measures forms, as it were, a contour line around the area formerly occupied by the dome of the anticline. The height of this contour line above the sea varies from a few feet to about 200 feet. Above that level the Greta Coal-measures have been denuded, while below they are intact. As the anticline dies out in a southerly direction from the Great Northern Railway, between Greta and Homeville, the line of outcrop of the Greta Coal-measures between these two places has the shape of a horse-shoe. The plan accompanying this Progress Report shows the approximate line of outcrop of the Greta coal-seams along the eastern half of the horse-shoe from Homeville to Deep Creek, a distance of 11 miles. At Homeville the Greta Coal-measures are capped by a bed of fine conglomerate 50 feet thick, and the coal-bearing portion of the series consists of the following coal-seams and rocks, in descending order:—

	ft.	in.	
"Top seam,"	5	7	*Coal*, chiefly cannel, much thinned in places by contemporaneous erosion.
	0	7–10	Clay shale, passing into fireclay next to underlying seam.
"Fireclay seam."	0	5	*Coal*, hard, bituminous. }
	0	7	Clay shale. } Coal in this seam varies from 1 ft. to 3½ ft. thick.
	2	0	*Coal*, hard, bituminous. }
	7–9	0	Clay shale, with fireclay immediately underlying Fireclay Seam.
"Cannel seam"...	0	8	*Coal*, dull, semi-cannel.
	0	0¼	Clayey coal.
	0	6	*Coal*, soft dull black, pyritous.
	0	7½	*Coal*, bright black, bituminous.
	3	6	*Coal*, cannel
	0	6	Coaly shale.
	3	0	Fireclay.
	1	3	*Coal*, hard, bituminous.
	49	0	Conglomerate. chiefly with a little hard shale.
"Bottom seam" ...	3	9	*Coal*, hard, bituminous, with an intermittent clay band ¼ to 1 in. thick at about 4 in. from top of seam.
	2	9	Sandy shale, overlying conglomerate.

At Font Hill, 30 chains south of the Homeville tunnels, the same seams have been proved at a shaft near Mr. Peter Green's house; and on the authority of Mr. J. Mackenzie, F.G.S., the Examiner of Coal-fields, the seams there are stated to be thicker than at Homeville.

From Font Hill I have traced the outcrop of these seams in a southerly direction through the portion shown on the parish of Heddon, county of Northumberland, as Hungerford's 2,000 acres, through G. Hawker's 100 acres, Clift's 640 acres, and Garven's 640 acres, to the boundary of the Government reserve for coal-mining, a total distance from the railway line of over 5½ miles.

For the last 4 miles of this distance the easterly dip is steep, varying from 24° to 40° (1 in 2 to 1 in 1¼) which will materially increase the cost of winning the coal in this area. From the south-west corner of Garven's 640 acres the dip lessens in a sou'-sou'-west direction as it passes through the prospecting areas of Messrs. Adams, Taylor, Trenchard, and Wilkinson. Near the south-east corner of Adams and others 640 acres the dip is 12°. A very sharp bend takes place here, the outcrop swinging round first to the south-west then to the west, the Coal-measures being faulted down to the north, at the middle of the bend, the fault having a throw probably of about 200 feet.

This change of strike is attended by a further lessening of the dip. From here the strike changes slightly to west-north-west, which course it maintains for a distance of 3 miles. The outcrops of the seams pass from here through Messrs. Hebblewhite's 640 and 600 acres of leasehold, and their 640 acres of freehold.

The thick Greta seam has lately been proved by Messrs. Hebblewhite, at a depth of 27 feet, in a bore near the north-west corner of their 600 acres, and also at a depth of 60 feet in a shaft in their 640-acre freehold. The seam outcrops in a waterhole about 15 chains nor'-nor'-west of the shaft.

From this point the Greta Coal-measures strike west-north-west for 1½ miles to Deep Creek, the place where I first reported the occurrence of the Greta seam in August, 1886. The thick seam of coal which here lies at the top of the Greta Coal-measures was measured by me in a shaft sunk by Messrs. Gardiner, Smith, and others, as follows:—

	ft.	in.		ft.	in.	
	5	0	Alluvial sandy soil. } From information.			
	5	0	Soft conglomerate. }			
Roof	4	7	Dark grey, pebbly, carbonaceous sandstone.			
				1	1	*Coal*, hard, bituminous.
				2	0	*Coal*, pyritous.
	5	11	*Coal*, hard, bituminous, rather pyritous.	0	10	*Coal*, rather pyritous.
				2	0	*Coal*, clean, like top coal with 1½ of cannel coal.
	1	8	Coal and bands, not workable.			
	2	1	*Coal*, clean, hard, bituminous.			
	0	0½	Band, brown clay.			
	1	8⅝	*Coal*, clean, hard, bituminous.			
	0	0⅛	Band, brown clay.			
	2	0	*Coal*, clean, hard, bituminous.			
	13	5	Total thickness of coal-seam.			

The influx of water from the seam into the shaft was so strong that it was found impossible with the rude appliances available to bale it down to within less than 2 feet of the bottom of the seam.

The seam was described to me as being 14½ feet thick, but my measurements make it 13½ feet, though it is possible for the reasons above given that my measurements are a foot short.

Summary.—The above facts prove,—(1) that the Greta Coal-measures are continuous from Homeville at least as far as Deep Creek, and (2) that the four upper seams at Homeville unite in a southerly direction so as to form a single seam about 14 feet thick at Deep Creek.

At Homeville and Font Hill the dip, though rather high (1 in 3½), is not so steep as to add very materially to the cost of working the coal. From Font Hill in a southerly direction as far as the south-west corner of Garven's 640 acres the dip gradually increases from 30° to 40°, then lessens again towards the point where the sudden bend takes place to the west. In consequence of the increase of dip between Homeville and Garven's the cost of working the coal here will be materially increased. From

From Garven's, however, towards the bend the gradual lessening of the dip should admit of the coal in this area being as easily worked as the Homeville coal.

Beyond the bend where the westerly and west-north-west strike commences, the dip is as low as 1 in 12 at Hebblewhite's and from 1 in 18 to 1 in 25 at Deep Creek, a total distance of 3½ miles; and from my measurements in the field I have ascertained that this low angle of dip extends for at least a mile to the south of Deep Creek.

It is evident therefore that in this locality there is a large area of coal lying nearly flat. In fact in no other part of New South Wales with which I am acquainted do the Greta Coal-measures so nearly approach the horizontal. It should be possible therefore within this area of low dip, as far as working expenses are concerned, to exploit the coal at a comparatively very cheap rate.

The greater part of this country is well supplied with good timber for props and all other mining purposes.

Quality of the Coal.—The following is an analysis of the coal in the lower half of the seam at Deep Creek, the sample having been selected by myself and analysed by the Government Analyst.

Hygroscopic moisture	2·35
Volatile hydrocarbons	40·79
Fixed carbon	52·76
Ash	4·10
	100·00
Specific gravity	1·243
Coke	56·86 per cent.
Sulphur in coal	·83

From the very hard nature of the coal it is well adapted for shipment, and it is useful for steam, gas, and household purposes.

Probable yield per acre.—From the facts already stated, it is evident that the yield of coal per acre will be higher at Deep Creek than it is at Homeville. At Homeville the bottom seam, in the area north of the Great Northern Railway, has an average thickness of about 3 feet 5 inches, the thickness varying from 2 feet 9 inches to 4 feet 8 inches. Taking the specific gravity of the coal as 1·270, the seam contains, after allowing one-third for waste in getting, rolls, &c., about 2,892 tons of large coal and 964 tons of small coal per acre.

The lower cannel seam at Homeville, with an average thickness of 4 feet, would yield, after making the same allowances, 3,753 tons of large coal and 1,251 tons of small per acre. The two seams above this at Homeville vary so much in thickness that it is impossible to even approximate the quantity of coal contained in them.

At Homeville, therefore, the total yield per acre from the bottom seam and the cannel seam should be 6,645 tons of large and 2,215 tons of small coal.

At Deep Creek, taking the thickness of workable coal as 11½ feet, and the specific gravity as 1,243, and making the same allowances, the yield should be about 8,700 tons of large coal and 2,900 tons of small coal per acre.

The unproved Greta Coal-measures between Homeville and Deep Creek may be assumed provisionally to yield an intermediate quantity between the above estimates.

Prospecting.—In prospecting the unproved area between Homeville and the point where the great bend takes place in the Greta Coal-measures care should be taken not to commence operations far to the east of the outcrops of the seams, as, owing to the steepness of their dip, they descend to great depths within a comparatively short distance, and besides the angle of slope increases in an easterly direction towards the dip of the coal.

These precautions are obviously of less consequence in those areas where the dip of the seams more nearly approaches the horizontal.

I have, &c.,
T. W. E. DAVID,
Geological Surveyor.

The Geological Surveyor-in-charge.

APPENDIX No. 2D.

Report on the coal-measures near Hilltop, between Mittagong and Picton, South-western Coal-field.

Sir, Department of Mines, 23 October, 1888.

In accordance with your instructions herewith, I have the honor to report on a part of the South-western Coal-field, near Hilltop.

This report has been compiled from—

1. Your report upon the Coal-measures near Mittagong. Annual Report of the Department of Mines, 1882, pp. 141–143.
2. Report on the Diamond-drill Bore at the Fitzroy Iron-mine, Mittagong, by Mr. W. Anderson, Geological Surveyor. Annual Report of the Department of Mines, 1887, pp. 159–160.
3. Sections furnished by the Superintendent of Drills on the bores near Colo Gate. Annual Report of the Department of Mines, 1884, pp. 171–178, and Annual Report of the Department of Mines for 1885, p. 160.
4. Description of the seams of coal in the South-western District, by J. Mackenzie, F.G.S., Examiner of Coal-fields. Mineral Products of New South Wales, &c., 1887, pp. 170–173.
5. My own observations at the tunnels at the junction of Rocky Waterholes and Iron ("Running Water") Creeks, about 5 miles westerly from the Hilltop Railway Station.

The country in this neighbourhood consists of a plateau of sandstone belonging to the Hawkesbury series, eroded by the Nattai River and its tributaries into narrow ravines from ¼ mile to ½ mile wide, the beds of the watercourses being from 800 feet to 1,000 feet below the general level of the plateau. The Coal-measures crop out at the base of the precipices forming the sides of these ravines, and the outcrop of the principal seam can be traced at intervals from Bundanoon, on the south, to Picton Lakes, on the north, a distance of about 35 miles.

The

The section measured by me in the tunnels, cliff faces, and hill slopes, at the junction of the Rocky Waterholes and Iron Creeks, is as follows:—

Height above sea-level. ft. in.	Total. ft. in.	ft. in.	Details.
2,022 0 to 1,522 0	500 0	500 0	Chiefly glistening white sandstone, whitish grey towards base of beds, and rendered conglomeratic and gritty by pebbles and angular fragments of quartz.
1,522 0 to 1,372 0	650 0	150 0	Sandy shales, whitish grey micaceous in thin beds.
1,372 0 to 1,322 0	700 0	50 0	Sandstone, massive, and slightly gritty, with intercalated bed of clay-shale 1 foot thick, and thin layers of small pebbles of red, green, and black jasper and concretions of clay ironstone.
322 0 to 362 0	760 0	60 0	Chiefly fine shaly sandstone and laminated sandy shales, the latter weathering a pale purplish grey, with a little hard flaggy sandstone, and a few miniature seams of coal near the base of these beds, which are strongly ripple-marked.
262 0 to 256 9	765 3	5 3	Coal-seam, probably the equivalent of the kerosene shale seam at Joadja Creek.
		1 3	Coal, splint and bituminous, rather dirty.
		0 11	Band of coaly shale, hard black splintery.
		1 8	Band of black coaly shale, mixed with a little hard splintery black shale.
		0 5	Hard, splintery, black shale, with mother of coal all through it.
		1 10	Hard, black, splintery shale, with conchoidal fracture, just like that of kerosene shale; contains vertebraria, glossopteris leaves, and abundant sporangiæ, or spore cases. This is probably the equivalent of the kerosene shale at Joadja Creek.
	767 9	2 0	Shale, grey, siliceous, and carbonaceous.
		1 0	Chert.
		3 0	Shale, grey, crumbling, with pebbles.
		1 0	Sandstone, fine-grained, hard.
		1 0	Coal, splint.
		11 0	Shale, black, stony, with bands of splint coal.
		1 9	Trachyte, decomposed, yellowish grey.
		0 6	Coal.
		2 0	Shale, black, stony.
		0 6	Trachyte, slightly cellular.
225 6	796 6	5 0	Stony, black shales.
		0 6	Coal, clayey splint. } Analysis A.
		0 6	Coal, heavy splint. }
		0 9	Coal, splint and bituminous. (Analysis B.)
		0 2	Band white clay.
		0 3½	Coal, bituminous, soft, dirty.
		0 1½	Coal, dirty and splint.
		1 1½	Coal, splint, rather stony. (Analysis C.)
		0 0¼	Band brown clay.
		0 7	Coal, splint, rather heavy.
		1 3	Coal, splint and bituminous. (Analysis D.)
		1 2	Coal splint. }
		0 0¼	Clayey coal. } Analysis E.
		0 5	Coal, hard splint. }
1,218 7	803 5	0 1	Coal, stony; total thickness of seams 6 ft. 11 in. } Seam, 6 ft. 11 in.
	873 5	70 0	Strata, undescribed, the upper portion thin bedded cherty shales.
	875 5	6 0	Coal-seam containing numerous bands, and resting on coarse pebble conglomerate. [This part of the section, as described in your report, occurs at a place 3½ miles S.S.E. of Iron Creek, on the property of Messrs. Campbell, Mitchell, Fraser Martin, M.P., and others.]

Proximate analyses of the samples taken by me to represent the portions of the seam marked A, B, C, D, and E have been made by Mr. J. C. A. Mingaye, F.C.S., with the following results:—

Mark.	Moisture.	Volatile Hydro-carbon.	Fixed carbon.	Ash.	Sulphur.	Sp. gr.	Coke.	Colour of ash.
A	1·56	27·47	47·75	23·22	·73	1·592	70·97	Light grey.
B	1·18	26·20	45·29	27·33	·73	1·474	72·62	,,
C	1·03	24·52	38·50	35·95	·56	1·572	74·45	,,
D	1·66	28·14	54·80	15·40	·86	1·497	70·20	,,
E	1·51	25·74	50·75	22·00	·50	1·408	72·75	Dirty white.

These analyses prove the coal at this particular spot to be unworkable. A comparison, however, of the natural section at the junction of the Rocky Waterholes and Iron Creeks with the sections furnished by the cores from the bores at Colo and at the Fitzroy iron-mine shows that the main seam in the first section is identical with the seams of good coal 8 ft. 11 in. thick, proved at the Fitzroy iron-mine, near Mittagong, and with the 5 ft. 4 in. seam, struck in the A diamond-drill bore, at Colo Vale, near Mittagong.

The positions of these sections, and the relations of the strata and seams proved in them to one another, are shown on the accompanying plan and sections.

COMPARATIVE SECTIONS showing the variation in the thickness and character of the main seam in the South-western Coal-field, between Mittagong and the neighbourhood of Hill Top :—

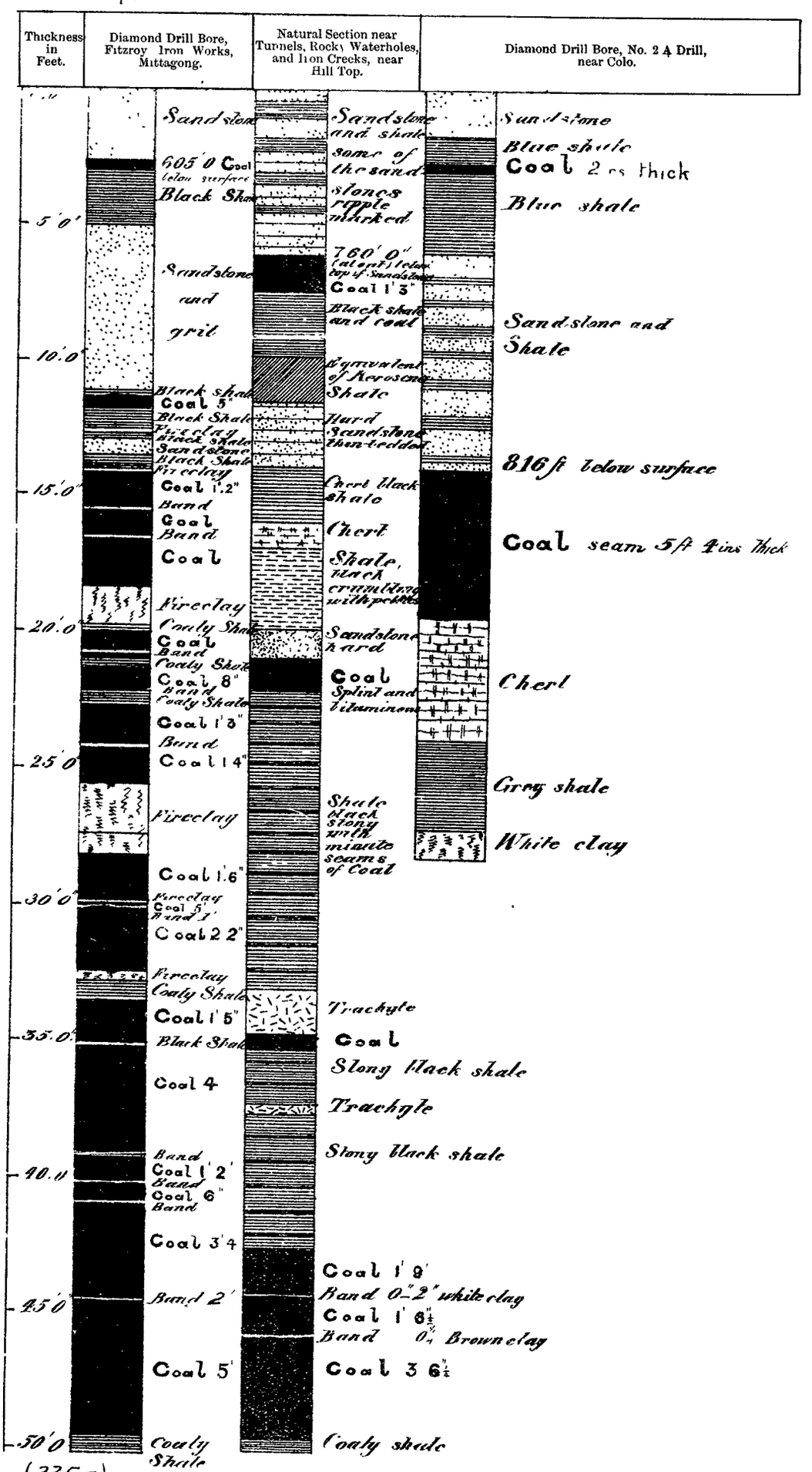


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PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY NEW SOUTH WALES.

It appears doubtful whether the "A" bore completely pierced the main seam, so that its full thickness may not have been proved at this locality. In the two other bores at Colo the coal in the seams was found to have been completely destroyed by intrusive dykes of trachyte; and in your report on the Mittagong Coal-measures you describe localities on the Nattai River where the coal has been similarly destroyed by the intrusive rock, or converted into anthracite, while within a few chains distance of the damaged area the coal is good and unaltered.

The conclusion to be drawn from this evidence is, that the coal in the main seam will be found to vary very much in thickness and quality, not only from original differences in the thicknesses and qualities of the layers of coal at the time of its formation, but also from the varying extent, in different localities, to which the coal has been affected by the intrusive rock of subsequent origin.

The greatest alteration and destruction of the coal has probably taken place in those areas where the intrusive rock makes a strong outcrop at the surface, as at the Gib Rock, but it is also evident that the coal has been considerably affected for some distance away from such visible dyke-masses by the intrusion of flat sheets of trachyte, which have forced their way along the bedding planes of the coal-seam, without bursting up through the overlying Hawkesbury sandstone, so that the absence of disturbance in the latter formation is not always a certain guarantee that the coal-seams underlying such areas have not been damaged by these flat intrusive sheets.

The general absence, however, of intrusive dykes between Colo and Picton, and again between Hill Top and the junction of the Rocky Waterholes and Iron Creeks, favours the supposition that those areas of the Coal-measures which lie to the east and north-east of the junction of these creeks will be found to have been much less affected by the intrusive rock than they are at the junction. The Coal-measures have been tested by the diamond-drill bore near the Colo gates to a depth of over 300 feet below the main (middle) seam, and, as already stated, three seams of coal underlie this area. In places, however, through the thinning out of the intermediate strata, the upper seams become united to the main seam, and the lower 6-feet seam of coal and bands become split up into a number of thin seams.

The middle or main seam is therefore the one most to be depended upon for future mining operations. Not even an approximate estimate can be formed of the yield per acre of this seam, as it is impossible to calculate the extent of the damaged as compared with the undamaged areas.

Assuming, however, that the coal in the main seam, where it is unaffected by the intrusive rock, is of a character similar to that described by Mr. Geological-Surveyor Anderson from the bore near the Fitzroy Iron-works, its specific gravity would be about 1·38, so that, after deducting one-third of the coal for waste in getting, faults, rolls, &c., and assuming that one-quarter of the remainder would be small coal, the seam would yield for every yard in thickness, in round numbers, 2,500 tons of large coal and 800 tons of small coal per acre.

As regards quality, it is evident that the coal varies extremely. At the tunnels on Rocky Waterholes and Iron Creeks the analyses above quoted show that, with the exception of about 1 foot 3 inches of coal, the rest of the seam is unworkable, but at the bore near the Fitzroy Iron-mines (the nearest point to the Hill Top neighbourhood from which samples of coal, not damaged by dykes, have been analysed) there are 8 feet 8 inches of workable coal, and it may reasonably be assumed that there are considerable areas near Hill Top, where the coal will be found to be of equally good quality.

The mean of two analyses made by the Government Assayer from samples selected by Mr. Anderson to represent this 8 feet 8 inches of coal gives the following average composition of the main seam at the Fitzroy Iron-mine :—

Moisture	1·37	
Volatile hyrdrocarbon	25·43	
Fixed carbon	60·04	Coke, 73·20
Ash	13·16	
Total	100·00	
Sulphur in coal	0·62 per cent.	
Specific gravity of coal	1·361	

Such a coal would be useful for steam, blacksmith, and household purposes; and there is every probability that patches of equally good coal will be found in some of the areas not damaged by the trachyte between the Nattai River and the Southern Railway, from Colo to Picton, and areas lying still further to the east and north-east.

Timber.—This country is timbered with stringy-bark, bloodwood, and a little mountain ash and banksia. The stringy-bark and bloodwood trees are from 30 to 40 feet high, and from 1 foot to 1½ foot in diameter, on the average, though considerably larger in places. This timber, though not very abundant, would probably supply all the requirements of coal-mining for a considerable period.

Owing to the disturbed nature of the Coal-measures at their outcrops in this neighbourhood, the dip is found to vary considerably in direction and amount.

At Hill Top platform, however, where the strata seems tolerably free from disturbance, the dip varies in direction from N.E. to E.N.E., and the amount of dip from 2° to 3°.

According to your aneroid observations, the main seam dips from its point of outcrop at Mitchell's tunnel, in portion 75, parish of Colo, towards the bore at Colo gates, which bears easterly about 230 chains distant, at the rate of about 30 feet per mile.

The general dip between Colo and Picton will therefore probably be in a north-easterly direction at a comparatively low angle—about 120 feet per mile. This small amount of dip is obviously advantageous for the economic working of the coal.

I have, &c.,

The Geological Surveyor-in-charge.

T. W. EDGEWORTH DAVID.

APPENDIX No. 2E.

Preliminary Report on Government Diamond-drill Bore for Coal, Hexham Island, near Newcastle.

Sir, Rockhampton, Queensland, 5 October, 1888.

In accordance with your instructions, I proceeded to Hexham on 23rd July, and was present on the 24th and 25th following at the boring through of the seam of coal described in the accompanying section as having been struck at a depth of 512 feet. I also measured the cores in the core-boxes, and from them compiled the section. On

On the 16th August I revisited Hexham Island and completed the section of the core, the boring meanwhile having been continued from 520 feet to 702 feet 4 inches. The thickness of the coal-seams below a depth of 517 feet 4 inches are given on the authority of Mr. Wright, the manager for the North Stockton Coal Company, on whose property the bore is situated.

Owing to the coal in these seams having been much burnt by intrusive sheets of dolerite, which were first met with at 599 feet 4 inches, very little solid coal core was obtained below that depth. The following is a generalized section of the strata and coal-seams passed through in this bore:—

TOTAL DETAILS.

Ft.	in.		Ft.	in.		
79	4	.....	79	4	.....	Alluvial, sandy clay and running sand.
109	5	.....	30	1	.....	Sandstone chiefly, passing downwards into mudstone and clay shale.
110	11	.....	1	6	.....	COAL.
137	2½	.....	26	3½	.....	Sandstone, dark-grey mudstone and shale.
140	3½	.....	3	1	.....	COAL.
259	9	.....	119	5½	.....	Sandstone chiefly, rather coarse whitish-grey, with layers of dark-grey mudstone and black shale.
260	0	.....	0	3	.....	COAL, splint.
421	2	.....	161	2	.....	Sandstone chiefly, with coal pipes and layers of dark-grey mudstone and black shale.
422	9	.....	1	7	.....	COAL, good bituminous and dirty splint mixed.
512	0	.....	89	3	.....	Sandstone, mudstone, and black shale (with glossopteris) succeeding one another in about equal proportions, with a little clay ironstone at 459 feet.
517	4¼	.....	5	4¼	.....	COAL SEAM ...

Ft.	in.	
0	2	*Coal.*
0	2	Fireclay, yellow.
0	1	*Coal.*
0	8	Fireclay, yellow.
0	1	*Coal.*
1	0	Fireclay.
1	0	*Coal* splint and bituminous.
0	5	Band, brown stony shale with streaks of iron pyrites.
1	9¼	*Coal.* The upper 9 inches splint and bituminous.
Total ...	5	4¼

534	4	.....	16	11¾	.....	Clay shale chiefly, dark grey with sandstone and a little ironstone.
536	10	.....	2	6	.....	Coal and shale alternating in layers about 3 inches thick.
598	10	.....	62	0	.....	Mudstone, shale, and sandstone.
599	4	.....	0	6	.....	COAL, burnt by dolerite.
602	4	.....	3	0	.....	*Dolerite.*
630	6	.....	28	2	.....	Mudstone, black shale, and sandstone.
634	10	.....	4	4	.....	COAL, burnt by dolerite (*Tomago seam*).
635	10	.....	1	0	.....	*Dolerite.*
660	0	.....	24	2	.....	Shale chiefly, hard black, with a little mudstone and sandstone.
662	0	.....	2	0	.....	*Dolerite.*
665	4	.....	3	4	.....	Shale, black, with abundant glossopteris.
668	11	.....	3	7	.....	COAL, burnt by dolerite.
671	10	.....	2	11	.....	*Dolerite.*
672	4	.....	0	6	.....	*Dolerite* and *coal* mixed.
690	3	.....	17	11	.....	Sandstone, with shaly partings.
692	6	.....	2	3	.....	Dolerite, partly decomposed.
697	1	.....	4	7	.....	COAL, burnt by dolerite.
702	4	.....	5	3	.....	*Dolerite.*
Total ...			702	4		

The sheets of dolerite described above are evidently offshoots from a dyke, which must exist in close proximity to the borehole, though of course not visible at the surface of the ground, owing to the thickness of the alluvial deposits, which here cover the Coal-measures.

It is improbable that this dyke will have damaged the coal-seams in its vicinity to any appreciable extent, though its occurrence here has seriously interfered with the obtaining of accurate information from the bore as regards the thickness and qualities of the coal-seams.

As, however, there is little difficulty in correlating the seams proved in this bore with those struck in the Kilcoy bore and the Tomago pit, it is certain that these Tomago seams underlie Hexham Island at the respective depths mentioned in my section.

The exact relation of the Hexham Island seams to those of Woodford (otherwise known as "Thornton" or "Alnwick"), and the bearing of the evidence obtained from the Hexham Island bore, taken in conjunction with that supplied by the Dempsey Island bore, as to the probable depth of the East Maitland Coal-measures below the Borehole seam, in the Newcastle Coal-measures, will be referred to by me in a subsequent more detailed report.

The dip of the coal-seams at Hexham Island is about S. 32 degrees W. at 1 in 18.

My thanks are due for some of the above information to Mr. Wright, the manager for the North Stockton Coal Company, and to Mr. Stenaker, the engineer in charge of the drill.

I have, &c.,

T. W. EDGEWORTH DAVID,

Geological Surveyor.

The Geological Surveyor-in-charge.

APPENDIX No. 2F.

Sir, Geological Survey Branch, Department of Mines, 28 August, 1888.

In accordance with your instructions, I have inspected the land shown on tracing herewith, the property of Mr. Baas, between Seaham and Clarencetown, on the Williams River. I found the formation to consist of (1) rocks of igneous origin, such as quartz-porphyries and volcanic conglomerates, and (2) shales of sedimentary origin.

As regards the advisability of employing the Government diamond drill to bore for coal in these rocks, this being the object for which Mr. Baas wished his property geologically examined, I am of opinion that it would be useless to bore in the igneous rocks. The shales, however, as was evident from the number of fossil plants contained in them, belong to a formation older than the productive Coal-measures, the "Lepidodendron and Rhacopteris series." This

This series of rocks, near Stroud, in this Colony, contains thin seams of coal of no value.

The possibility of proving the existence on this property of a workable seam of coal by means of the diamond drill are so remote that I would certainly advise Mr. Baas not to incur the expense. If, however, he should decide to test the shales by boring the most suitable site appeared to me to be the one already chosen by Mr. Baas, and marked with a red dot on the accompanying tracing. Another favourable site would be at a point along the south boundary of this property, about 15 chains easterly from its intersection with the Stroud road. The latter spot has the advantage of being near a swamp, where an abundant supply of fresh water is obtainable. I have, &c.,

T. W. EDGEWORTH DAVID.

The Under Secretary.

APPENDIX No. 2G.

Report on the occurrence of the recently-discovered Cobalt Ore at Carcoar.

Sir, Department of Mines, Sydney, 19 December, 1888.

In accordance with verbal instructions given me by the Under Secretary for Mines, I have inspected the cobalt reef lately discovered on the property of Mr. J. A. M'Killop, near Carcoar. The spot where the cobalt ore was first discovered is situated on top of a hill, ¾ mile south-easterly from the Carcoar railway station. The discovery was made accidentally by a miner when trenching to intersect the continuation of a neighbouring copper reef. The formation here consists of a greenish-black crystalline rock, which may provisionally be termed diorite, though, probably, when it has been further examined in transparent microscopic sections, it will be found more nearly allied to the hypersthene gabbros, or to teschenite. This diorite occupies all the area tinted green on the accompanying plan, and most of the intervening uncoloured area, immediately to the north-west of the cobalt vein. Next, on the south-east of this mass of diorite, comes a belt of greenish chloritic slate, then the cobalt vein, consisting of a succession of bunches of nearly pure cobaltiferous mispickel; then, further to the south-east, brownish-grey clay slate, with a dyke of whitish-grey felsite outwardly resembling opaque quartz; then a considerable mass of clay slate similar to that on the north-west side of the felsite dyke.

The sections seen in the railway cuttings show clearly the relations to one another of the diorite, slate, and felsite.

The slate is the oldest formation which has been intruded by the boss of diorite, and subsequently both slate and diorite have been intersected by dykes of whitish-grey felsite. The cleavage of the slates dips in direction from 10° to 30° E. of S. The diorite meets the slate near the cobalt reef in portions 1 and 2, parish of Shaw, along a line nearly parallel with the cobalt reef, and is traversed by a few quartz reefs, one of which contains copper pyrites and iron pyrites, and has been worked for copper, and another of which is said to contain a little gold. These reefs strike towards the cobalt reef at an oblique angle. The diorite boss, close to its junction with the slate, throws off a narrow dyke, which penetrates the slate, and runs parallel for some distance with the contact line of the two formations. The bunches of cobalt ore occur partly in this dyke and partly in the slate, at its sides at the north-east end of the reef, while towards its south-west end the bunches are entirely in the slate. The felsite dykes are from a few feet to 18 feet wide, and strike in various directions, but chiefly in a north-east and north-west direction.

The most important of these dykes is the one which runs parallel to the cobalt reef on the south-east side of it, at a distance of 40 yards.

This dyke is about 18 feet wide.

The relations of these formations to one another, and the occurrence of the bunches of cobalt ore, are shown on the plan accompanying this report.

The vein, as far as at present proved, consists of a succession of lens-shaped bunches, of which three had been discovered up to the time of my inspection. These three bunches lie in the same straight line, and their longest axes also lie parallel to the same line, which is itself almost exactly parallel with the junction line of the slate with the diorite and with the strike of the large felsite dyke to the south-east of the vein.

The first bunch consisted of strings of small bunches ranged along three lines, which met at the point shown in the sketch plan. The bearings of these three lines were, respectively, E. 30° N., E.S.E., and S. 10° E. This bunch commenced close to the surface at its north-east end, and dipped slightly to the south-west at the rate of about 1 in 6. The whole bunch was worked out at a depth of about 5 feet from the surface, below which level scarcely the least trace of it remained.

The smaller individual bunches consisted of irregular shaped, more or less, spherical masses of cobaltiferous mispickel and molybdenite, which merge gradually into the country rock. Some of these masses weighed over 1 cwt., and in all about 5 tons of ore were won from this bunch.

The second bunch is a single mass, 9 feet long, 2½ feet wide at the centre, and tapering off rapidly at both ends, where it ceases suddenly in the chlorite slate. The longest axis of this bunch strikes N. 33° E. The ore here is massive cobaltiferous mispickel, which, as in the first bunch, merges gradually into the country rock. The downward vertical extent of this bunch had not been proved at the time of my visit. The second bunch bears S. 35° W. from the first, and is 35 chains distant. Bearing S. 35° W. from the second bunch is the third bunch, also enclosed in chlorite slate.

Its width is at least 1 foot, but its length had not been proved.

Three bunches have, therefore, been discovered, the last being nearly half a mile distant from the first.

Owing to the ore in the bunches being of about the same degree of hardness as the enclosing rock, they do not make any visible outcrop at the surface, such as a quartz reef does, and a great deal of trenching will consequently be necessary in order to discover the intermediate bunches, which, no doubt, exist.

Ore.—The ore in these bunches consists of glaucodot (a variety of cobaltiferous mispickel), erythrine (cobalt bloom), molybdenite, and thin films of an apple-green to dark-green mineral, which has been determined by Mr. J. C. H. Mingaye, F.C.S., the Government Assayer and Analyst, to be annabergite (arseniate of nickel).

Scarcely any molybdenite was met with in the No. 2 and No. 3 bunches, which were almost wholly composed of massive granular-crystalline glaucodot, with small isolated crystals of the same mineral intermixed with the chlorite hornblende and felspar of the gangue.

Glaucodot.—

Glaucodot.—The following are two analyses of this mineral from Carcoar, made by Mr. J. C. H. Mingaye:—

No. 3,542, from No. 1 Bunch.

Analysis.

Moisture	·120
Metallic arsenic	51·810
,, cobalt	10·447
,, nickel	·590
,, iron	11·860
,, manganese	Nil.
,, calcium	Nil.
Magnesium	1·480
Gold	trace.
Silver	,,
Sulphur	1·520
(Insol. in acids) gangue	22·078
	99·905
Specific gravity of ore	5·430

Sample from No. 2 Bunch, No. 4,367.

Analysis.

Moisture	2·180
Metallic arsenic	29·010
,, cobalt	13·830*
,, nickel	·390
,, iron	15·78
Alumina	trace.
Manganese	Nil.
Calcium	·71
Magnesium	·22
Sulphur	11·24
Gangue	26·31
	99·66

Traces of gold; no silver; trace of copper and antimony.

I have the honor to report that a qualitative analysis has been made of a green-coloured substance which accompanied the mineral worked, No. 4,637, with the result that nickel, arsenic, and a trace of cobalt were found present. The bulk of this mineral consists of mispickel containing cobalt, and a small percentage of nickel; also much gangue. The stone was much decomposed in places, and the green colour was visible where the decomposition had taken place. From results obtained, I am of opinion that this green mineral is nickel bloom.

J. C. H. MINGAYE, F.C.S.,
Government Assayer and Analyst.

These analyses, as well as the crystalline form and perfect basal cleavage of the mineral, prove it to be glaucodot.

The actual amount of cobalt oxide in the ore was, in No. 1 sample about 14·69, and in No. 2 sample, 19·45 per cent. In the former case over 22 per cent. of gangue was present, and in the latter, 26 per cent. The total amount of cobalt oxide in this mineral, the pure glaucodot, when quite freed from the gangue, would be, in the first case, nearly 19 per cent., and in the second case, over 26 per cent.

The other minerals, with the exception of the annabergite, have already been described, as regards their physical characters, in my previous report, dated 15th August, 1888. The anabergite (nickel bloom) is not present in sufficient quantity to be of any commercial importance.

Summary.—This deposit of cobalt appears to me to have been formed in a line of fissure, which for some distance followed the line of junction of the diorite with the slate, and was probably directly due to the intrusion of the diorite, being formed either by the thrust of its upheaval, or by the contraction consequent upon the cooling of the mass of igneous rock. Towards its north-east end this fissure was partly filled by a dyke of fine-grained diorite, closely resembling the chlorite slate, which it has penetrated. The cobalt ore was then concentrated into the irregular hollows along this line of fissure by some process of segregation, for its intimate admixture with the dyke rock is difficult of explanation on any other hypothesis, and in the case of No. 2 and No. 3 bunches, by a similar process, accompanied, apparently, by a slight transportation of the mineral in solution into the hollows now occupied by the bunches, as in these two last cases the gradual merging of the mineral into the country rock is less apparent than in the first.

The occurrence of cobalt in the form of Kupfermanganerz† at the Coombing Copper Mine, bearing W. 40° S. from the present bunches, 2 miles distant, proves that this metal is somewhat widely distributed in the Carcoar District.

The bunches will probably dip in a south-easterly direction, conforming to the dip of the cleavage of the slate rock.

Notwithstanding the bunchy nature of this deposit, the richness and size of the bunches will fully justify the outlay of some capital upon its future development.

The ore is exceptionally rich in cobalt, at least four times as rich as the cobaltiferous manganese ores hitherto worked for cobalt in New South Wales, and when picked some of it would be worth at least £20 per ton.

My thanks are due to Mr. J. A. M'Killop, of Carcoar, the owner of the cobalt-ore deposit, for much information and assistance.

I have, &c.,
T. W. EDGEWORTH DAVID,
Geological Surveyor.

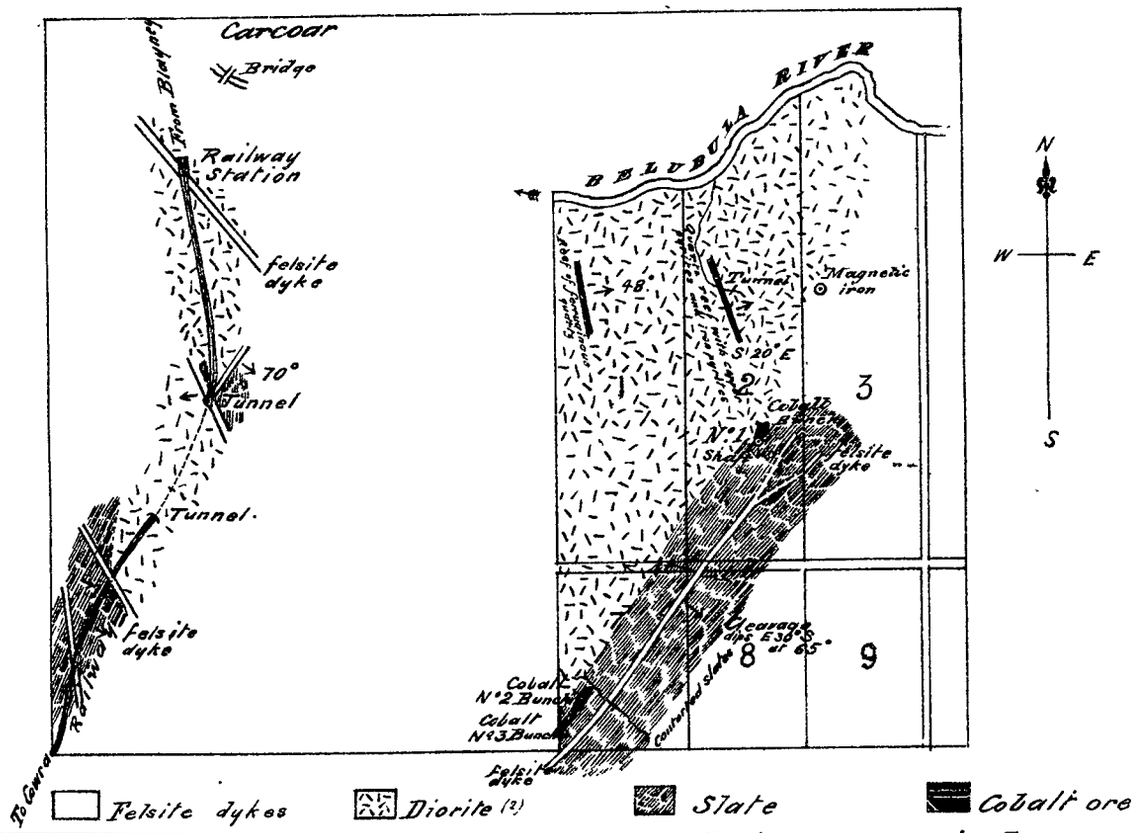
The Geological Surveyor-in-charge.

PLAN

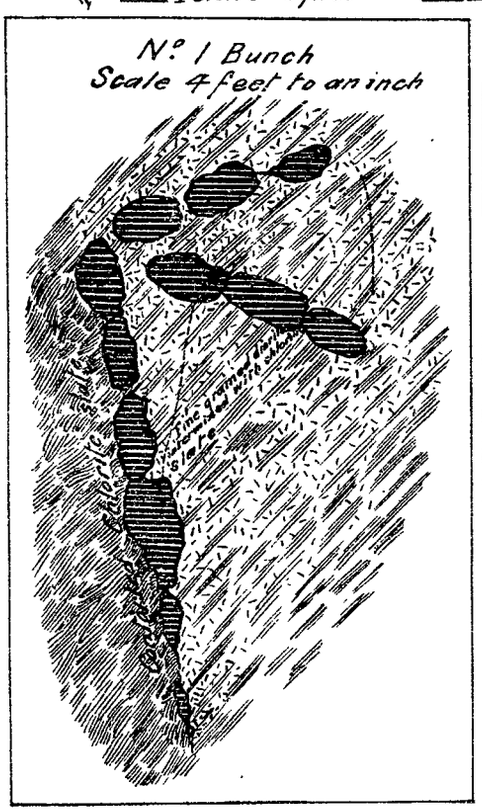
* = $Co_2 O_3$, 19·453. † Minerals of New South Wales, by Professor A. Liversidge, second edition.

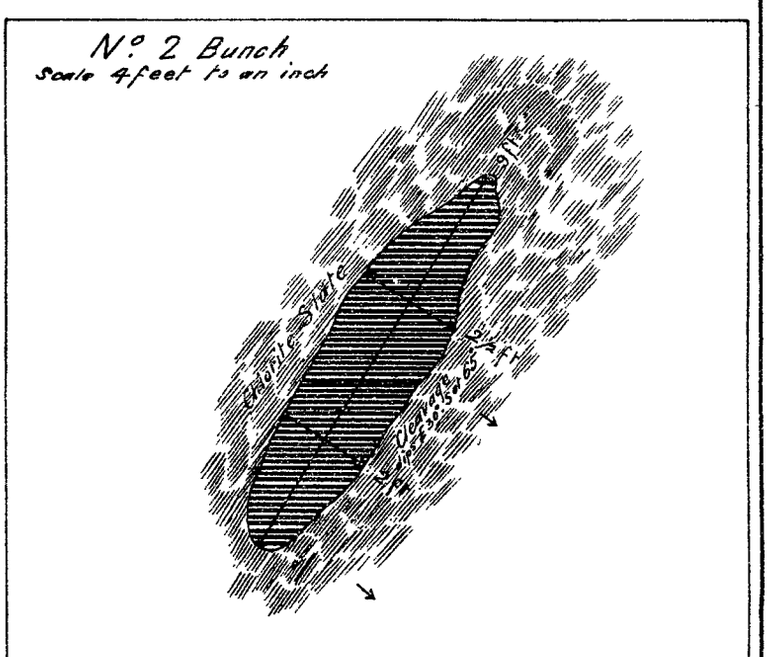
PLAN showing the occurrence of COBALT ORE near CARCOAR

Parish of SHAW, County of BATHURST



Scale 20 chains to an inch.





Prepared by P.F. Hammond.

(335-2B.)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

APPENDIX No. 3.

Sir, Geological Survey Department of Mines, Sydney, 26 February, 1889.

I have the honor to furnish you with a Progress Report of the work on which I have been engaged during the past year (1888).

In the early part of January I visited Gunning in connection with the alienation of certain lands.

My annual leave of absence extended from 31st January to 20th February.

On 12th March I left Sydney for Bingera, and remained in that neighbourhood till 20th April, when I proceeded to Barraba. During that time I visited the Pleistocene ossiferous deposits near Myall Creek, which were being excavated for the Palæontological collection of the survey, and from which a very large and interesting collection of the bones of our large Pleistocene vertebrates have since been obtained. The full report has been published in Part II, vol. I, of the Records of the Geological Survey. I also examined numerous mining localities in the neighbourhoods of Bingera and Barraba, and these examinations are embodied in my general report on those districts. (*Appendix No.* 3 A.) I returned to Sydney from Barraba on May 2nd, and, until the beginning of June, I was engaged in office work and the writing of the above reports.

On 4th June I travelled *via* Mudgee to Gulgong, where I was engaged till 7th June with business connected with the Prospecting Vote.

On 5th July I left Sydney for Molong, and reported generally on the district north and west of that place, returning to Sydney on 9th July. (My report forms Appendix No. 3 B.)

On 2nd August I left town for Tamworth, and thereafter, as a member of the Prospecting Board, visited the following places in the Northern District:—Nundle, Hanging Rock, Bowling Alley Point, Moonbi, Uralla, Boro Creek, Walcha, Glen Morrison, Tia Reef, Armidale, Boorolong, Eversleigh, Herbert Park, Warm Corner, Hillgrove, Gyra, Glen Innes, and Vegetable Creek, returning to Sydney on the 13th September.

On 9th October I proceeded, *via* Gundagai, to Tumut, where I was engaged in connection with the alienation of certain lands until 13th October, when I returned to Sydney.

On 22nd October I left Sydney for Dubbo, and was engaged until the 29th making a cursory examination of the Coal-measures of Ballimore and Spicer's Creek. My report thereon forms Appendix No. 3 C.

Leaving Sydney on 30th November, I proceeded *via* Mudgee, and joined you at Gulgong next day, and while in this district, as a member of the Prospecting Board, I visited the following places:—Reedy Creek, Denison Town, Home Rule, Merindie, and Capertee, and dealt with numerous applications from these places for aid out of the Prospecting Vote, and returned to Sydney on 16th December.

While in the Mudgee District I visited, in company with Mr. Arthur Lowe, of Wilbertree, a locality near the Talbragar River where an important discovery of fossil fish had recently been made. This place is at Boyce's selection, No. 14, parish of Bligh, county of Bligh. The fish remains were discovered along with a set of plants, which occur in loose blocks of ferruginous shale, which lie scattered over the surface of the ground above the outcrop of the beds, which are not themselves visible. These shales probably form a lenticular patch in the Hawkesbury sandstone, which here overlies a set of coal-bearing strata, and where undenuded covers a large portion of the country, chiefly as horizontally-bedded and extensive outliers. A very large collection of these fish remains has since been obtained for examination and description, and they will no doubt form a most interesting addition to the Palæontology of the Hawkesbury-Wianamatta formation. A short notice of these fish-bearing shales has been published in the Records of the Geological Survey, Part II, vol. I.

I have, &c.,

The Geological Surveyor-in-charge. ——————— WILLIAM ANDERSON.

APPENDIX No. 3 A.

The Geology of the Bingera and Barraba Gold-field.

Sir, Department of Mines, Geological Survey Board, Sydney, 24 May, 1888.

In accordance with your instructions, I have made a general examination of the geological features of the country between Bingera and Barraba, in the counties of Murchison and Darling, and visited various mining localities in the neighbourhood of these townships which you requested me to report upon particularly. I have now the honor to furnish you with my report.

The sedimentary rocks of this area consist of a series of clay shales, sandstones, quartzites, and limestones. They are highly altered, being much indurated and minutely jointed. To the west of Barraba they lie mostly horizontally, with a few slight wavy flexures, while around Bingera, and in the neighbourhood of the serpentine belt, they stand nearly vertically, or with a decided dip. From their petrological characters, and the occurrence of Lepidodendron in the shales near Bingera, they probably belong to the Devonian period. To the east of Bingera, however, we come upon a much more highly-altered and contorted series of rocks, which will probably be found to be of Silurian age. In all these sedimentary rocks there are abundance of quartz veins and reefs, which of course occur in greatest numbers in the localities where the rocks have undergone most alteration and contortion, and in the neighbourhood of intruded volcanic rocks. Many of these quartz reefs are auriferous, and are at present being worked.

Tertiary basalt occur in various parts of the district, forming isolated tablelands of considerable extent. It is present covering the diamondiferous drift with their overlying pipeclays a few miles to the west of Bingera, and also on the Bald Nob some half dozen miles up the Gwydir River. It occurs also covering Tertiary pipeclays and drift on the hills to the east of Coorangra Creek, which flows northwards to the Gwydir River, from near Upper Bingera. It forms the summit of Bell's Mountain, 6 miles to the north of Barraba, a plateau which extends to the east and west of the road for some miles, along the boundary between the counties of Murchison and Darling. It is also found in numerous other isolated positions. As these basalt ranges with their underlying pipeclays, represent the old Tertiary valleys, we can reasonably expect to find that under some portions of them at least we should get the old river channels with their pebbly wash containing gold and precious stones. The first two localities above mentioned have been more or less prospected, but very little attention has been paid to the latter two. If the Cope's Creek and Bingera diamond drifts are part of the same Tertiary river course, it is probable that one of these basalt ranges which crosses the country between these two places forms the connecting

link between them. My examination of the country was not, however, minute enough to warrant my drawing a decided conclusion as to which of the last two mentioned basalt ranges formed the connection. However, we have evidence in the presence of characteristic Tertiary boulders and pebbles in the Pleistocene alluvial deposits which form Bingera Flat that a portion of a Tertiary lead must have undergone denudation within the drainage area of this valley. The probability is that this Tertiary lead must have crossed the valley of Bingera Creek on the north side of the watershed, between that creek and Cobbedah Creek; and, so far as we know at present, it is quite possible that the Coorangra Creek basalt may form the connection. At any rate, the drift under these two runs of basalt at Coorangra Creek and Bell's Mountain ought to be thoroughly prospected for gold and precious stones.

The Devonian series of rocks in this district is intersected from near Manilla to within 3 miles of Bingera by a nearly continuous belt of serpentine, which varies from over 2 miles to a few hundred yards in width. It varies much in character. It is in some places uniformly compact, but generally it has been much crushed, and is now a finely-jointed slickensided rock-mass, throughout which occur numerous very hard kernels and nodules of a compact rock with a light-brown base, having black lustrous porphyritic crystals of *bastite* (?), an altered pyroxene, scattered plentifully through it. In various places dykes of hard volcanic rock have been intruded through the serpentine, which is itself probably a highly-altered volcanic rock—a *peridotite*.

Large quantities of gold have been obtained in immediate connection with this belt of serpentine along its whole extent. This occurred both in reefs traversing the serpentine itself or occupying a position on the line of junction of that rock and the slate, and also as alluvial gold in certain areas draining off the serpentine.

Following out your instructions, conveyed to me by telegram, I visited the following localities in the neighbourhood of Bingera, having received a list of these from the Secretary of the Progress Committee.

Spring Creek.—At the head of Spring Gully, about 3 miles to the S.E. of Bingera, two parties are at present engaged working a quartz reef. Salter and Neal's party have sunk on the reef, and driven a short way on the underlay. The reef dips at a low angle, a little to the north of east. It averages about a foot in thickness, and traverses the hardened and much-jointed Devonian slate. Since my visit I have heard that Neal and party have had 7 tons 3 cwt. 1 qr. of quartz crushed at the battery in Bingera, and it yielded 10 oz. 1 dwt., there having been a considerable amount of gold picked from the stone before it was sent to the battery. A short distance to the south, along its outcrop, Redding and party have opened on the quartz reef, which is here on the line of junction between the serpentine and the slate. A shaft has been sunk to catch the reef on its underlay. It passes through 34 feet of slate, and for the next 6 feet alternating quartz and slate, until at 40 feet the serpentine foot-wall was struck. Good prospects were got from this shaft by hand-crushing. From the outcrop of the reef a drive was put in, following the serpentine foot-wall for 100 feet, passing 15 feet beyond the bottom of the 40-feet shaft. The quartz reef in the drive varies from 2 feet to 5 feet in thickness, but the gold is more or less confined to the immediate proximity of the foot-wall, and indeed the serpentine foot-wall itself carries fine free gold in patches. The Doctor's reef, lying a few hundred yards to the north of this reef, has had a considerable amount of work done on it, as its surfacing was rather rich. It averages over 1 foot in width, and consists of hard pyritous quartz with calcite, dipping to the west and traversing the slate. The free gold has no doubt been freed from the pyrites by decomposition, as it occurs chiefly in small hollows in the quartz containing the ferruginous matter, the decomposition product of the iron pyrites. An assay of quartz from this reef gave a return of 25 oz. 9 dwt. 14 gr. of gold per ton, and 10 oz. 9 dwt. of silver per ton, showing that there is a considerable amount of fine free gold in the stone.

Spring Gully is the northern limit of the serpentine belt, the reefs occupying the line of junction between it and the slates, or occurring in the immediate neighbourhood of that junction. In the reefs I have mentioned above the gold is of a patchy character, and confined locally to certain portions of the reef. Although, in the case of Redding's reef, if the serpentinous footwall continues to carry payable gold, as well as a layer of quartz in immediate relation to the footwall, as is at present the case, the prospects are rather encouraging.

Bobby Whitlow.—This valley, through which flows a creek of the same name, a tributary of Myall Creek, lies a few miles to the north-east of Bingera. The alluvial deposits here have proved very rich, and numerous reefs traversing the nearly vertical Silurian slates have been more or less opened up. I visited the following reefs:—

The Mountain Maid consists of quartz and calcite leaders in pyritous slate. It outcrops on a spur to the left of Surveyor's Gully. Considerable work has been done in sinking shafts on this reef. Five tons of picked stone averaged 1½ oz. to the ton.

The Lady Mary, some distance higher up the Bobby Whitlow Creek, consists of a thin leader of pyritous quartz, traversing bluish-coloured Silurian slate. Not far from this is the Maid of Ashford, formed by a small leader of quartz, with epidote, and one of calcite, which unite lower down. Free gold can be seen in the calcite, but not in the quartz. They dip N.E. These quartz reefs in Bobby Whitlow Valley are of small size, indeed, the whole body of Silurian slate is seamed with small leaders and veins of quartz, many of which are auriferous, but there are no indications of permanency about them. Most of the gold which has been got in the Pleistocene alluvial deposits of the valley of this creek has no doubt been derived locally from the leaders and gold-bearing veins of quartz, although some of it, from its well water-worn appearance, must have travelled some distance. A good deal of fossicking is still carried on in the Pleistocene alluvial in various parts of the valley. The most extensive alluvial working is at a portion of the valley called Mud-holes. Here the Pleistocene alluvium is being sluiced by means of a water-race, which has been cut for a considerable distance, but the scarcity of water greatly retards operations. Although here this Pleistocene alluvium is somewhat limited in extent, the prospects obtained are fairly good.

Upper Bingera lies in a south-easterly direction, distant about 16 miles from Lower Bingera. Some years ago the alluvial deposits and reefs in the Upper Bingera gold-field comprised the valley through which the road from Lower Bingera passes, together with the hills enclosing the head of it, and lying to the north-west of the old township of Upper Bingera. This valley has been excavated in the serpentine belt, which at this point is about a mile wide, while all the reefs that have been worked occur in that rock. At present there is very little work done in the neighbourhood of this once rich area. A few miners are still fossicking in the gullies draining off the serpentine hills, while some desultory

desultory work is being carried on by a few parties in sinking on reefs. About a couple of miles down the valley from the township, where it is contracted into a somewhat narrow gorge by the close proximity of two steeply sloping serpentine ridges, preparations are being made to work the alluvial deposits which are still untouched in this narrow part of the valley.

The chief mine in which work was lately carried on is called the Ballarat Reef, which occurs on portions 32, 59, and 24, parish of Hall. In former days exceptionally rich patches were got when this was first opened up, and it is the endeavour of the present owners, by sinking deeper, to strike others of these rich patches. This so-called reef is of a rather peculiar character. The line along which it has been worked lies north-west and south-east, and large numbers of shafts and tunnels have been excavated in connection with it. It is not a reef in the true acceptation of that term, although true leaders of auriferous quartz have been met with, and have given rich returns. It is a narrow strip of dark-coloured ferruginous much-jointed and slickensided serpentinous rock occurring in the centre of the serpentine area. This narrow strip of crushed rock occurs for a considerable distance along a north-west and south-east line. It is of a schistose character;—its component minerals have been forced by enormous pressure to take a wavy lenticular form. To the east of this is the true serpentine, while immediately to the west of it there is a very hard light-coloured rock, which, on examination under the microscope, proves to be a wholly crystalline rock of the diorite type, and is undoubtedly of an intrusive character. The intrusion of this rock into the serpentine may have been the cause of the great crushing which the serpentinous rock has undergone. Consequent upon the crushing to which this rock has been subjected, innumerable minute cracks were opened in it, which were subsequently filled with quartz, sometimes auriferous, forming small leaders, which are never of any extent or thickness. In course of time, by the denudation of the crushed serpentinous rock, with its included auriferous veins and the ready percolation of water downwards, along its numberless joints, much of the gold liberated from the decomposed quartz-veins was taken up in solution by the percolating water and carried downwards by it; and wherever there has been a horizontal or slightly inclined joint of any extent, the gold has been redeposited on that joint face. The consequence of this has been that, besides the rich yield obtained from the auriferous leaders of quartz, there have been numerous large patches of free gold obtained wherever one of these more or less horizontal joints was struck. Iron pyrites is present in these rocks, and it is probable that originally some of the gold was in combination with this mineral. Below the water-level, to which they have attained in the present workings, iron pyrites is very abundant, and probably carries much of the gold unreleased by decomposition.

It will be seen from what has been stated above that the occurrence of these patches of free gold is quite arbitrary, and there is no defined line or direction to act as a guide in searching for them, except the general fact that they will only be found in the narrow belt of crushed and much-jointed serpentinous rock, where that has contained auriferous leaders, and it is as likely these will occur in the unprospected portions of the crushed rock between the surface and the lowest depths of the present workings as that they will be found at still lower depths. Quartz leaders will be found to be abundant in this strip of crushed rock, and, in all likelihood, numbers of them will be auriferous, but they will be of small size. Below the water-level much of the gold is probably confined to the iron pyrites.

Coorangra Flat.—This flat occupies the upper reaches of the Gouron Gouron Creek, one of the southern tributaries of the Gwydir River. It lies some few miles to the north-east of Upper Bingera, and is of considerable extent. Numberless shafts have been sunk all over the flat, but the depth necessary to reach the wash could not be obtained because of the wetness of the ground. At its upper end there is at present being worked with good results about 5 feet of coarse pebbly wash, consisting of well-rounded and angular pebbles, evidently a Pleistocene redistribution of a Tertiary lead. There is little doubt that this wash covers a large portion of the flat which has as yet been wholly unprospected, this being due to the fact that the presence of water had always prevented individual miners from sinking to a workable depth. The probability is that, if properly prospected, the drift in this flat would be found payably workable.

Many of the hills on the eastern side of the Gouron Gouron Creek are capped with Tertiary basalt, while others consist entirely of sand and fine drift, which, in some places, must be over 60 feet thick, while in the few shafts which have been sunk in the immediate neighbourhood of the basalt, pipeclays and lignite with fossil leaves occur. It is due to the denudations of portions of this Tertiary lead that we find the Tertiary boulders in the Pleistocene redistribution on Coorangra Flat. Four shafts at different points have been sunk on the Tertiary deposits, but in none of them was the drift successfully reached and prospected, because of the amount of water present, so that as yet it is altogether unknown whether or not gold or diamonds are present in it.

All Nations Reefs.—This reef outcrops on a rising ground ¼ of a mile to the south of Lower Bingera. It traverses slate, and has a general north and south strike. It was first opened about twenty years ago, and the original series of shafts put down on its outcrops can still be seen. Its dip is nearly vertical for 30 feet, when it changes to the east. On this dip the reef was followed for a short distance, when it was found to resume its vertical position. A shaft was put down from the surface to catch the reef at this point by Goldrig and party, who sunk it on the reef 65 feet. The present party began operations in this shaft at that depth, and are now down a little over 100 feet. It is about 3 feet in thickness, and contains free gold in a fine state of division, besides a large amount of auriferous pyrites. A battery has recently been erected in the town to carry on the crushings from this reef. The bulk assays of the reef are as follows:—A mixed sample of the whole reef gave a return from the Mint of 17½ dwt. to the ton. Four tons treated at Park and Lacey's gave 15 dwt. of free gold to the ton, and half an ounce from the pyrites to the ton. If the free gold continues at this rate uniformly through the stone, this reef will in all probability pay for its extraction by crushing, but the pyrites will require special treatment, and it is very likely that below the water-level the gold will be chiefly in the pyrites.

The Wet Flat, on which the township of Lower Bingera is situated, still remains unprospected, owing to the presence of so much water. Lately Wearne and party have sunk two shafts some distance to the north-east of the All Nations Reef; one is down 63 feet, and the other 68 feet; both bottomed on slate rock. Drives from these shafts prove the presence of a small channel of drift, consisting chiefly of slate pebbles with quartz and decomposed basalt boulders, much of which has come from the denudation of a Tertiary lead higher up the valley. Operations were reported to have been stopped owing to the influx of water into the drives. There is not the least doubt that there is on this flat deep ground which formed the main drainage channel for the valley, and in which there is every prospect of obtaining payable gold whenever the water can be overcome.

I made an examination of the following places in the neighbourhood of Barraba :—

Manilla River.—From opposite the mouth of Connor's Creek, for 14 miles up the river on its southern camp, isolated hillocks of Pleistocene gravel occur, which consist of sand with well-rounded and angular pebbles of quartz, jasperoid rock, slate, and blocks of ferruginous cemented gravel, resting upon the much-jointed and nearly horizontal Devonian slates. A few specks of scaly gold can be got almost anywhere in this drift. At many places the present stream has cut through this gravel deposit, which, no doubt, represents the course, or at any rate the undenuded bends of the Pleistocene course of the river. The probability is that some portions of this drift may be locally rich, but it would require a great deal of prospecting to prove this.

Woods Reef is a small township lying about 8 miles to the east of Barraba. The track from Barraba for the first 2 miles passes over Devonian slates, then on Broadbeck's and Douglas' selections over a basaltic plateau, an outlier of the Bell's Mountain Tertiary basalt, and then over more highly contorted and altered slates as far as Ironbark Creek, where we come upon the serpentine, the bed of the creek being at this spot on the western line of junction with the slate. The serpentine is here about $1\frac{1}{2}$ miles broad, and Woods Reef is situated on it. Mining has been carried on in this neighbourhood for a considerable time. The chief mine at present worked is the Addison Reef. It occurs on a quartzite ridge in the immediate vicinity of the eastern junction of the serpentine with the slate rock. It is a saddle-shaped quartz reef, the forkings of which dip to the north-east and south-west, respectively. The easterly branch gave out in a short distance, but the westerly, which dips at an angle of about 40 degrees, has been followed for over 100 feet. A 65-feet shaft has been sunk not far from the outcrop, to catch the reef on the underlay. From the bottom of this the westerly branch of the reef has been followed to a depth of 110 ft. The reef divides into two, the smaller portion passing off to the west at a low angle, while the larger portion continues downwards in a nearly vertical direction. The last crushing of quartz taken from the present workings at 110 ft. gave a return of half an ounce to the ton. The average yield of stone taken from between the bottom of the 65-ft. shaft and the present workings at 110 ft. was about 6 dwt. to the ton.

Some distance to the south of this occurs what is called the Young Garryowen reef, which is a bed of ferruginous pyritous quartzite interbedded with the decomposed slate-rocks. The superficial portion of the quartzite, in which the pyrites was decomposed, returned 7 dwt of gold to the ton. Below the water-level the gold will be wholly confined to the pyrites, and the expense of treatment would preclude the possibility of working it payably.

Paling Yard Creek.—Considerable quantities of gold have been obtained in the Pleistocene alluvial of this creek near its source, north of the old Paling Yard Station, in the north-west corner of the parish of Tiabundie. There are still a few miners working on the creek. Here the serpentine belt is only about 100 yards wide, and in connection with it there are dyke-like masses of a hard crystalline rock, containing a large amount of pyrites, which was probably the origin of at least some of the alluvial gold. About half a mile to the south-east of the old Paling Yard Station is an outcrop of chromic iron ore. It occurs on the western line of junction of the serpentine with the slate, and contains gold, but not in payable quantity.

Ti-tree Creek.—These diggings lie about 9 miles in a southerly direction from Barraba. The alluvial in this creek was very rich, and there are yet a few miners working here, though near the source of the creek it is pretty well worked out. On the water-shed between Ti-tree Creek and Aberdeen Gully is the Pioneer Reef. It consists of calcite with arsenical and iron pyrites, and averages about 1 ft. in thickness. It strikes north-west and south-east, and dips to the north-east at a high angle, traversing bluish-coloured pyritous slate.

A series of shafts have been sunk on the outcrop of the reef, the deepest of which is down 140 ft., while the others have been sunk to 30 ft., 40 ft., 41 ft., and 132 ft., respectively. At the bottom of the 140-ft. shaft the reef has been driven upon to the south-east, while at the 132-ft. level there is a 45-ft. drive to the north-west. In the former drive the reef is 15 in. thick, and in the latter 7 in. Traces of gold have been got all the way from the surface to the 140-ft. level, while some parts of the reef were very rich locally. The following are some of the crushings from the reef:—Two tons from the 50-ft. level crushed at the Mint gave 5 oz. to the ton, while from the same level 140 lb. of stone returned 58 oz. Six tons from the same level were crushed at the Crow Mountain Battery, and returned 1 oz. 5 dwt. to the ton. Six tons from the 140-ft. level gave 1 oz. 12 dwt. to the ton. This reef seems to be of a persistent character, and has a fair average yield, although the occurrence of rich gold in it is of a patchy nature.

Taking the district around Barraba as a whole, I think that prospectors ought to confine their attention to the neighbourhood of the serpentine belt and the basalt-capped ridges, together with the valleys draining off these. The geological structure in the former position is favourable to the presence of metalliferous reefs and lodes, because the serpentine is in all probability an altered peridotite (an olivine enstatite rock) of volcanic origin, which, in its unaltered condition, has been intruded among the slates, and has caused their contortion and alteration; consequently along their lines of junction, and in the crushed and contorted slates in the neighbourhood of that junction, cavities have been formed, which were subsequently filled with quartz, calcite, or metalliferous lodestuffs.

In the case of basalt-capped ridges the occurrence of auriferous drifts may be expected, because they represent the old valleys and low-lying grounds, which in the Tertiary times were flooded with basaltic lavas. But, in fact, from a geological point of view, there is every reason to suppose that the whole country from Tamworth northwards to beyond Bingera is favourable to the occurrence of auriferous and argentiferous reefs and lodes.

In conclusion, I beg to record my thanks to the numerous gentlemen, both in Bingera and Barraba, who so kindly afforded me every assistance and information during my examination of the district.

I have, &c.,

WILLIAM ANDERSON.

The Geological Surveyor-in-charge. Geological Surveyor.

APPENDIX

APPENDIX No. 3 B.

Sir, Department of Mines, Geological Survey Board, Sydney, 12 July, 1888.

In accordance with the instructions I received from the Under Secretary, I have visited the country immediately to the north of Molong, and have now the honor to furnish you with my report thereon.

The country under examination includes portions of the three counties, Gordon, Wellington, and Ashburham, about the junction of the Bell River with Molong and Nora Creeks. It is of a hilly character, and consists of altered Silurian slates, sandstones, conglomerates, and limestones, with numerous varieties of volcanic rocks. One of the chief geological features of the district is the great development of the limestones, whose outcrops, in many cases, cover a considerable extent of country. They occur in lenticular beds, which are interbedded with the other sedimentary strata, and contain numerous fossils. In connection with many of them occur extensive outcrops of iron ore and gossan, some of which contain gold and silver, but which have never been prospected to any extent. The general strike of the sedimentary rocks, as is shown by the outcrop of the various beds of limestone, is in a north-easterly and south-westerly direction. To the south and south-east of Molong a considerable area is occupied by pink-coloured granite, while intrusive diorite and felsite occur near Larras Lake station. At Spring Creek, parish of Eurimbula, county Gordon, intrusive basaltic rocks occur.

The remains of Tertiary basaltic lavas, covering river drift, form extensive ranges of hills in some parts of the district. These drifts have never been thoroughly prospected, and judging from the auriferous character of the rocks from which they have been derived, they are, I think, deposits to which prospectors ought to direct their attention.

In the upper portion of the valley of Nora Creek a Tertiary drift occurs, in which a few shafts have been sunk, but no systematic work has been done to prospect this deposit, although good gold is reported to have been got here, and in the alluvial at the head of Burrawong Creek.

On the watershed between the sources of these two creeks is Delaney's Dyke, which is a garnetiferous rock containing gold and copper. It is worked by the Delaney Dyke Gold-mining Company. It traverses the Silurian slates near their junction with pink-coloured granite. The strike is nearly north and south, and the dip is to the east at a high angle. Numerous shafts have been sunk on the outcrop, the deepest of which is down about 65 feet. At the 40-feet level the lode has been driven upon to the north for 35 feet, and here it averages 10 feet in thickness. At the 55-feet level the lode averages 23 feet from footwall to hanging wall, including a thin horse of dark flakey slickensided slate much stained with the carbonates of copper, and which when crushed returns good gold. The lode consists of garnetiferous lodestuff containing free gold with the carbonates of copper. The gold is generally very fine, but visible specks are not unfrequently to be seen. At the southern end of the lode, at the deepest level, it is very rich in copper carbonates. A crushing of 40 cartloads from this lode returned 41 oz. of gold and 25 oz. of silver. The lode has every appearance of being permanent in depth, and the only drawback at present is the want of water to carry on the crushing, which is done by an eleven-headed stamper battery, situated on the neighbouring creek.

Mullingin Reef outcrops near the northern fence of Mr. Lee's 1,120-acre block, at the junction of the Weandre Creek with the Bell River, parish of Three Rivers, county of Wellington. It is a quartz reef containing arsenical and iron pyrites. It has an east and west strike, and dips south 5° east at a high angle. At its outcrop it is a foot thick, and continues to a depth of 60 feet at the same uniform thickness. It traverses decomposed slates of different degrees of hardness, the hanging wall being soft clay slate, and the footwall a very hard chloritic slate. For 34 feet the shaft is vertical, and then follows the reef to the depth of 60 feet, where they are at present working. At the bottom of this shaft the reef has pinched out towards the west, but in a small drive to the east it is still about a foot thick. From this part of the reef I took a sample for assay, which returned neither gold nor silver. Two assays were, however, made of the quartz from the shaft, and both gave a little over 3 ounces of gold to the ton and a trace of silver. The country rock in the neighbourhood of this reef has undergone great disturbance, and this, I think, would discourage the idea of finding well-defined reefs of large size, but nevertheless it is probable that small reefs may frequently occur. In the next block to the north the outcrop of a fairly large quartz reef can be followed, running nearly north and south for a considerable distance, but it is not, so far as has been ascertained, payably workable. The probability is that Mr. Lees's Mullingin Reef is a branch coming from the larger reef, or that it is the continuation of that large reef whose strike at this point has turned to the west instead of continuing to the north. This, however, can only be proved by following the Mullingin Reef to its junction with the other.

Numerous other reefs occur about here, which have not, however, been tested or opened up. They generally show arsenical and iron pyrites and the carbonates of copper—in fact, copper, in one form or another, seems to be present in almost all the reefs of this district.

In the neighbourhood of Mullingin Reefs there are large tracts of country covered by Tertiary basalt, which in many instances overlies Tertiary river drifts. These have never been prospected to any extent. Some holes have been sunk for a few feet in depth along the outcrop of the drift, which, however, has never been followed into the deepest ground. There is little doubt that in this locality numbers of those isolated basalt-capped ridges will be found to contain payable auriferous drift when thoroughly prospected.

On Spring Creek, near its junction with the Bell River, in the parish of Eurimbula, county of Gordon, large pieces of native copper were found some years ago on the surface. A few thin quartz leaders with calcite showing the carbonates and grey sulphide of copper, and assaying 43 per cent of copper, were sunk upon, till they gave out at no great depth. In the immediate neighbourhood the rocks are more or less copper-stained along their joints. They consist of sedimentary Silurian rocks through which eruptive basaltic rocks have been intruded, the line of junction between them being just at this point where the native copper was found. It is probable that a rich copper lode may exist near this spot, and, if so, it no doubt will be found to occupy a position in the immediate neighbourhood of the junction between the sedimentary and intrusive rocks. On Reedy Creek, a tributary of the Bell River, a few miles to the south of Spring Creek, in the parish of Eurimbula, county Gordon, is an immense outcrop of ferruginous gossan and iron ore. It occurs in connection with a bed of limestone, and can be traced for miles in a northerly direction, following the outcrop of the limestone. In some parts it contains a few water-worn pebbles of quartz. Two samples for assay I took about a quarter of a mile apart gave no return of either silver or gold.

At Little Copper Hill, on the western side of the Wellington Road, about 2 miles north of Molong, an outcrop of iron ore and gossan occurs in connection with a bed of limestone. This outcrop of gossan

was

was opened up some forty years ago for the purpose of working the copper it contained, but this did not prove of sufficient richness to pay. It has, however, been proved by assay to contain silver, and I think it might be worth while to prospect it for that metal.

In many parts of the world, and particularly in the western parts of the United States of America, rich silver and lead mines have long been worked in limestones. These ore deposits occur especially where the limestones are connected with eruptive rocks, but not only are they found along the junctions of the limestones with the eruptive rocks, but owing to the easy solubility of limestone, large irregular cavities have been dissolved out along the joints by water percolating through the rock, and these are often found to have been refilled by the deposition in them of metalliferous ores. In this country no attention has ever been paid to the prospecting for metals in limestone, and as yet our Palæozoic limestones are virgin ground to the prospector. I believe that if, not only in this district but in other parts of the Colony, the limestones, especially where connected with eruptive rocks, were carefully examined and prospected, some rich mineral finds would be the result.

In conclusion, I would state that this district presents many geological features which are favourable to the development of metalliferous lodes and reefs, and to the occurrence of gold; for not only are there large tracts of country covered with Tertiary river drifts, which in many places are probably auriferous, but the whole country is formed of highly inclined and tilted Silurian rocks, which locally have been much disturbed by the intrusion among them of volcanic rocks, and in these disturbed areas are to be found the reefs and metalliferous lodes, which have been formed in the cracks and fissures left in the strata by the movements and great pressure to which they have been subjected. I would, however, call special attention to the limestones, which are so largely developed in this district, and particularly to those portions of them which are in any way connected with eruptive rocks, as being probably ore-bearing strata.

I have to express my thanks for the kind assistance afforded me by Mr. Lee of Larras Lake during the examination of this country.

I have, &c.,

WILLIAM ANDERSON,

The Geological Surveyor-in-charge. Geological Surveyor.

APPENDIX No. 3 C.

Sir, Geological Survey, Department of Mines, Sydney November. 1888.

In accordance with your instructions, I have inspected a portion of the North-western or Talbragar River Coal-field, in the neighbourhood of Spicer's Creek and the Talbragar River, to the east of Dubbo. I have now the honor to furnish you with a report thereon.

From Dubbo eastward to Spicer's Creek the country consists superficially of a coarse sandstone and conglomerate, which is covered locally by patches of Tertiary basalt, in some places overlying auriferous Tertiary drift. This grit and conglomerate, known as the Dubbo or Ballimore sandstone, lies horizontally, and shows false bedding. In a few positions lenticular beds of thin-bedded shales, of no great extent, occur in it. It presents all the characters of the Hawkesbury sandstones of the Blue Mountains, and there is little doubt that it is an outlier of that formation. Natural sections of the coal-bearing beds which underlie it are of rare occurrence in the district. It is only in certain positions in the creeks and watercourses, where the denuding action of these has worn through the sandstone and so exposed a small portion of the underlying beds, that they can be seen. The sandstone is, however, so easily disintegrated that such quantities of the loosened sand are swept into the watercourses that they become partially filled up with it, and any sections that may have been exposed by denudation are wholly obscured. The sandstone is of no great thickness, although it varies considerably in different positions, so that the coal-bearing strata can be struck generally over the district at a comparatively shallow depth. Sections showing the relations between the coal-bearing strata and the overlying sandstone occur on the northern bank of the Talbragar River at Ballimore Hill, for about a mile and a half up the river, and also in the north-western corner of the parish of Ballimore, about 2 miles above Gillies' accommodation house. On the north-eastern slope of Ballimore Hill, about 100 feet of these coal-bearing beds are seen cropping out below the Dubbo or Hawkesbury sandstone, while in the creek to the north of the hill about 100 feet more of the beds are exposed. At the top of the hill the Hawkesbury sandstone is seen to rest on the underlying coal strata with a slight unconformity, which, however, at this point is hardly appreciable, the dip of the latter beds being not more than 2° or 3° in a southerly direction. The uppermost portion of the coal-bearing beds in this section consist of thin-bedded sandstone and light-coloured shales, with interstratified beds of ironstone, while below these are a series of thin shales, fireclays, and bituminous coals, none of which exceed a few inches in thickness. A portion of these thin coal-seams constituted what was formerly known as the Ballimore coal-seam, but although they are fairly good bituminous coals, the thinness of the individual seams, and the frequent occurrence of interstratified white bands, render the seams on this horizon, in this neighbourhood, of no commercial value, although it is quite possible that some of them may unite to form a workable seam in another part of the field. Altogether there are about 200 feet of the coal-bearing beds exposed in section in the vicinity of Ballimore Hill.

Two diamond-drill bores have been put down in the neighbourhood of Ballimore Hill. No. 1 bore was situated about a mile up the river from the hill. It is close to the northern bank of the river, and was commenced among the thin coals which occur about 100 feet below the Hawkesbury sandstone on Ballimore Hill. This bore attained a depth of 794 ft. 6 in. At 526 ft. a seam of coal was struck, which was 5 ft. 3 in. in thickness, with an inch band about a foot from its upper surface At 550 ft. artesian mineral water was tapped; and the only other coal-seam that was struck was at 653 ft., but proved only to be 11 inches thick. The presence of the artesian water prevented the 5 ft. 3 in. seam from being worked in the neighbourhood of the bore. No. 2 bore was situated about 60 chains in a northerly direction from No. 1 bore on the creek. After the surface alluvium it first passed through a set of beds identical with those occurring immediately below the Hawkesbury sandstone on Ballimore Hill, which were followed by the same series of thin coal-seams. The total depth bored was 1,101 ft. 4 in., but after passing through the thin coals at 200 ft. no other coal-seam is reported to have been met with At about 600 ft. a few thin coaly layers were passed through, which no doubt represented the 5 ft. 3 in. coal-seam met with in No. 1 bore, the horizon being approximately the same in both cases. The fact that this 5 ft. 3 in. coal-seam appears to have totally disappeared in so short a distance may possibly be due merely to a local thinning of the bed. As shown by both these bores, there is in this series of coal-bearing strata a great prevalence of interstratified beds of conglomerate, the presence of which is against the uniform persistence of the coal-seams over a large area.

Nº 1. Bore

Soil	17	10
Alternate thin coals sandstone and shales	64	7
Shale and Sandstone	93	7
Coal		4
Conglomerate	26	3
Sandstone and Shale	296	9
Sandstone	27	3
Coal	5	3
Freclay	4	1
Coaly shale	5	6
Sandstone	43	9
Dark shale with ironstone bands	9	8
Sandstone shale and Conglomerate	57	3
Coal		11
Sandstone shale & Conglomerate	63	3
Coaly shale	5	11
Conglomerate	14	10
Coaly shale		7
Sandstone and Conglomerate	20	8
Coaly shale		11
Conglomerate & Sandstone	35	4

Artesian water 550 ft.

714 ft. 6 in.

Nº 2 Bore

Surface Clay	7	
Sandstone with ironstone bands	77	1
Shaly Sandstone	11	3
Coal and band	6	2
Coaly shale	37	11
Shaly sandstone and Conglomerate	13	6
Coal and bands	5	1
Dark shale with Coal veins from 1 in to 5 in in thickness	32	2
Shaly Sandstone	84	
Coal		8
Soft blue shale	12	2
Sandstone	11	1
Chert		4
Conglomerate	2	10
Soft shaly Sandstone	14	7
Chert	1	3
Grey shaly sandstone	139	10
Blue shale with sandstone partings	46	6
Soft blue shale	12	5
Sandstone and shale	49	6
Conglomerate	17	2
Dark shale		
Dark shale with coal pipes	3	10
Dark shale	8	8
	5	5
Conglomerate	36	9
Shale	14	10
Conglomerate	7	
Shale	35	4
Conglomerate	48	9
Conglomerate with coaly partings	38	10
Sandstone and shale	49	9
Conglomerate	2	6
Sandstone	17	11
Conglomerate	3	2
Shaly sandstone	49	6
Conglomerate	28	6
Shaly sandstone	13	5
Conglomerate	53	8
Shale	4	
Conglomerate	27	1
Shaly sandstone	4	4
Conglomerate	7	2
Sandstone shaly	31	2
Sandstone	27	6

1101 ft. 4 in.

(335-2 E)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

Two miles up the river from Gillies' accommodation house, the section on the northern branch of the river consists of the same series of thin coal-seams and light-coloured shales, showing that over a considerable area the dip of the beds is hardly appreciable.

In the bed of Spicer's Creek, a few hundred yards north of the spot where the Dubbo and Wellington track crosses the creek, about 28 miles from Dubbo, a bed of coal crops out, at a point where the Hawkesbury sandstone has been removed by the creek. On the west bank, about a chain from this place, a shaft has been sunk to a depth of about 30 ft. After passing through the alluvium, sandstone and light fireclay shales containing plant remains, chiefly rootlets and Glossopteris leaflets, the same coal-seam was struck at 25 ft. It is reported to be about 4 ft. in thickness, with an inch band near the top of it. The coal is partly bituminous and partly a splint coal, containing small kernels and streaks of very pure and fine-grained fireclay, the presence of which will materially affect the percentage of ash in specimens analysed. The following are analyses of two samples of this coal. No. 1 was taken out of the shaft, and No. 2 from the heap at the mouth of the shaft:—

	No. 1.		No. 2.	
Specific gravity	1·430		1·479	
Volatile hydrocarbons ...	23·61		23·05	
Fixed carbons	52·28	72·88	54·65	73·35
Ash	20·60		18·70	
Sulphur	0·42		0·576	
Moisture	3·09		3·60	

The colour of the ash in both samples is greyish. It is not a caking coal. The high percentage of ash would prevent its use for domestic purposes in localities where a better coal could be procured, but still it might have a local value for household purposes. It does not burn very readily, and when used for smelting purposes a certain amount of wood has to be used along with it. As all the analyses and trials have been made from samples of this coal taken from near the surface, where the percentage of volatile hydrocarbons has no doubt been lowered by the percolation of surface water, the results are probably, to a certain extent, not so good as they would be if the samples had been taken from a considerable depth. To prove the thickness and quality of this coal-seam it would be necessary to sink a shaft some distance away from the present one on the line of dip of the seam. The probability is that if the shaft is sunk on the same flat as the present one the coal-seam will be struck at less than 50 ft. Away from the creek the country rises gradually, and consequently the further from the creek the thicker will the overlying Hawkesbury sandstone be, because the denuding action of the waters of the creek were more active, and wore deeper into the sandstones near the creek than towards the watershed.

What relation the coal-seam at Spicer's Creek bears to the coal-seams seen in section and occurring in the bores at Ballimore Hill we have at present no means of determining conclusively, as there are no sections visible between these two places. Judging, however, from the slight dip of the beds generally, and the fact that along the course of the Talbragar River, on the line of strike for a distance of 7 miles, most of the sections present some portion of a series of thin coals which are undoubtedly on the same horizon, and have in every case a uniform relation to the overlying Hawkesbury sandstone, it seems to be probable that the Spicer's Creek coal-seam may possibly be the representative of that which was struck at 526 ft. in No. 1 bore. It is, however, probable that there will not be below the Spicer's Creek coal-seam nearly the same thickness of coal-bearing strata that has been proved by boring to exist in the neighbourhood of Ballimore Hill, because within a mile to the southward of the outcrop of the coal at Spicer's Creek the older Palæozoic rocks outcrop on the surface and represent the edge of the basin in which the coal-bearing strata had been laid down, unless, perhaps, they have been brought into position by faulting, of which I noticed no evidence.

The great prevalence of interstratified conglomerates and the thin-bedded character of the whole series point to the fact that during the deposition of the various beds there was a rapid alternation in the movements for elevation and subsidence, in the character of the sediment, and in the direction of the currents from which it was deposited. It is evident from the few sections of the series which have been obtained that the area of the individual coal-seams is somewhat circumscribed, that is to say, that each coal-seam will be only locally persistent laterally, and will not persist with a uniform thickness over a large area. The total thickness of the coal-bearing strata in the neighbourhood of Dubbo has not yet been ascertained. The thickness proved by the deepest bore was a little over 1,100 feet, but at that depth the bore was still in the Coal-measures. It is of the utmost importance, both to the inhabitants of the Western District and to the Railway Department, that a knowledge be obtained by boring of the whole thickness of the coal-bearing strata in this the north-western or Talbragar River Coal-field, because such a knowledge would settle the question whether or not there are in these Coal-measures workable seams of coal, which if opened up, could be utilised for smelting, railway, and other purposes, in the Western District, at a much smaller cost to the consumers than is at present the case, when all the coal that is used has to be conveyed from the Lithgow and Newcastle coal-fields. It is therefore now almost a necessity that this the furthest western extension of our Coal-measures should be thoroughly proved. The bores that have already been put down in the district have been, for one reason and another, abandoned without satisfactorily testing the real thickness of the series of coal-bearing rocks that exist in the neighbourhood and pass under Dubbo, and consequently the presence or absence of workable coal-seams, with the exception of the 5 ft. 3 in. seam struck at 526 feet in No. 1 bore, has yet to be proved.

I have, &c.,
WILLIAM ANDERSON,
Geological Surveyor.

The Geological Surveyor-in-charge.

APPENDIX No. 4.

Annual Report of the Palæontologist, 1888.

Sir,

I herewith have the honor to hand you a progress report of work performed by me during 1888.

In continuation of the Monograph of the "Permo-Carboniferous Fossils of New South Wales," I beg to refer to a suggestion made in the progress report for 1887—that the first part of this publication should be deferred pending the acquisition of additional material from localities not then represented. I am now glad to say that through the exertions of the collector, Mr. C. Cullen, valuable additions to the

Echinodermata from Nowra and corals from Shoalhaven have been made. Under this heading may be mentioned the loan of a remarkably fine *Cyathocrinus*, the largest I ever saw, from Mount Vincent, made by the Maitland Scientific Society; and a fine *Palæaster*, from the Ravensfield quarries, by Mr. T. Browne, of West Maitland. I now purpose completing this first part as soon as possible. It should, however, be understood that, leaving out of consideration the time necessary for the elucidation of such complicated structures as corals, a publication of this nature is always more or less interrupted by current work of a miscellaneous character.

Of the Palæontological section of the "Memoirs of the Geological Survey of New South Wales" the two first appeared during the past year, viz :—

No. I.—The Invertebrate Fauna of the Hawkesbury-Wianamatta Series, &c. By R. Etheridge, junr.
No. II.—Contributions to the Tertiary Flora of Australia. By Baron von Ettingshausen.

In the first I endeavoured to give a concise history of the invertebrate animal remains found in the large series of rocks overlying the productive Upper Coal-measures of New South Wales. In the second, which simply passed through my hands editorially, descriptions of the Tertiary Flora of this continent are given, translated from the original memoirs in German. Many valuable conclusions as to the origin of the bygone and present floras of Australia will be found in this work. It is hoped that during the present year at least two other complete memoirs will appear, viz. :—The Palæozoic and Mesozoic Flora, by Dr. O. Feistmantel; and a translation of the late Professor De Koninck's "Recherches sur les Fossiles Paléozoiques de la Nouvelle Galles du Sud," the preparation of both for the press being well in hand.

The sorting and transfer of the collection, mentioned in the last Annual Report, has been steadily carried on, and only about one-third now remains to be placed; this will be completed on the reception of the new trays, now under order. Those classes recently transferred consist of the Silurian corals, Polyzoa, and Cephalopoda, the whole of the Permo-Carboniferous, except the univalves, and a part of the bivalves having been so dealt with. Other subsidiary lots have also been sorted and placed, such as Post Tertiary bones from Wellington Caves, Lord Howe Island, &c.

Amongst the more important Miscellaneous Determinations made during 1888 may be mentioned the following:—

A Selachian fish-spine, discovered by Mr. Geological-Surveyor Anderson, in the Siluro-Devonian limestone of the Wellington caves, making a welcome addition to the scanty vertebrate remains hitherto known from that horizon; a small collection of Upper Tertiary shells from near Adelaide, South Australia; and Permo-Carboniferous mollusca, from near Hobart, Tasmania, presented by Mr. Anderson. Further, a very interesting set of specimens from the Joagla Falls, Styx Creek, near Armidale, collected by the latter, and proving the existence of rocks of Permo-carboniferous age in that district. (*See Appendix No.* 4 F.)

Post Tertiary shells from Olsen's Caves, Queensland, presented by Dr. J. C. Cox.

Permo-Carboniferous Brachiopoda, presented by Mr. J. H. Maiden, Curator of the Technological Museum.

An excellent example of *Cycadopteris scolopendrina*, Ratte, obtained by Mr. G. A. Stonier, Field Assistant, at Alexandria. This specimen enables me to confirm Mr. Ratte's description[1] of the fossil, and its reference to the above genus.[2]

Post Tertiary shells, collected and presented by Mr. Theodore Bevan, at the Aird Hills, Douglas River, British New Guinea, during his fifth exploring expedition. (*See Appendix No.* 4A)

A fine collection of plants and marine fossils from the Permo-Carboniferous rocks of the Wollongong and Shoalhaven Districts, made by the collector, Mr. Charles Cullen. These have already been referred to, but amongst the remainder may be mentioned examples of the plant *Noeggerathiopsis*, which confirm the structure of *N. spathulata* given by Professor J. D. Dana,[3] wherein the leaves occur as a cluster growing together, in a verticillate manner, a fact in the structure of this genus which seems to have been overlooked by most authors.

Upper Silurian limestone with typical fossils. From between Cobar and Nymagee, by the Rev. J. Milne-Curran. In last year's Annual Report reference is made[4] to the first discovery of the fossiliferous deposit, the additional specimens which have come to hand in every way confirming the former determinations. (*See Appendix No.* 4 *D.*)

A very interesting coral from the Lower Palæozoic rocks of the Yass District, presented by Mr. R. A. Barber, which I have described as *Lonsdaleia* (*Spongophyllum*) *bipartita*.[5]

The museum has been enriched by the presentation of Permo-Carboniferous mollusca from Somerton and Pallal, and Ravensfield, near Maitland, by Messrs. D. A. Porter and J. Browne, respectively; several good samples of *Lepidodendron* from Goonoo Goonoo, and Devonian corals from Tamworth, by the former. Amongst the last named are examples of an hitherto unrecognized genus in New South Wales, *Diphyphyllum*, which I hope to describe shortly.

A collection of Post Tertiary bird and marsupial bones from the Paroo River, south-central Queensland, presented by Mr. A. S. Cotter. Amongst these are the mutilated tibia and fibula of Owen's extinct and rare struthious bird, *Dromornis*, and a portion of a tibia of an Emu, lately described by Mr. C. W. de Vis as *Dromaius patricius*,[6] thus showing the co-existence of that bird with the *Dromornis*. A description of these remains is now in the press.[7]

Mesozoic plants from the Ipswich coal-basin, Queensland, presented by yourself. These fill up a gap in our museum, whilst several forms not hitherto known to me from that area are represented.

Glossopteris and other Coal-Measure plants from Iron Creek, near Mittagong, obtained by Mr. Geological-Surveyor David, B.A. Some of the *Glossopteris* are interesting in that they show traces of fructification.

In continuation of the examination of the diatomaceous earths of New South Wales,[8] Diatomite has been examined from Lismore, Tweed River, near Cudgen, Richmond River, and the Dubbo District, *See Appendix* 4 *E.* A clay from a coast coal-seam, south of Pelican Creek, Lake Macquarie, was found to be devoid of organisms (*See Appendix No.* 4 *B.*); and a similar result occurred in connection with a Tertiary clay from Kiandra. (*See Appendix No.* 4 *C.*)

[1] Proc. Linn. Soc. N. S. Wales, 1886, I, p. 1081, t. 16 f. 5.
[2] See Records Geol, Survey N. S. Wales, 1889, I, Pt. 2 (*in lit.*)
[3] U.S. Exploring Exped. (Wilkes), Geology, vol. X, Atlas, t. 12, f. 9.
[4] Ann. Report Dept. Mines, N. S. Wales, for 1887 [1888], p. 166.
[5] Records Geol. Survey N. S. Wales, 1889, I, pt. 1, p. 22, t. 3.
[6] Proc. Linn. Soc., N.S. Wales, 1888, III, pt. 3, p. 1290.
[7] Records Geological Survey N.S. Wales, 1889, I, pt. 2.
[8] Annual Report, Department of Mines, New South Wales, for 1887 [1888], p. 165.

I have been favoured by Mr. R. A. F. Murray, Government Geologist for Victoria, with samples of diatomaceous earths from that province. Amongst other interesting results, the curious fact has presented itself that, with one exception, the diatoms of the one colony are quite different from those of the other. Difference in age of the deposits may perhaps account for this.

In the early part of the year I accompanied Mr. Geological-Surveyor David to inspect the bore through the Hawkesbury-Wianamatta beds, at the Moore-bank Estate, near Liverpool.

Conjointly with the same officer, important ethno-geological investigations have been carried on in the immediate neighbourhood of Sydney. Examinations of aboriginal burying-places, rock-shelters, and kitchen-middens have been made at Long Bay, near Botany, and at North Harbour, Port Jackson. A number of interesting facts were obtained and remains and implements collected.[1] This line of investigation cannot be too strongly recommended, and it is hoped that opportunities will be afforded for their continuation. As a contribution to this study I visited aboriginal rock shelters on George's River and Harris Creek, in company with Dr. J. C. Cox.[2]

In connection with the late International Centennial Exhibition at Melbourne, I put together and forwarded a collection of Eocene and other Tertiary plants.

The departmental library has engaged much of my attention, with the view of assisting to render it as practically useful as possible. Through a wider distribution of the departmental publications the number of books has been largely increased.

I have, in conclusion, to express my appreciation of the lapidary's (Mr. Chas. Merton) exertions in assisting me in much difficult and minute work.

I have, &c.,

R. ETHERIDGE, Junr.,
Palæontologist.

APPENDIX No. 4 A.

Miscellaneous Contributions to the Palæontology of Australasia.

No. 7.—Report on semi-fossil Fluviatile Shells brought by Mr. T. Bevan from the Aird Hills, Douglas River, British New Guinea.

The shells procured at the summit of a trachyte hill, called Aird Hill, are referable to three species, two univalves and one bivalve. They are:—

1. *Melania clavus*, Lamarck.—Represented by several specimens. It has previously been obtained at New Ireland, the Philipines, and is recorded by Mr. J. Brazier from the Solomon Islands also.
2. *Neritina gagates*, Lamarck.—This species comprises more than two-thirds the entire parcel, and is present in several varieties. It is a characteristic New Guinea species, and was obtained by Mr. Brazier in the Katau River.
3. *Cyrena* sp.—Several valves, which Mr. Brazier, who was kind enough to examine these shells, in company with the writer, is unable to precisely refer to any known species from New Guinea. It is nearest to *Cyrena nitida*, Desh., and is perhaps only a variety of it. The latter shell has hitherto been known from Borneo.

The shells were in a kind of silty mud or mould, which on dissolution in water failed to reveal any trace of Foraminifera, or other low organisms. The general mass seems to be composed of the minutest fragments of shell. The specimens do not in any way possess the aspect of fossils, the Neritinæ retaining their original surface gloss. It would be very hazardous to suggest any theory of upheaval from the position of these shells, unless strong corroborative evidence is forthcoming as to the thickness, extent, and general position of the deposit containing them.

R.E., j., 4/2/88.

APPENDIX No. 4B.

Miscellaneous Contributions to the Palæontology of Australasia.

No. 8.—Report on a sample of clay from above a coal-seam on the coast, at least 6 miles south of Pelican Flat, Lake Macquarie, New South Wales.

This sample of clay appears to have been taken from near the outcrop of the bed, judging from the manner in which it is laminated and otherwise traversed by filaments and layers of low plant life, probably Cryptogamic. After treatment of a portion with hydrochloric acid, the residue was examined and found to be destitute of the remains of organic life, other than small particles of the vegetable matter just mentioned.

R.E., 22/3/88.

APPENDIX No. 4C.

Miscellaneous Contributions to the Palæontology of Australasia.

No. 9.—Report on a sample of Tertiary Clay from Kiandra, New South Wales.

This clay from the Tertiary lignite deposit at Kiandra is of a greyish-brown colour, very fine in texture, and slightly arenaceous.

It was prepared and carefully examined for Diatomaceæ, but without the presence of any frustules being detected.

R.E., 8/5/88.

APPENDIX No. 4D.

Miscellaneous Contributions to the Palæontology of Australasia.

No. 10.—Report on Fossils forwarded by the Rev. J. Milne Curran, from a new locality in the Cobar District, New South Wales.

The fossils forwarded by Mr. Curran are in an exceedingly fine-grained sandstone, much stained with oxide of iron.

Only two species are represented—a *Rhynchonella*, and fragments of what appears to be an *Orthis* or *Strophomena*. The *Rhynchonella* is of great interest, as I am quite unable to distinguish it from *R. Wilsoni* (J. Sowerby), a characteristic Upper Silurian shell, except in the lesser number and coarser nature of the ornamenting ribs. In this character, however, it accords exceedingly well with a variety of this species termed *Davidsoni*, by Prof. M'Coy, from the Wenlock limestone.

The specimens are from 30 miles north-west of Cobar.

R.E., 8/5/88.

APPENDIX

[1] Records Geol. Survey, N. S. Wales, 1889, I, pt. 1, p. 9, and pt. 2 (*in lit.*) [2] *Ibid.* pt. 2 (*in lit.*)

APPENDIX No. 4E.

Miscellaneous Contributions to the Palæontology of Australasia.

No. 11.—Further Preliminary Examinations of *Diatomite* (Diatomaceous Earth) from New South Wales localities.

(*a.*) *Lismore District* (Mr. C. S. Wilkinson).—The remains of Diatomaceæ in this deposit are very much broken up, but few complete frustules being present. The form is probably identical with that already recorded from previous localities, viz., *Melosira*, but the frustules, instead of being barrel-shaped and short, are cylindrical and generally much longer. A few sponge spicules are also present.

(*b.*) *Tweed River*, near *Cudgen* (Mr. Munro, 15/3/88).—A very rich bed, containing both a large quantity of comminuted frustules and entire segments. In this case it is the short barrel-shaped frustle which predominates, and for the sake of distinction it may be well to temporarily know this as *Melosira a*; and the former, or cylindrical frustule common in the Lismore sample, as *Melosira b*. In the present Tweed River earth the frustules are exceedingly well preserved.

(*c.*) *Richmond River* (Mr. Munro, 15/3/88).—In the present sample from the Richmond River deposit the frustules, *Melosira b*, predominates to a very large extent, and they are of a greater length than I have otherwise seen them. The deposit is not particularly rich. A few sponge spicules have been observed.

(*d.*) *Dubbo District.*—The exact locality of this specimen is not known, but possibly it may be from the Warrumbungle Mountains. Both forms of *Melosira a* and *b* are present, and both equally plentiful. Spicules were not seen.

The examination of the New South Wales Diatomaceous Deposits, although at present only prosecuted in a preliminary manner, conclusively proves that a certain horizon, or perhaps more than one horizon, is well marked geologically by the constant presence of these frustules which I have referred to *Melosira*. So much is the case, and so marked is the form, that it will probably be necessary in the future to apply a distinctive name to it.

R.E., 15/5/88.

The Government Geologist.

APPENDIX No. 4F.

Contributions to the Palæontology of Australasia.

Geological Survey Branch, Sydney, 18 September, 1888.

No. 12.—Report on Specimens collected by Mr. W. Anderson, Geological Surveyor, at Joagla Falls Warm Corner, 50 miles north-west of Armidale, New England, New South Wales.

During the recent tour of inspection of the Prospecting Board, consisting of Messrs. W. H. J. Slee, Inspector of Mines, and Mr. W. Anderson, in the New England District, the latter obtained some fossil mollusca from a boulder at the Joagla Falls, Styx or Oaky Creek, county Clarke.

The limestone is of a dark-blue colour, crystalline, coarse-grained, and to some extent brecciated.

The fossils are of Permo-Carboniferous age, and represent either the Lower or Upper Marine Series. In the first place there is a large Aviculopecten, of which several fragments and one or two badly-preserved but almost entire valves are present. Allowing for the indifferent condition of the specimens, these may perhaps be referred to *Aviculopecten Illawarensis*, Morris. With these are associated numerous fragments of *Spirifera*, and some traces of *Fenestella*. Of the former genus there would seem to be two species, *Spirifera Tasmaniensis*, Morris, and a second unrecognizable form.

Mr. Anderson states that from the contour of the surrounding country the boulder could not have travelled far, and therefore it may be legitimately concluded that one or other of the marine portions of our Permo-Carboniferous series is developed within the drainage area of the watercourse previously referred to.

R. ETHERIDGE, Junior,
Palæontologist.

The Geological Surveyor-in-charge.

APPENDIX No. 5.

Sir, Department of Mines, Sydney.

I have the honor to make the following report for the year 1888; and to furnish herewith an analytical statement of assays and analyses made in the Departmental Laboratory during the same period; together with lists of donations to the Mining and Geological Museum and Library.

Exhibitions.

The great amount of Exhibition work devolving upon the Department during the year necessitated a large encroachment upon my time, as the following notes will reveal.

The Adelaide Jubilee International Exhibition was, after a very successful currency, brought to a close on the 7th January. The New South Wales Mining Court, as pointed out in my last report, was acknowledged to be one of the features of the Exhibition, a reputation it maintained to the end. The mineral section of the Colony's exhibits comprised eighty-one entries, but it should be mentioned that the whole of the large and varied general collections of the Minister for Mines and of Professor Liversidge appeared but as two entries.

The exhibits represented by the above entries received fifty-nine awards, viz., 16 first, 31 second, and 12 third class awards. Of these the Minister for Mines received 13 first-class awards for minerals, metals, and fossils; one for publications, maps, and sections; and five first and one second class awards for Forestry Exhibits.

The Council of the Centennial Agricultural Show having specially requested that the mineral and forestry exhibits of the Department should be transferred from Adelaide to Moore Park, Sydney, I was instructed to leave for Adelaide on the 29th December, 1887, to arrange for, and carry out the transference. As the Centennial Show opened on the 24th January, the time was very limited for such an undertaking, but the Executive Commissioner and his officers having rendered every possible assistance, the necessary exhibits were packed and despatched in sufficient time to enable me to rearrange them by the date mentioned. About 2,500 square feet of space were occupied by the above exhibits in the pavilion erected on the show-ground. Considerable interest was manifested in them during the time they remained on view.

At

At the close of the show these exhibits were removed to the store which had been obtained by the New South Wales Commission for receiving exhibits for the Melbourne Centennial Exhibition, to be opened on the 1st August; the balance of the mineral exhibits from Adelaide were also forwarded to it.

A considerable proportion of the mining exhibits were, however, shortly afterwards removed and rearranged in the Centennial Universal Exhibition, which opened in the Prince Alfred Park building on the 14th March, and remained open until the 14th May.

About 2,000 square feet of space were thus occupied during its currency. From this Exhibition they were again removed to the Melbourne Commission store, and prepared for transmission to the Melbourne Exhibition.

In addition to the large departmental collections thus secured for display at the latter, the private exhibits at Adelaide were packed and taken charge of by the Department for the same purpose. Great exertions were made to increase the number of exhibits, by securing additions to those which were already in hand, and fresh ones from newly-discovered or previously unrepresented deposits. Extensive correspondence was opened up with those interested in our mineral resources, and personal interviews sought were practicable. Every step was taken to secure a representation which would bring the mineral wealth of the Colony prominently before the visitors to the Exhibition, and to give effect to the wishes of the New South Wales Commission expressed in the following resolution conveyed to the Honorable the Minister for Mines by their President on the 28th July, 1887:—"That the Honorable the Minister for Mines be invited to authorize the officers of his Department to prepare, at the cost of the Commission, an exhibit that will fully exemplify the mineral resources of the Colony, and also to take charge of the exhibits furnished by private persons in the same classes, and to arrange for their display."

The efforts thus made resulted in a Mineral Court occupying a space but little short of 12,000 square feet of space, and out of a total of 236 entries in this section 43 were by the Minister for Mines, and 140 obtained through his instrumentality, leaving 53 entered in the ordinary way.

Many of the entries comprised exhibits in bulk weighing several tons each, the great desire being to secure exhibits which would impart a massive appearance to the Court and impress visitors with the extent as well as the richness and variety of the mineral resources of the Colony.

Having been instructed to carry out the work of arrangement, I visited the Exhibition building about a month prior to the general commencement of work, and drew out a plan of arrangement suited to the space set apart by the Executive Commissioner as a Mineral Court, which, meeting with approval, I was instructed to carry out; for this purpose I left for Melbourne on the 29th June. Work was begun on the 1st July, and continued vigorously at the rate of fourteen hours per day until near the opening day, when the night was still further encroached upon. At the opening (August 1st), though not quite completed, the Court presented a very good appearance, and evoked very generous congratulations from the Press and public alike.

Mr. Ford, who had remained in Sydney to supervise the packing and shipping of the mining exhibits, arrived shortly before the opening. Upon my departure, about the middle of August, he was placed in charge of the Mineral Court, a position to which he had been appointed by the Executive Commissioner, and one which he filled with great credit.

As the Exhibition closed on the 26th January, 1889, I venture to complete my notice of it.

The Executive Commissioner, R. Burdett Smith, Esq., J.P., in his thirteenth report, in summarizing the awards, states:—"But it is in Jury Section 50—Minerals and Mining—that in the matter of awards the exhibitors and exhibits of this Colony appear in special prominence. In silver and silver ores, and coal, the great majority of the awards fall to the share of New South Wales, and in gold and copper first-class honors have been obtained."

One hundred and seventeen awards were obtained in the mineral section of the New South Wales exhibits, viz., 50 first orders of merit, 30 second, 3 third, and 23 fourth.

The exhibits receiving the honor of special distinction, in addition to first order of merit, were—the collective exhibits of the Minister for Mines; the Australian Kerosene Oil and Mineral Company's exhibit of petroleum oil cannel coal (kerosene shale), and products; Professor Liversidge's general collection of minerals; Messrs. Hassall and Dowel, Ms.P., collection of tin ores, gem-stones, &c.; Broken Hill Proprietary Silver-mining Company's trophy and exhibit of silver ores; the Gypsy Girl Silver-mining Company's silver ore; the New Year Silver-mining Company's silver ores; the Barrier Range Mine Managers' Association's collection of silver ores; the Baker's Creek Gold-mining Company's gold-bearing quartz; and R. Saunders' massive exhibit of sandstone from Pyrmont.

Assays and Analyses.

During the year prospectors and others interested in mining largely availed themselves of the aid afforded by the Department in assaying, free of cost, samples from new or unworked deposits within the Colony.

The samples selected for treatment in the Laboratory considerably more than doubled the number for the previous year, being 5,245, against 2,222 in 1887.

In addition to the above, numerous samples were reported on verbally or in writing after inspection or simple tests.

The 5,245 samples sent to the Laboratory were submitted to 10,123 tests for single metals, and 86 analyses (of coal, shale, water, and miscellaneous substances). Particulars of the work thus performed will be found in the accompanying analytical statement, prepared for insertion in the Under Secretary's Report, under the heads of the various metals, &c., also in Mr. Mingaye's report. (*See Appendix No.* 6.)

The correspondence in connection with the above work has been very great; but, owing to precedence being given it, the results of assays have in all cases received speedy dispatch.

Mining and Geological Museum.

From the list of donations (*Appendix No.* 5A) accompanying this report, it will be apparent that the Department of Mines has been placed under great obligations to the mining community, and especially to those of it who took part as exhibitors in the Adelaide and Melbourne Exhibitions. The donations at the former were exhibited at the latter, so that at its close, out of a total of 196 private exhibits in the New South Wales Mineral Court, 112 were presented to the Mining and Geological Museum, either wholly or in part; whilst many of the balance not being suitable were not sought for. It

It would be invidious to specially mention any of the exhibits thus presented, though many of them are of exceptional value. The obligation thus imposed upon the Department cannot be met by mere acknowledgment. The aim and object of the donors is to assist in building up a Mining and Geological Museum which shall serve as a permanent exhibition of the mineral resources of the Colony.

In anticipation of the requirements and economical furnishing of such an institution, advantage was taken of the opportunities afforded by the representation of the Colony at the Colonial and Indian and Melbourne Exhibitions to secure suitable show-cases, after they had served the primary purpose for which they were constructed, and thus, at one cost to the country, continue their usefulness indefinitely. In this way 168 show-cases were obtained from the Commissions appointed to represent New South Wales at the above Exhibitions, and they are now available, in addition to the fifty-five already in use in the temporary structure at present serving as a Mining and Geological Museum.

In view, therefore, of the large number of valuable exhibits and show-cases accumulated since the destruction of the former Museum in the Garden Palace fire, the urgent necessity for a proper building in which to display them is very apparent, not alone on account of the educational nor yet of the wider international advantages of keeping alive the interest awakened at recent Exhibitions in the great undeveloped resources of the Colony, great though these advantages be; but also on the score of economy in public expenditure, for which reason alone this building should be at once begun. At the present time, in addition to the portion of rent borne by the inadequate structure in use as a Museum, and the interest on the cost of erection, the country is paying at the rate of £325 per annum for storage room, which, at 4 per cent., represents a capital of over £8,000, an expenditure in which is no profit, as the exhibits thus stored are entirely hidden from the public. At about one-fourth of the capital thus represented, and at a corresponding reduction of rent, the Mining and Geological Museum could be placed on a fair footing and in a fair way of serving the purposes for which it is intended.

In addition to the donations recorded, the Museum has been enriched by a splendid collection of bones of extinct animals, obtained by the collector, Mr. Charles Cullen, from Myall Creek, near Bingera. This unique collection has, as yet, remained unopened, room for its display not being available.

Library.

During the year the donations to the Library have greatly increased (*See Appendix No.* 5B), the total number of volumes registered to date being 2,364. Increased shelving has been provided, which necessitated a rearrangement of the books; but, owing to press of other work, the complete numbering and indexing has not yet been carried out. A considerable number of publications have been bound at the Government Printing Office during the year, which was necessary for uniformity and preservation.

I desire to express my acknowledgment of the great assistance rendered me in the performance of my duties in connection with the representation of the Colony at the Melbourne Exhibition by Mr. M. W. Lewis, Clerk of Works, East Maitland, in the preparation and description from practical observation of a collection of building stones from the Hunter River District; and by Mr. Herbert Winchester, of the Coal-fields Office, Newcastle, who, under the Examiner of Coal-fields' direction, supervised the preparation and despatch of the coal exhibits from the Northern Coal-field.

My best thanks are due to Mr. T. Ford, the officer in charge of the Mineral Courts at the several Exhibitions mentioned, for the able and ready assistance at all times rendered me.

During my absence on such work, Mr. G. A. Stonier, Geological Assistant, took charge of the examination of specimens for assay and the correspondence in connection therewith.

The performance of the duties of my assistant, Mr. Whittel, has been characterized by steady application and increasing usefulness; whilst those of the general assistant, Malcolm Morrison, have been performed with ready willingness.

I have, &c.,

JOSEPH E. CARNE,
Curator.

APPENDIX 5A.

DONATIONS to the Mining and Geological Museum during 1888.

Donor.	Donation.	Locality.
Albion Tin-Mining Company.	Lode tin ore	Albion Tin Mine, Barrier Range.
Mr. T. H. Alcock	Galena	The Hazlewood Mine, Tasmania.
Mr. W. Anschau	Tripolite (infusorial earth)	Richmond River District.
Captain Armstrong	Kaolin	Near Rookwood.
Mr. W. Ashcroft	Scheelite with a little copper	The Cordillera Mine, Tuena.
Australian Kerosene Oil and Mineral Company.	Petroleum oil cannel coal (kerosene shale).	Company's Mine at Joadja Creek.
Messrs. Bailey and Miles	Pyritous lodestuff	Bailey and Miles' reef, Mt. Domedary.
Back Creek Silver & Gold-mining Company.	Block of ore from 40-ft. level, No. 2 shaft	Back Creek silver and gold mine.
Baker's Creek Gold-mining Company.	Quartz lodestuff, showing gold freely	Baker's Creek, Hillgrove, near Armidale.
Bakewell Bros.	Shale and ground shale	Beulah Brick-works, Macdonald Town.
Mr. J. Badge	Blue and green carbonates of copper	Great Barrier copper and silver mine, Silverton.
Mr. E. W. Bathurst	Diamondiferous drift and associated gems	Round Mount diamond mine, parish of Aconite, Auburn Vale, near Inverell.
Mr. J. B. Beauregard	Collection of silver ores	Lewis Ponds, near Orange.
Mr. J. Beavis	Rhodonite and tephroite	Manilla.
Mr. S. L. Bensusan	Rich lode tin ore	Dalcoath Tin-mine, Glen Creek, New England.
Mr. T. Bevan	Post-Tertiary shells	Aird Hills, New Guinea.
Mr. Bingle	Bituminous coal	A new seam 1 mile N.E. from Mt. Jellore, county of Camden.
Messrs. J. R. Bingle & Co.	Antimony ore (oxide)	Ford's Creek, near Gulgong.
Mr. L. Bishop	Sandstone	Muree Quarry, Raymond Terrace.
Mr. J. H. Blatchford	Auriferous quartz	Snob's Reef, Braidwood.
Do	Geological specimens	Sugarloaf Mountain, Clyde Road, near Braidwood.
Mr. R. Breckenridge	Iron ores	Messrs. Breckenridge and Watson's Estate, Port Stephens.

APPENDIX 5A—*continued*

Donor	Donation	Locality.
Mr. W. Bridle	Silver ore	Yarrangobilly Silver-mine, Tumut District.
Mr. S. Bridgement	Quartz showing free gold	Araluen.
Broken Hill, Block 14, Silver-mining Company	Silver ores	Company's Mine, Broken Hill.
Broken Hill Junction Silver-mining Company	Silver-lead ores	Broken Hill Junction Mine, Barrier Range.
Broken Hill Proprietary Company	Silver-lead ores	Broken Hill, Barrier Range.
Mr. T. Browne	Building stone	Singleton Quarry.
Mr. H G. Brown .	Quartz with pyrites, galena, and zinc-blende	Meadow Flat, near Rydal West.
Mr. J. Burgess	Quartz showing free gold .	Burgess' Reef, Yeoval.
Mr. J. Campbell	Pyrites and zinc-blende in haplitic granite	Six miles from Yalwal
Mr. M. W Carr	Tin ore	Red Cross Tin-mine, Emmaville, Vegetable Creek, New England.
Mr C. A. Chesney	Auriferous lodestuff	Chesney's Lease, near Cobar
Mr W. C. Cleghorn	Felspar	Near Uralla.
Mr. G Cochrane	Fireclay .	North Willoughby.
Mr T. Colls, M P.	Heavy spar (sulphate of barium)	Humewood, 5 miles from Yass.
Commodore Silver-mining Company.	Silver ore	Commodore Silver-mine, Captain's Flat.
Mr. Corcoran	Stream tin .	Furracabad, near Glen Innes.
Do	Lode tin .	12 miles from Glen Innes
Cordillera Hill Silver-mining and Smelting Company	Silver, lead, and copper ores	Cordillera Hill Silver-mine, Peelwood
Cosmopolitan Extended Tin-mining Company	Tin ores	Company's Mine, Barrier Range.
Do do	do	do do
Mr. T. Cotterill	Schistose talc .	Between Caloola and Cowflat.
Mr. H. H. Cooke, M P.	Quartz with arsenical and copper pyrites	Dayspring Reef, Parkes.
Mr H. Copeland, M.P	Orthis, Gasteropod fragments. Naticopsis, and Bellerophon	Isis, Murrurundi.
Dr J C Cox .	Stalagmite with Helix and Pupina .	Olsen's Caves, Queensland.
Mr. T. Cragie	Sulphide of antimony and topaz	Cragie's Prospecting area, 14 miles west from Bingera
Do ..	Chrome iron . . .	4 miles from junction of the Gwydir and Horton Rivers, Bingera.
Do	Concretionary iron ore	Bingera.
Mr. Crommelin	Iron pyrites with vivianite	Grenfell.
Mr. W. A. Cunee	Glossopteris, brown boghead mineral, and semi-bituminous coal.	15 miles from Thirlmere,
Mr. H Dawson	Gold in slate	Flyer's Creek, 14 miles from Cooma.
Mr. P. Davis	Bituminous coal	The Mittagong Coal Company's Colliery, Natti River, 4 miles from Mittagong.
Mr. J. H. Decent	Clay ironstone	Leaton Grove, Auburn Park, near Bankstown.
Mr. A. Delaney	Bismuth ore	Gumble Flat.
Do	Tin and copper ore	Gumble Mine.
Mr A DeMestre	Alum earth and crude alum	Berrung, Nowra.
Mr. A. Dewhurst	Coal and Shale	Prior's property, parish of Black Jack, county Pottinger, near Doughboy Hollow.
Mr. J. Dunshea	Pipeclay	2 miles from Cudal.
Mr. H. T. Edwards	Coralline marble	Bibbenluke, near Bombala.
Messrs. T. Edwards and party	Auriferous quartz .	Near Locksley.
Mr J B. Engelen	Soapstone, asbestos, and slate	Gundagai.
Mr. G. S. Evans	Limestone, slightly argillaceous, containing Pentamerus	Walli, 15 miles from Cowra.
Mr. C Featherstonhaugh	Pyritous quartz .	Near the junction of the Macquarie and Turon Rivers
Do do	Crystallized cerussite	Near Lewis Ponds.
Mr. F. A. Ficinus	Silver ore	Maiden-head Station, Reedy Creek, Queensland Border, New England
Mr H. S Fry	Basalt with augite and olivine	Bulli Pass
Mr. C. L Garland, M P	Silver-lead ores	Captain's Flat, near Molonglo, and Peelwood.
Mr J. A Gegg	Concretionary iron ore	Windellama
Mr J. H. Goodlet	Sphærosiderite	Brick Quarry, Granville.
Mr. J. G. Griffin	Silver, gold, and copper-bearing lodestuff	Eyrie South Mines, Wiseman's Creek, near Brewongle
Do	Zeolites	Collingwood, near Melbourne, Victoria.
Mr. W. J. Gregory, J P	Granite	Green Hills, Berrigan.
Mr J. R. Grant	Prehnite and calcite in basalt	South Kembla.
Mr. A. Gray, Consul for Sweden.	Auriferous quartz and quartzite	Mount Gray
Mr. Gutherie	Devonian marine fossils	Ilford
Gypsy Girl Silver-Mining Company	Two tons of silver ore	Company's Mine, Barrier Range.
Mr. M J. Hammond	Cobalt ore	Bungonia
Mr. Hamlyn	Volcanic dust	Krakatoa volcanic eruptions.
Messrs. A Harber & Co.	Shale, ground shale, and fossils (fish and plants)	St Peters.
Messrs Hassall & Dowel, Ms.P.	Stream tin and gem-stones .. .	Oban, New England.
Mr J. S. Hawthorne	Garnets	Silverton.
Mrs. C G Haydon	Fossil-wood and concretionary ironstone	Oaky Creek, Barraba.
Mr Hebblewhite	Marine Carboniferous fossils .	Between Deep Creek and Farley.
Do	Wood opal	Orange.
Homeward Bound Gold-mining Co.	Auriferous quartz	Company's Mine, Yalwal, Shoalhaven.
Mr T W. Horton	Auriferous quartz and felspathic lodestuff, with blue and green carbonates of copper	Sawpit Gully, Fairfield, New England.
Do	Auriferous quartz	Mount Carrington, New England.

APPENDIX 5A– *continued.*

Donor	Donation	Locality
Mr T. W Horton	Silver ore	Rivertree, New England
Do	Galena, with a little copper pyrites and zinc blende, in ferruginous quartz and felspathic lodestuff	The Great Red Rock Gold and Silver Mine, Fairfield, New England
Do	Auriferous lodestuff	do do do
Do	Auriferous granite	Big Hill, Surface Hill, and from 1st Claim, Timbaria
Mr. J. K Hume	Ottelia praetermita	A creek between Rockwood and Mount Gilead, about 6 miles from Campbelltown
Mr. E. Irby	Silver ore	Pye's Creek
Mr. T. Jones, M P.	Kaolin	Shaking Bog, near Tumut.
Mr. T Jones	Scheelite	Cobar
Mr R Jones	Chalcedony, agates, stalactites, &c.	Springsure, Queensland
Do	Re deposited gold	A reef 3 miles south of Gulgong
Messrs Jones Bros	Brown iron ore	Gunning Consols Mine
Katoomba Coal and Shale Mining Co	Coal and boghead mineral	Company's Mines, Katoomba.
Mr J E Kelly	Tin and copper ore	Gumble Mine, near Molong
Do	Auriferous lodestuff	Delaney's Dyke Gold mine, near Molong
Do	Aboriginal's tomahawk	Dilga West
Messrs Kennedy and Bateman	Tin ore	Eight miles north west of Tenterfield
Mr J Larkin	Calcite (cone in cone)	Property of Mr J M Antill, Jarvisfield, Picton
Laurium Silver mining Co	Silver ore	Company's Mine, Thackaringa, Barrier Range.
Mr N Leoni	Quartz and mispickel	Junction of the Wombat and Candoin Creeks
Mr F Liebentritt	Plant remains	Near Druitt Town
Mr J B Lillicrap	Tin ore	New England
Mr Lindberg	Copper ore	Wellington
Mr J Lockhart	Ferruginous breccia quartz in slate, and containing a little pyrites	Cochrane's Reef, Warrall Creek
Rev J G Love	Contorted slate	Mount Dromedary
Mr Lowe	Fossil fish	Twelve miles south of Demsontown
Mr E Lipton	Hematite	Bargo, near Picton
Mr J H Maiden	Spirifera (4 specimens)	Shoalhaven Bridge and Camberarra.
Mr J. O M Manly	Copper ore and fluor spar	Woolgarlo, near Yass
Do	Copper ore	Six miles west of Binalong
Do	Quartz with galena, zinc blende, and pyrites.	Eight miles north east of Yass
Do	Galena	Haidwicke, near Yass
Do	Pyritous veinstone, with veins of calcite.	Greeves, near Yass
Do	Altered ferruginous claystone	do
Mr. G Martin	Silver ores	Pye's Creek, Webb's Consols Mine, Severn River, and Walsh's Claim, adjoining Webb's Consols
Do	Cellular, siliceous, and felspathic lodestuff	Bathurst and Company's Portion, 6 miles north-west from Deepwater Railway Station
Mascotte Gold and Silver Mining Company	Quartz and felspathic lodestuff, with zinc blende and pyrites	Company's Mine, Drake, New England
Mr J S Melville	Star antimony, smelted from New South Wales antimony ores, and three samples of type metal manufactured from same	
Do	Graphite	Underclift, New England
Do	Jasper, stibnite, and copper ore	Fairfield
Mr R Moore	Cellular quartz and brown iron ore, and specimens of gypsum	Ilford, near Mudgee
Mr J Morgan	Silver lead ores	Christmas eve Mine, Purnamoota, Barrier Range
Mount Biliagoe Prospecting Syndicate	Gold and silver bearing ore	North Billagoe Prospecting Syndicate's Mine, Cobar
Mount Costigan lead and Silver Mining Co	Silver ore	Mount Costigan Lead and Silver Mine, Tuena
Mount Euriowie Tin mining Co	Tin ore	Company's Mine, Barrier Range
Mount Euriowie West Tin-mining Co	Lode tin ore	Company's Mine, Barrier Range
Mount Gray Gold mining Syndicate	Auriferous lodestuff	Mount Gray Gold mine, Grove Creek, near Abercrombie Caves
Mount Stewart Silver mining Company	Silver ore	Company's Mine, Denison Town, Mudgee District.
Mr C S M'Glew	Lode tin ore, rhodonite, and tin bearing tourmaline	Giant's Den, Bendemeer
Mr J M'Namara	Silver ore and auriferous quartz	Silver King Mine, Purnamoota, Barrier Range.
Mr H W Newman	Metallic antimony in calcite, and calcite with needle antimony ore	New Reform Gold mine, Lucknow.
New Lewis Ponds Gold and Silver Mining Company	Gold and silver ores	Company's Mine, near Orange
New South Wales Shale and Oil Company	A full section taken from the petroleum oil cannel coal seam (bog head mineral)	Company's Mine, Hartley, near Mount Victoria
New Year Silver mining Co	Silver ore and show case	Company's Mine, Barrier Range
Mr L Nicholson	Quartz with tourmaline, and quartz with iron pyrites and a little calcite	Braidwood District
One tree Cordillera Silver mining Co	Silver ore	Company's Mine, near Tuena
Pinnacles Tribute Silver mining Company	Silver ore	Company's Mine, Barrier Range
Mr. W H Puddicombe	Fluor spar and tin ore	8 miles from Ottery Lode, Glen Creek, near Emmaville
Messrs F J E Rae and party	Copper ore	Apsley, 3 miles south of Wellington
Mr Ranft	Porous felstone with quartz and free gold	Pile's Claim, Back Creek, 12 miles from Warne
Mr. T L Richardson	Copper ore	Gunlambone Copper mine, West Bogan

APPENDIX 5A—*continued.*

Donor.	Donation.	Locality.
Mr. W. W. Richardson ...	Gold and silver ore.....	Carrington Mine, and Jerrara Creek Silver-mine, near Goulburn.
Mr. A. M. N. Rose	Auriferous lodestuff	Cooma District.
Mr. R. W. B. Rose	Auriferous lodestuff	Upper Boloco.
Dr. A. Ross, M.P.	Pipeclay	J. Black's farm, Norah, 3 miles from Molong.
Mr. J. S. Rutherford	Hydraulic limestone and briquette.....	The Island of Whangarei.
Mr. J. Scully	Fossil-wood and secondary iron pyrites ...	Gulgong.
Mr. J. C. B. P. Seaver, M.P.	Silver ore	Maritoto Mine, New Zealand.
Mr. E. Stack.....	Ironstone concretion	North Willoughby.
Mr. Steel	Infusorial earth	Richmond River.
Dr. Storer	Cinnabar	Kilkivan, Queensland.
Mr. H. Tarrant.....	Bismuth ore	Near Bowen, Queensland.
Prof. R. Tate.....	Glaciated rock-surface	Black Point, St. Vincent's Gulf, South Australia.
The Malacca Diamond and Tin-mining Company.	Tin and diamondiferous wash, &c.	Company's property, Auburn Vale, Inverell.
The Princess Midas Gold-mining Company.	Auriferous quartz and copper ore	Company's Mine, Purnamoota, Barrier Range.
The Secretary, Castlerag Proprietary Silver-mining Company.	Quartz with galena and cerussite	Castlerag, near Deepwater, New England.
The Terrible Dick Silver-mining Company.	Silver-lead ores	Company's Mine, Barrier Range.
The White Rock Proprietary Silver-mining Company.	Silver ore.....	Company's Mine, Fairfield, Drake.
Torrington Tin-mining Company.	Tin ores	Company's Mine, Mole Tableland, New England.
Mr. T. Travathan.....	Steatite	Golden Crown Reef, Yalwal.
Umberumberka Silver-mining Company.	Silver-lead ores, showing native silver freely	Company's Mine, Barrier Range.
Vanderbilt Silver-mining Company.	Silver ore	Company's Mine, Captain's Flat.
Hon. E. Vickery, M.L.C.	Native bismuth, bismuth in quartz and granite, molybdenite and wolfram.	Kingsgate Bismuth Mine, near Glen Innes.
Victory Tin-mining Company.	Tin ore	Company's Mine, Barrier Range.
Mr. T. Waddell, M.P.....	Copper ore	New Burra Burra Copper-mine.
Mr. T. Waterhouse, M.A.	Fossil wood and leaves	Jubilee Claim, Rocky River.
Webb's Consols Silver-mining Company.	Silver ore	Company's Mine, near Emmaville, New England.
Webb's Silver-mining Company.	Silver ores	Company's Mine, Little Plant Creek, near Emmaville.
Mr. G. W. West	Silver ore, showing native silver	White Rock Silver-mine, Fairfield, Drake.
Wheal Australia Tin-mining Company.	Lode and alluvial tin ore	Company's Mine, parish Herbert, county Gough.
Wheal Victoria Tin-mining Company.	Lode and alluvial tin ore	Company's Mine, parish Herbert, county Gough, between Cope's Creek and the Mackintyre River.
Mr. F. Wheeler	Pipeclay and white shale	One mile from Riverstone Railway Station.
Mr. Wilshire, P.M.....	Gem and iron sand	Berrima.
Mr. W. H. Wilson	Jasper with veins of quartz, and auriferous lodestuff.	Bald Hills, Chesney's Lease, and Billygoe, Cobar District.
Mr. C. Wooller.....	Ferruginous quartz with a little pyrites ...	Wooller and Main's Bonanza King Mine, Undercliff Run, Wilson's Downfall, New England.
Do.	Graphite, topaz, tourmaline, quartz crystals, clear quartz, and quartz with graphite.	Undercliff Station, Wilson's Downfall, New England.
Messrs. C. Wooller, T. Pike, and J. Erskine.	Graphite	do. do. do.
Young Wallsend Coal-mining Company.	Coal ore obtained from a bore on Company's property.	Parish of Teralba, near Newcastle.
Zig-zag Coal-mining Company.	Block of coal	Company's Mine, Lithgow Valley.

APPENDIX No. 5B.

DONATIONS to the Library of the Mining and Geological Museum during 1888.

WORKS.

Author.	Title.	Donor.
Agassiz (L.)	Iconographie des Coquilles Tertiaires Réputées identiques avec les espèces vivantes ou dans différens terrains de l'Epogue Tertiaire accompagnée de le description des espèces Nouvelles.	Trustees of the British Museum (Natural History).
Blake	Report on the Geology of the Route (Explorations and Surveys for a Railroad Route from the Mississippi River to the Pacific Ocean).	do do
Bonney, Professor (T. G.), M.A.	On a new theory of the formation of basalt.	do do
Do do do	On some Nodular Felsites in the Bala Group of North Wales.	do do
Do do do	On a Boulder of Hornblende Picrite near Pen-y-Carnisiog, Anglesey.	do do
Brown (J.), F.G.S.	Note on the Artesian Well at Colchester, and remarks on some of the Microscopic Fossils from the Colchester Chalk.	do do

APPENDIX 5B—*continued.*

Author.	Title.	Donor.
Briart (A.) and Cornet (F. L.) ...	Description des Fossiles du Calcaire grossier de mons. (Seconde Partie.)	Trustees of the British Museum (Natural History).
Clarke (W. B.), Rev.	Researches in the Southern Gold Fields of New South Wales.	C. S. Wilkinson, Esq., F.G.S., &c.
Czjzek (J.)	Uber die congeria Partschie	Trustees of the British Museum (Natural History).
Fitton (W. H.), M.D.	An account of some Geological Specimens from the Coasts of Australia.	C. S. Wilkinson, Esq., F.G.S. &c.
Garman (S.)	The Rattle of the Rattlesnake	A. Agassiz, Esq., F.G.S.
Gardiner (J. S.)	On the British Eocenes and their deposition	Trustees of the British Museum (Natural History).
Gervais (P.)	Observations sur les Mammiferés fossiles du Midi de la France.	Do do
Griffiths (G. S.).....	Evidences of a Glacial Epoch from Kerguelen's Land, being comments upon the "Challenger" reports.	The Author.
Do	On the Official Reports of the Tarawera outbreak, with some objections to some of the conclusions drawn by the Government Geologist, Dr Hector.	do
Do	On the evidences of a Glacial Epoch in Victoria during Post-Miocene Times.	do
Griffin (G. W.)	New South Wales : Her Commerce and Resources.....	do
Hamlin (C. E.)	Results of an Examination of Syrian Molluscan Fossils, chiefly from the Range of Mount Lebanon.	
Heer, Professor (O.)	On the Miocene Flora of the Polar Regions (2 lectures). Translated by J. E. Lee, F.S.A.	Trustees of the British Museum (Natural History.)
Hitchcock (E.)	Final report on the Geology of Massachusetts, vol. I ...	do do
Hofman (H. O.)	Recent improvements in desilverizing lead in the United States.	The Author
Huxley, Professor (T. H.)	Preliminary note on the Fossil Remains of a Chelonian Reptile, Ceratochelys Sthenurus from Lord Howe's Island, Australia.	do
Do do	Further observations upon Hyperodapedon Gordoni ...	do
Johnson (M. H.)	On Flint.	Trustees of the British Museum (Natural History).
Kidston (R.)	On the Fossil Flora of the Radstock Series of the Somerset and British Coal Field. Part I.	The Author
Morris, Professor (J.), M.A.	The Chalk : Its distribution and subdivision.	Trustees of the British Museum (Natural History).
Mojsisovics (E.) and Neumayr (M.)	Beitrage zur Palaontologie von Osterreich-Ungarn und den Angrenzenden Gebieten Herausgegeben.	do do
Morlot (A.)	Uber die Geologischen Verhaltuesse von Istrien mit Berucksichtigung Dalmatiens und der Angrenzenden Gegenden Croatiens unterkrains und des Gorzerkreises.	do do
Nicholson (H. A.)	On the structure of Cleistopora (Michelina) Geometrica, Edwards and Haime.	do do
Do do	On the detection of Mural Pores in thin sections of the Favositidæ.	do do
Pettko Von (J.)	Tubicaules von Ilia Bei Schemnitz	do do
Porter (D. A.)	Notes on some minerals and mineral localities in the Northern Districts of New South Wales.	The Author.
Prestwich, Prof. (J.)	On a peculiar bed of Angular drift on the Lower Chalk High Plain between Upton and Chilton.	Trustees of the British Museum (Natural History).
Do do	On a new group of Pre-Cambrian Rocks (the Arvonian) in Pembrokeshire.	do do
Do do	On a raised beach in Rhos Sili Bay, Gower	do do
Do do	Notes on the Phenomena of the Quarternary Period in the Isle of Portland, and around Weymouth.	do do
Do do	On Crag-beds of Suffolk and Norfolk	do do
Slade (D. D.).....	On certain vacuities or deficiencies in the Crania of Mammals.	do do
Streeter E.....	Precious stones and gems	The Author.
Do	The Great Diamonds of the World	do
Do	Pearls, and Pearling Life	do
Woodward (H)	On some New British Carboniferous Cockroaches	do
Do	Myriapods of the Coal Period	do
Do	On Carboniferous Limestone Trilobites	do
Do	On Aptychus and Aptychopsis in Nebalia.....	do
Woodward (A. S.)	On two New Lepidotoid Ganoids from the Early Mesozoic Deposits of Orange Free State, South Africa.	do
Do do	Note on the extinct Reptilian Genera Megalania, Owen, and Meilania, Owen.	Trustees of the British Museum (Natural History).
Wood (S.)	On Boulder Clay	do do
Zigno de (A.).....	Coup D'Oeil sur les Terrains Stratifies des Alpes Venitiennes.	do do

REPORTS, SERIALS, &c.

Belgium.

Société Royale Malacologique de Belgique	Reports for 1887	The Secretary.

Canada.

Canadian Institute	Annual Report 1886-87, and Proceedings, Vol. V, 1888.	do
Geological and Natural History Survey.	Annual Reports 1886, Vol. II. ; 1887, Part III	The Director.
Do do do...	Catalogue of Canadian Plants. Part IV. Endogens. By J. Macoun, M.A.	do

APPENDIX 5B—*continued.*

Author.	Title.	Donor.
	France.	
Carte Geologique de la France ...	Explication. Tome Quatrième, 1879. Seconde Partie. Végétaux Fossiles du Terrain Honiller, par R. Zeiller.	The Director.
Do do	Memoirs, Mineralogie Micrographique Roches eruptives Françaises, 1879, par F. Fonque et M. Levy.	do
Do do	Memoirs. Le pays de Bray, 1879, par A. De Lapparent.	do
	Germany.	
Keiserlichen Akademie der Wissenschaften.	Denkschriften. Band VIII, 1854. Band XIII–XVII, 1857-9. Band XXII, 1864. Band XXIII, 1867.	The Secretary.
Naturhistorischen Verunes der preussischen, Rheinlande, Westfalens.	Band XXVI, 1867.	do
	Verhandlungen. Zweite Halfte, 1886, Erste Halfte, Zweite Halfte, 1887.	
	Great Britain.	
British Museum (Natural History).	A Guide to the collection of Meteorites in the Department of Mineralogy.	The Trustees.
Do do	Catalogue ofFossil Mammalia, Part V.	do
Geologists' Association	Reports from 1869–1876	Trustees of the British Museum (Natural History).
Geological Survey of England & Wales.	Memoirs. Guide to the Geology of London and the neighbourhood. By W. Whitaker, B.A.	do do
Do do	Memoirs. The Geology of the country around Fakenham, Wells, and Holt. By H. W. Woodward, F.G.S.	do do
Geological Survey of Great Britain and of the Museum of Economic Geology in London.	Memoirs. Vols. 1, 2, Parts 1 and 2, and Vol. 3. 1846.	do do
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Do do	Memoirs. On the Tertiary Fluvio-Marine Formation of the Isle of Wight. 1856. By Ed. Forbes.	do do
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APPENDIX 5B—*continued.*

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Royal Society	Journal and Proceedings. Vols. XXI, XXII, Parts III, I, 1887–88.	The Secretary.
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The Observatory	Results of Meteorological Observations made in New South Wales during 1886, under the direction of H. C. Russell, B.A., Government Astronomer of New South Wales.	Government Astronomer.
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Do do	Bulletin. Report on the Fossil Plants of the Auriferous Gravel Deposits of the Sierra Nevada. By L. Lesquereux.	do

APPENDIX 5B—*continued.*

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Do do ...	Bulletin. The Auriferous Gravels of the Sierra Nevada of California. Parts I and II. By J. D. Whitney.	do
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APPENDIX No. 6.

Report to the Geological Surveyor-in-charge respecting Analyses and Assays of Minerals, Waters, &c., received in the Laboratory during the year 1888.

Department of Mines, Geological Survey Branch, Laboratory, Sydney, 21 February, 1889.

Sir,

I have the honor to furnish you with the following report respecting the various analyses, assays, &c., performed in the laboratory connected with the Geological Survey Branch during the year 1888:—

Owing to the large increase of mineral analyses, waters, assays, &c., over previous years, it was found necessary to apply for larger and more suitable accommodation, the present laboratory being much too small and totally unsuitable for such work.

At your suggestion larger premises were acquired, they being situated over the Ordnance Stores Department, Lower George-street.

These premises have been fitted up under my supervision, and are divided into as follows:—

Office and scales-room, including library.

Analytical Laboratory.—This room is fitted up with all the latest appliances necessary to carry out the various analyses required, it being connected with both gas and water.

Assaying and Furnace Room.—This room contains two large air coke furnaces, built on the same designs as those in use at the Royal School of Mines, London; also, two of Fletcher's large gas fusion furnaces, of which I cannot speak too highly, they being found capable of performing all that is claimed for them. The cupellation is performed in two of Fletcher's gas muffle furnaces, one large and one small being in continuous use. These also answer the purpose well, they being much cleaner than coke furnaces, and more readily regulated.

The laboratory is thoroughly stocked with apparatus, pure reagents, fluxes, &c., and is capable of turning out double the work if required, the whole establishment being connected with gas-lights should it be necessary at any time to carry on work at night.

The crushing and sampling of the various minerals sent for analyses and assay are performed in a room set apart from both the laboratories, thus doing away with much dust and dirt.

The ores are mostly crushed on two flat iron plates set in solid brickwork, with wooden sides, the pulverizing being performed by means of flat square hammers. These answer the purpose well, and this method of sampling is in my opinion one of the best, as large quantities of ore can be broken down and crushed in a short space of time, and the plates after each operation thoroughly cleaned.

On my application and your recommendation that an assistant be appointed who was thoroughly up in the analyses of minerals and the treatment of various ores, the appointment was offered to and accepted by Mr. H. P. White, F.C.S., that gentleman starting his duties on the 30th July, 1888.

5,245 numbered samples were received during the year for analyses and assay, they being all completed early in 1889.

10,123 assays for various metals were made, and 86 proximate and ultimate analyses of minerals, waters, &c. In addition to these analyses, many of the samples were submitted to a qualitative analysis with the view of ascertaining the composition of various minerals, &c., and a large amount of assays, &c., checked.

The following shows the increase of work from the year 1883 to 1888.

Year 1883	242 samples.	Year 1886	1,807 samples.
,, 1884	664 ,,	,, 1887	2,222 ,,
,, 1885	1,428 ,,	,, 1888	5,245 ,,

The following assays were made during the year :—

ANTIMONY.—Six samples.
BISMUTH.—Twelve samples.
COPPER.—Fifty-nine.
COBALT.—Six samples were assayed for cobalt, and in all cases the nickel estimated. These ores were manganese wads.
CHROMIUM.—One sample.
IRON.—Seven samples.
LEAD.—Twenty-eight samples.
MANGANESE.—Three samples.
NICKEL.—Seven samples.
TIN.—Thirty-nine samples.
TUNGSTEN.—One sample assayed for the percentage of tungstic acid.
TELLURIUM.—Three samples assayed for the percentage of tellurium, this element being combined with bismuth as tetradymite and montanite. Many qualitative analyses were made of the bismuth ores of the Colony, with the result that some were found to yield small quantities of tellurium.
URANIUM.—Two samples of iron ore were examined for the presence of uranium, and in neither case was that element found present.
ZINC.—One sample tested for zinc. This mineral was found to be a silicate of zinc, and from its description is probably willemite. I believe this is the first time this ore of zinc has been discovered in this Colony.
GOLD.—4,976 samples were assayed for gold.
SILVER.—4,973 samples were assayed for silver.

Particulars of these analyses will be found stated in the report of the Under Secretary for Mines, 1888.

The work performed in the laboratory this year has been exceptionally heavy, as will be seen on comparing it with that turned out for all previous years, a large amount of this no doubt being due to the silver boom at Broken Hill, Sunny Corner, Mount Costigan, and various other localities which have sprung up into existence during the last few years.

I think I may venture to point out the usefulness of the work performed, especially as far as the assaying of prospecting samples are concerned, as to my knowledge it has been the means of opening up many districts, which would have laid dormant for many years to come if the ground had not been thoroughly tested by assays made of samples taken from various parts of the lodes. In proof of this statement I may point out the Lewis Ponds District, Tuena District, &c., as also to the valuable find of cobalt ore near Carcoar, which Mr. T. W. E. David, Geological Surveyor of the Department, first identified and reported on, analyses and assays being made of various samples. This is a valuable discovery as hitherto the only supply of cobalt obtained in this Colony was from the manganese wads, yielding a poor percentage of cobalt, not in many cases sufficient in quantity to be profitably extracted. I do not think it is necessary for me to report more fully on the work performed in the laboratory, as the large increase and the amount of work shown in this report speaks for itself.

In concluding, I have to acknowledge the ready assistance given to me by the assistant, Mr. H. P. White, F.C.S., in conducting many of the various analyses, without whose help it would have been impossible to have carried them all out in time. I would further acknowledge the steady working capacity at all times displayed by the second assistant, Mr. A. H. Neilson, as also the others employed in the laboratory.

I have, &c.,
JOHN C. H. MINGAYE, F.C.S.
Analyst and Assayer.

The Geological Surveyor-in-charge.

APPENDIX No. 7.

Sir, Department of Mines, Geological Survey Branch, January, 1889.

I have the honor to submit the following progress report on the caves of New South Wales for the year 1888.

Since my appointment to my present position, eight months ago, I have had opportunities, when visiting the different caves on matters relating to their improvement and management, of noting the great and growing interest taken in these subterranean stores of nature's wonders. This is especially noticeable when some new cave or branch of an existing cave has been discovered and becomes known ; then follows what might be termed a "rush" of the district people to view the new wonders, which, having been locked up for ages, are suddenly thrown open to the gaze of man. Later on visitors from the metropolis and other places outside the district also find time to undertake a visit of exploration.

As is usually the case at all places of public resort, the caves are most crowded with visitors during holiday times, and at these particular seasons they form one of the principal attractions to the pleasure-seekers of the respective districts in which they are situated, the annual picnic to the caves in fact having become quite an institution. In addition to the local visitors, tourists from the other colonies and different parts of the world are to be met at the principal caves the whole year round.

The

The great majority of visitors approve of and express themselves well pleased with the precautions taken by the Government for the preservation of the caves and with the works already carried out for their improvement; but regret is often expressed at the acts of vandalism perpetrated at some of the caves when first discovered, and before they were brought under Government control and supervision.

During the past year the following were the principal discoveries of new caves, viz., at Jenolan, a small but very pretty branch of the Elder Cave (*See Appendix* A), and at Wombeyan, a separate series of spacious lofty and beautiful caves (*See Appendix* B). This latter discovery was the means of bringing the Wombeyan Caves into great prominence. In fact, for grandeur and the pureness and variety of the stalactitic formations they rival any other known caves in the Colony. A new cave was also discovered near Araluen; but this not yet having been explored, as it is full of water, no report on same can be made.

Following are particulars showing number of visitors, improvements, &c., at the different caves for the year 1888, viz.:—

Jenolan Caves.

Number of visitors, 1,829, being an increase on the number for the previous year. A new accommodation house, capable of accommodating about thirty visitors, has been completed, yet during the summer months both this and the old house are occasionally uncomfortably crowded. On this account the erection of another building will soon become a matter of necessity. The owner of the existing buildings and lessee of the ground, Mr. J. Wilson, cave-keeper, has notified his intention of carrying out this work at an early date.

Great improvements have been carried out at these caves in the way of making the outside surroundings attractive to visitors. Plantations and walks have been tastefully laid out and suitable trees, shrubs, and flowers planted. Altogether, it is intended to make the cave surroundings as attractive and pleasing to the eye as possible, in order that visitors, when not engaged exploring the caves, will be able to pass their time pleasantly in viewing the scenery and vegetation around. The improvements at the bathing-hole have been greatly appreciated, and consequently taken advantage of by the visitors. Everything that can be done up to the present in the way of improving the interior of the caves has been carried out. The result is that access to the different caves is now comparatively easy and cases of accident very rare. It is intended to put up a cottage for the engine-driver and new stables during the current year; and also to complete the erection of turbine on the creek, for driving the electric light, in place of the present engine, which work has been unavoidably held over on account of more urgent and necessary works having been carried out in the meantime which exhausted the available funds.

Wombeyan Caves.

Until quite recently, these caves did not attract much attention outside the district; but since the new discovery of the splendid caves lately reported on (*See Appendix* B.) great interest in them has suddenly sprung up. This is at once apparent on reference being made to the visitors' book, when it is noticed that latterly parties have arrived from almost all quarters and in much larger numbers since these discoveries than in any like period for years back.

The number of visitors for 1888 is about 400, being an increase of about 100 on the year 1887.

The principal improvements necessary for enabling visitors to explore the new caves with comparative ease and safety have already been carried out. A tender has been conditionally accepted for the erection of an accommodation house, and the work will probably be proceeded with without delay.

The old caves are both extensive and remarkable, and the surroundings of the whole very picturesque and pretty. Other general and necessary improvements at these caves will, I hope, be carried out in due course.

Wellington Caves.

Taking into consideration the grandeur of the Jenolan and Wombeyan Caves and their respective visitors' lists, the number of visitors to the Wellington Caves, 1,679, which do not compare with those named for beauty, is remarkable. This is, perhaps, accounted for by their proximity to the town of Wellington, and the fact that "the caves" are the principal resort for picnic and other parties from all quarters of this district. The visitors for 1888 numbered 600 more than those for the previous year.

Being within 5 miles of Wellington, an accommodation house is not required. A cottage for the keeper has recently been erected, and an open shelter-shed for the use of visitors is now in course of erection.

These caves are chiefly remarkable for the number of fossil bones found buried in them, some rare specimens of which have been unearthed by the keeper, who, when not otherwise engaged with visitors, is employed in the collection of them for the Geological and Australian Museums.

Yarrangobilly Caves.

These caves, situated in the coldest district of New South Wales, are mostly visited during the warmer months, the number for last season being about 200. They are remarkable as regards their extent and the massiveness of the various formations therein. Romantically situated on the Yarrangobilly River, the immense archway or entrance to the caves, and the limestone bluffs standing out in bold relief, together with the wild vegetation around, combine to form a most imposing and picturesque scene.

An accommodation and keeper's cottage having just been erected, it is expected there will be a large increase in the number of visitors this season, a great number of people having signified their intention of visiting the caves when accommodation was provided for them.

Abercrombie Caves.

The principal feature of these caves, as far as yet known, is the immense natural archway hollowed out of the limestone, the total length of which is 650 feet, and the average width 130 feet. The roof and sides are covered with fine stalactites of various lengths and colours of every shade. A variety of remarkable and pretty views are produced by these, especially when viewed from different points on the elevated terraces

terraces or platforms which project from the sides and run longitudinally for some distance through the arch. A number of caves can be entered from the archway, these mostly present the appearance of winding fissures, which can be traversed in some instances a great distance. Others, a little more spacious, are also met with, the floor of which consist of a thick bed of detritus. No pure stalactitic formations are found in them, they being very dirty, and present the appearance of having been inhabited by bats and wombats for ages.

On account of the gradual destruction of the stalactites in the archway by visitors, a temporary keeper, at a small salary, has been appointed to protect them as far as possible. By this means it is expected the whole will be preserved in their present and still interesting state.

The keepers of the different caves seem peculiarly well fitted for the positions they hold, and great credit is due to them both for their care and attention to visitors, and also for the interest taken by them in the work of exploration at their respective stations. This is especially the case at Jenolan and Wombeyan Caves, where the operations in this respect, carried out by Mr. J. Wilson and Mr. M. Chalker respectively, have been attended with great success; and thus the desires of the enthusiastic visitor to traverse still further these natural inroads into the earth's interior are constantly being gratified.

I have, &c.,

W. S. LEIGH,

Superintendent of Caves.

APPENDIX No. 7A.

Sir, Department of Mines, Geological Survey Branch, 11 June, 1888.

I have the honor to submit the following report on the new cave recently discovered by Mr. J. Wilson, Keeper, at Jenolan Caves:—

The cave is situated at the extreme end of the Elder Cave, the entrance being reached from this point by an almost vertical descent of about 20 feet over fallen rocks. To the casual observer there would certainly appear to be no outlet beyond this, as you are brought face to face with an immense overhanging rock, which runs up perpendicularly to a height of 30 feet, the front of which is covered with a crystal formation, from which depend a number of narrow shawls, giving it a very pretty appearance. The base of the projecting rock, which is about 18 inches above the ground, is literally covered with stalactites, and these, reaching to within a few inches of the floor of the cave, form a guard of thickly-studded spikes, and completely shut out from view the small aperture beyond, which, after minute examination and some rough work, proved to be the entrance or mouth of a new cave. After the removal of a number of the stalactites, the interior was gained by crawling underneath the overhanging rock a distance of 5 or 6 feet. The cave consists of a long narrow passage, having a total length of about 90 feet and an average width of 4 feet, and may be divided into two parts, as follows:—

The first part, *i.e.*, for a distance of about 50 feet from the entrance, has the appearance of an arched tunnel on a winding inclined plane, the incline being continuous and at an angle of about 45°. The ascent is made over a crystallized rocky formation, which forms the floor of the cave. The sides are well studded with stalactites, which gradually diminish in length as they approach the centre of the roof; stalagmites are not so numerous. To stand upright in this part of the cave, except in one or two places, is out of the question, as the height to the centre of the roof does not average more than 3 feet, and at two points the passage narrows to such an extent that only small openings are left, just sufficiently large to admit of an ordinary-sized man forcing his way through.

The second part of the cave is gained by making a straight drop of about 10 feet from the top of the incline or end of first part. Here the visitor finds himself in a lofty passage, about 40 feet in length and 4 feet in width; and in this small area nature has formed one of the prettiest caves of the whole group. It is really a varied collection of the finest specimens found in the other principal caves. In it are grouped grand stalactites and stalagmites of various lengths and shapes. Columns in clusters, over 10 feet in height, and shawls, rivalling in beauty those formed in the Imperial Cave, but of a different shape, in that they are not flat, but rather of a gouge-shaped section and pointed, are grouped in great variety; in some cases stalactites form the centre of shawls, giving them a rare appearance. Like those of the Music-hall in the Lucas Cave, the stalactites and shawls in this cave, when struck, give out various notes, and from their great number different peals could be rung at the same time, and almost any note sounded. A bed of crystals, having a wonderful combination, similar to the Fairies Retreat in the Imperial, is also found in a cavity on the left-hand side below the level of the floor. A feature of this cave is the remarkable whiteness and transparency of the different formations. To see this cave by the aid of the magnesium light would well repay the visitor for the trouble experienced in reaching it. To open up the cave thoroughly would mean a great expense, and also the destruction of a number of the prettiest specimens; in its present state it is easier to explore than some parts of the Elder Cave, through which a person must first pass before arriving at the new cave. Also, as the Elder Cave is noted for its difficult passages and small openings, the rough exploring of which a large percentage of the visitors enjoy, the new cave is only just in keeping with the rest of the Elder Cave, and the visitor who goes through the Elder thoroughly will not mind the little extra exertion attendant on visiting the new cave. I would therefore suggest that for the time being it be left in its present state, *i.e.*, with openings just sufficiently large to admit one person at a time.

Small cave adjoining.—A few yards to the left, and on the same level as the entrance to the new cave referred to, is a small opening in the rock just large enough to enable one to force the body through. This proved to be the mouth of another cave, but of much smaller dimensions, being only about 25 feet long by 12 feet wide, and 2 feet in height to the centre of the roof, which is arched. The bed of the cave is of the same crystal rock formation. All the formations are in miniature compared with the other cave. It has innumerable small stalactites studding the whole of the roof, all of which appear very clear and fresh and in the course of formation. Small columns are ranged all round the sides, and there are a few in the centre, but none of them being more than 1½ inches in diameter, a number of miniature shawls, similiar in appearance to those of the Imperial Caves, are also found. On the left-hand side, and near the entrance, is a very pretty coral-like bed, with numerous basins and other formations. Above this bed, and in the immediate vicinity, the stalactites assume a very peculiar and altogether different form to the rest; instead of being pointed, each is tipped with a lime crystal, perfectly shaped, and glittering like a diamond, and

and this being about twice the width of the stalactite, has the appearance of having been stuck on the end of it. This cave can only be seen to advantage by one person at a time, and in a recumbent position, with the head only inside the cave. In this way the whole can be seen at a glance. By the aid of the magnesium light a very pretty effect would be produced, especially when directed on the coral-bed.

I have, &c.,

W. S. LEIGH,

The Geological Surveyor-in-charge. Superintendent of Caves.

APPENDIX No. 7 B.

Sir, Department of Mines, Geological Survey Branch, 7 September, 1888.

I have the honor to report, as requested, on the new cave recently discovered by Mr. M. Chalker at the Wombeyan Caves, near Goulburn.

The entrance, a round opening about 2 feet in diameter (which it is proposed to enlarge), is situated on the face of a rather steep hill, and is about 200 yards north-west of the mouth of the old cave, and 500 yards from proposed site of the cave-house. After passing through the entrance into the new cave, a perpendicular descent of 25 feet is made, and then a further descent for a like distance on an incline, the passage progressively increasing in size the lower you descend until the bottom is reached, when it opens out into a large chamber about 50 feet by 30 feet, and averaging 10 feet in height. This chamber contains a fine collection of stalactites and columns, &c., and may be termed the "Hall," as the small caves radiate from it in three different directions.

The first branch to the right of the entrance runs about due north about 100 yards in a zigzag line on a comparatively level floor, and averages about 10 feet in width and 12 feet in height. The floor for 20 or 30 feet from the entrance is remarkably pretty in its formation, resembling a stream of crystals overflowing from a large basin, the stream below the main basin being composed of innumerable miniature basins in terraces, each basin being filled with a pure white coral-like formation. Other parts of the floor are covered with spherical stalagmites resembling snowballs. The stalactites in this, as also in the other branches, are grouped more regularly than is usually the case, as they run in almost parallel lines across the limestone roof. These, as well as the other formations, are remarkable for their snowy whiteness and transparency, the only exception being an occasional nest of stalactites resembling terra-cotta in appearance, and so lending a pleasing variety of colour. A very singular feature here is a large column of stalactites having small stalactites, varying in size from the thickness of a needle to half an inch in diameter, projecting at all angles round its base, the whole resembling very much the trunk of a tree with the young shoots sprouting up all round.

The middle branch cave, by far the largest, consists of a chain of chambers, ranging from the size of a small cabin to that of a lofty cathedral. These are formed by immense rocks falling and wedging themselves together in all shapes, which necessitates the making of a number of steep ascents and descents. The chambers are well filled with all the prettiest formations met with in other caves. An instance is also observable of a large column formed by a number of stalactites having been naturally broken across at a point about half-way between the floor and the roof, the broken surfaces being separated from one another by a space of about 2 inches, so that the upper part of the column remains suspended from the roof.

A further extension of this cave was discovered during my inspection, and I may safely say it is the crowning discovery as yet in the whole cave, being a roomy chamber at the extreme end (as far as yet known) of this branch, the floor of which might appropriately be named the "Crystal Lakes," the so-called lakes being a large number of pure white and transparent basins formed into a succession of terraces, each basin being partly filled with minute crystals having the exact appearance of water, the illusion only being discovered by touch. To see this formation alone would repay the visitor for the trouble experienced in reaching it.

The third branch to the left of the last described is comparatively small, and consists of a narrow winding passage, at the end of which is an almost circular chamber, being the main part of the branch. It contains a good collection of stalactites and stalagmites, and also some fine coral-like beds, the floor being of a crystallized dripstone. Fossilized bone deposits are found in some parts of the cave, a few specimens of which I brought down for examination. The roots of the kurrajong tree growing 50 feet overhead appear through the roof of the cave, and seem to take root again below the floor, some of them having a thick crusting of lime. This cave in some respects resembles very much the Imperial and Lucas caves at Jenolan, the former in the fineness, transparency, and delicacy of its stalactitic structures, and the latter in some of its spacious and lofty chambers; and I may safely add that some of its formations, a proper description of which it would be difficult to give, if seen by the aid of magnesium wire or other such light, would be proved to be quite equal to some of the best found at the far-famed Jenolan Caves.

I may add that this discovery cannot be over-estimated, and it adds immensely to the interest of the Wombeyan Caves for those desirous of studying the wonderful and beautiful phenomena of the ancient subterraneous river channels hollowed out of the massive marble limestone.

In conclusion, I may state that as time and circumstances permit further explorations will be carried out, it being my firm belief that other large chambers exist connected with this cave.

Recommendations with regard to improvements and opening up of the newly-found caves are submitted on another paper.

I have, &c.,

W. S. LEIGH,

The Geological Surveyor-in-charge. Superintendent of Caves.

SUPERINTENDENT OF DRILLS' REPORT.

Superintendent of Drills to The Under Secretary for Mines, reporting on the working of the Diamond-drills and Water-augers for the year 1888.

Sir, Department of Mines, Diamond-drill Branch, Sydney.

In submitting my annual report on the working of the Diamond-drills and Water-augers for the year 1888 I do myself the honor to attach to said report the following appendices:—

Diamond-drills.

Appendix A.—Return showing the locality, strata, depth bored, percentage of core extracted, value of diamonds used during the year, and rate per foot, exclusive of office salaries, store wages, and rent; also Superintendent of Drills' travelling expenses.

Appendix B.—Summary of diamond-drills, showing the number of feet bored, total working cost to the Department, average cost per foot, and amounts receivable for the year 1888.

Appendix C, *Nos.* 1 *to* 14.—Sections of borings during the year 1888.

Appendix D.—Return showing the expenditure of Clarence Siding bore, without office expenditure.

Appendix E.—Return showing the total expenditure of Clarence Siding bore, including office salaries, &c., &c.

Water-augers.

Appendix F.—Return showing the locality, depth bored, and rate per foot, exclusive of office salaries, store wages, and rent; also Superintendent of Drills' travelling expenses.

Appendix G.—Summary of water-augers, showing the number of feet bored, total working cost to the Department, and average cost per foot during the year 1888.

Appendix H, *Nos.* 1 *to* 6.—Sections of borings during the year 1888.

Appendix I.—Map of New South Wales, showing positions of wells and bores, as published last year, with additions.

Appendix J.—Index to wells and bores.

Appendix K.—Balance-sheet for diamond-drills.

Appendix L.—Balance-sheet for water-augers.

During the year the diamond-drill work has proceeded more satisfactorily than in any previous years, since diamond-drills were purchased and worked by the Government of New South Wales. This has been partly due to the better class of engineers and men employed at the drills. Several of the older ones who had been on the drill work for some time were discharged by me, principally through their inattention and carelessness, thereby hindering others from doing a fair day's work; others were discharged for neglecting work through drink.

Several important bores have been put down during the year, viz., No. 11 drill, at Broken Hill, was down at the end of the year 1,122 feet; No. 10 drill, 1,101 feet 4 inches; No. 4 drill, at Woodford, 1,656 feet 6 inches; Woodford (second bore), 685 feet 1 inch; Lochend (Cockle's Creek), 864 feet 9 inches. A bore was completed at Snake Creek 997 feet 6 inches, at Hexham Island 702 feet, and at Joadja 365 feet 1 inch; and No. 2 bore at the same place was 382 feet in depth. Hence it will be seen that boring has reached a greater average depth during the year than in any previous years, with the same number of drills at work, the size of bore being not less than 3 inches. Six diamond-drills were in the field at the end of the year, viz., No. A, at Joadja (Mittagong); No. 3 drill, Lochend (Newcastle District); No. 4 drill, Woodford (Blue Mountains); No. 8 drill, Fassifern, near Lake Macquarie; No. 11 drill, Broken Hill; and No. 13 drill, Ash Island. No. 7 drill was, during part of the year, employed at Clarence siding, and brought into the Drill stores.

The total depth bored by diamond-drill during the year is 8,292 feet 3 inches, or 5,194 feet 10 inches more than in the year 1887.

The average cost per foot of boring, exclusive of office salaries, store wages, and rent, also of Superintendent's travelling expenses, is 8s. 11¾d., or 9s. 1¼d. less than during the year 1887.

The total working, or field cost, exclusive of office salaries, store wages, and rent, also of Superintendent's travelling expenses, amounts to £3,724 9s. 10d; and the total earnings during the year amounts to £8,067 19s 11d.; but the total cost, inclusive of all office salaries and all other expenditure in connection with the Diamond-drill Branch, amounts to £4,564 8s. 2d., or at the rate of 11s. per foot.

The loss of wear and tear of diamonds in the bore-hole, and the cost of diamonds at per foot bored, has been less than during the year 1887. In the year 1887 the loss and wear and tear of diamonds at per foot amounted to 1s. 6$\frac{1}{16}$d., but during the year 1888 the loss was 1s. 0$\frac{5}{16}$d, or 6$\frac{3}{16}$d. less per foot than in 1887.

Percentage of core saved during the year is 83·32 per cent., against 64·0 per cent. during 1887, or an increase in the percentage of core saved of 19·32 per cent.

After deducting 5 per cent for wear and tear of diamond-drill plant, there is still a profit remaining showing that the working of the Government diamond-drills is no loss to the State, but on the contrary, that while they are worked without loss they confer an immense benefit to the whole community, by their assistance in the development of the extensive mineral resources of our rich Colony.

Results would have been still better financially had it not been for the expenditure sustained through losing the core-barrel at Clarence Siding, and the attempts to recover the same.

The clerks of the Diamond-drill Branch, Messrs. J. S. M'Neil, R. Dalrymple, and D. M'Culloch, and the storekeeper, Mr. J. S. Leigh, have greatly assisted me in the object aimed at, namely, by simplifying all work in connection with the Diamond-drill Branch, to make it more practical and effective, reducing expenditure and increasing the earnings of the diamond-drills.

A heavy extra addition has been added during the year to the work of the Diamond-drill Branch, inasmuch as the whole of the clerical work in connection with the Prospecting Vote has been transferred to this Branch, and entrusted to Mr. D. M'Culloch, who, with his usual energy, performed his duties very satisfactorily.

satisfactorily. Through Mr. M'Culloch not being able to pay so much attention to the clerical work in connection with the drills, a great deal of extra work has been thrown on and performed by Mr. J. S. M'Neil, the Chief Clerk of the Branch, who also deserves especial credit, in conjunction with Mr. M'Culloch.

In conclusion, I beg to state, that although the Diamond-drill Branch has been self-supporting, the rates charged to the public for the use of drills has been gradually lowered ever since the supervision of said drills was placed under my charge, and I hope to be able to recommend in the near future still more favourable conditions for those who use the drills than have been obtained hitherto.

Water-augers.

In the year 1887 I proceeded from Bourke to Wanaaring and Milparinka for the purpose of selecting bore sites for artesian water, so as to connect the important district of Mount Browne, and even as far as Cooper's Creek, with the Bourke railway, by a permanent water supply. The whole of this district both east and west of the Paroo, stretching towards Cooper's Creek, is of Cretaceous formation; hence there is almost a certainty that artesian water will be obtained. The Government of New South Wales have led the way, and to the Department of Mines is due the credit of having proved by practical results that artesian water in unlimited quantities can be obtained by boring in the Cretaceous formation; and I am glad to note that advantage of such information has been taken, obtained at the Mines Department, by Mr. Longhead, the Canadian Water-borer, Mr. Barton, and others, who have, since such information was obtained by them, been successful in artesian water-boring. The first bore marked out by me at the 101½ mile, about 11½ miles from Wanaaring, east of the Paroo, has been successful, inasmuch as at the depth of 851 feet artesian water was tapped, and at 965 feet the water increased, flowing over the surface at the rate of 22,464 gallons per day. Section of bore was given in last year's report. Eight new sites were marked out by me between Wanaaring and Milparinka, viz., 15 miles from Milparinka, 30 miles, 46 miles, 61 miles, 76 miles, 91 miles, 160 miles, and 121 miles. The latter site is 17 miles west of Wanaaring. Boring operations were commenced during the year on three of the sites west of the Paroo, viz., the 121 mile, 106 mile, and 91 mile from Milparinka. Owing to the severe drought, and in consequence of the great scarcity of water and grass, the boring at the 91 mile had to be temporarily abandoned, but should the drought break up it is intended to recommence operations.

The 106-mile bore was at the end of the year 655 feet in depth, and had passed through several hard layers of quartzite and limestone. Water of fair quality was tapped at the 126-feet level, but supply was small. I expect artesian water to be tapped at the depth of about 1,000 to 1,100 feet.

The 121-mile bore had reached the depth of 502 feet at the end of the year. A small supply of fresh water was tapped at the depth of 81 feet. This boring has been very hard, and progress has been greatly retarded through the severe drought. In the face of this the price at per foot bored during this year is lower than that during the year 1887.

The Tiffin and Wright and Edwards boring machines or water-augers are very slow in deep and hard boring in comparison to the Canadian wooden rods boring plants, which were introduced into New South Wales by Canadians during late years. Hence I recommended, and which recommendation was approved of, that boring, with the exception of the three bores now in progress on the Wanaaring-Milparinka route, should be done by contract with the Canadian plants, which, although not cheaper at the rate of per foot than the boring done by wages work under my supervision, will be performed in shorter time.

A bore was also started in the Cretaceous formation about 3½ miles north of Tibooburra, for the purpose of a supply of artesian water, several wells having been sunk in the granite and slate formations in the immediate vicinity of Tibooburra without beneficial results. The bore was commenced about half-a-mile north of Scott's well, near a stock route. Fresh water was tapped at a depth of 150 feet, which rose to 108 feet from the surface. At 233 feet from surface the supply increased very considerably, but as the water supply for the inhabitants of Tibooburra, including the Works Department well, failed during the recent severe drought, it was thought best to discontinue boring, and hand over the bore to the Public Watering-places Branch, for the purpose of supplying the public with water, which has proved a great boon not only to the inhabitants of those districts, but others who travelled through—in fact, it being about the only water available man and beast had to depend upon in that particular part to tide them over a severe and protracted drought.

No. 2 bore was started 300 yards north of No. 1 bore; but as the people of Tibooburra had now a good supply of water it was decided to temporarily move the plant to Milparinka, for the purpose, if possible, of obtaining artesian water there.

It will be seen by Appendix F that the cost per foot of boring, without carriage, is 19s. 4d., but with carriage it is £2 3s. 2⅓d. per foot. This great item of carriage was caused through the plant having to be brought by teams from Hay to Tibooburra, fully 500 miles, at a cost of £407. Had it not been for this heavy item of carriage, the cost per foot of the whole boring with water-augers would have been very considerably reduced.

Total number of feet bored, 1,962, or 604 feet 10 inches less than during the year 1887. This is due to the hard strata met with at the Wanaaring road and the severe drought.

Total cost of boring, at per foot, inclusive of carriage, but exclusive of office salaries, £1 4s. 4¼d.; but inclusive of all office salaries and all expenditure to the Government, is £1 7s. 6⅓d., or 5s. 2⅞d. more than in the year 1887. This increase is caused, as already stated, by the high carriage in bringing the boring plant from Hay to Tibooburra, and the loss of time sustained in supplying the public with water at Tibooburra, before the bore was handed over to the Public Watering-places Branch.

The cost of boring on the Wanaaring to Milparinka road, exclusive of carriage and office expenditure, was 16s. 7½d. per foot, or 8s. 2¼d. per foot less than in 1887; but including office and all other expenditure, it was £1 4s. 7½d. per foot.

I have, &c.,

W. H. J. SLEE, F.G.S.,
Superintendent of Drills.

APPENDIX

APPENDIX A.

DIAMOND-DRILL work, showing average cost per foot, exclusive of office salaries, store wages, rent, and Superintendent of Drills' travelling expenses, to the Department.

No. of machine.	No. of bore.	Locality.	Strata.	Depths bored: Depth of bore at 31 Dec., 1887.	Depths bored: Depth bored during 1888.	Depths bored: Total depth of bores.	Days occupied: Moving.	Erecting.	Boring.	Repairing.	Reaming.	Delays.	Holidays.	Total.	Rate bored per hour.	Per-centage of core obtained.	Cost: Amounts.	Cost: Per foot.	Remarks.
				ft. in.	ft in	ft in.									inches.		£ s. d.	£ s. d.	
A	1	Joadja	Coal measures	.	365 1	365 1	5	6	39	13	..	..		63	14 04	58·12	176 7 9	0 9 7¼	The bores at Joadja were put down for the purpose of striking kerosene shale, but so far without success.
A	2	Do	do	. . .	382 0	382 0	8	12	31	6	..		3	60	18 48	65 22	128 8 5	0 6 8½	do do
3	1	Redhead	Upper coal measures	143 9	213 3	357 0			16	2	.			18	19 99	97 53	40 18 11	0 3 10	Boring for coal.
3	1	Snake Creek	do	.....	997 6	997 6	5	6	117	8	1	1	4	142	12·79	93·22	314 19 3	0 6 3¼	Several seams of coal were bored through, but none proved clear of bands for any great thickness.
3	1	Lochend	do	.	864 9	864 9	7	5	101	9	3	8	5	138	12 84	92 55	280 16 3	0 6 8⅛	Bored for coal, passed through several seams.
4	1	Woodford	Hawkesbury series and coal measures	. ....	1,656 6	1,656 6	7	8	116	30	20	7	4	102	21·42	90 08	822 17 6	0 7 0⅜	Bored for coal; passed through coal (see section).
4	2	Do	do do	. . .	685 1	685 1	5	9	30	3			4	51	34 25	87 77			
8	1	Fassifern	Upper coal measures	..	294 5	294 5		6	27	8	..	4	4	49	16 35	88 84	269 6 7	0 18 3½	This was a 4 inch bore put down from the bottom of pit, 476 feet 8 inches, 294 feet 5 inches by the end of year; mostly very hard conglomerates.
10	1	Ballmore	Coal measures	600 3	501 1	1,101 4	.	2	70	26	24	48	2	172	10 73	43 50	469 6 5	0 18 8¼	This was completed early in the year.
11	1	Broken Hill	Quartzite, granite, and diorite	200 1	921 11	1,122 0		1	232	59	13	3	5	313	5·96	92 03	733 12 2	0 15 10⅝	Boring to catch the Broken Hill lode on the underlay, but so far without any success. The strata through which the drill passed was very hard and destructive on diamonds, being diorite, quartzite, granite, gneiss, and mica slates.
13	1	Hexham Island	Upper coal measures	. . . .	702 0	702 0	3	22	72	10	7	2	1	117	14 62	81·38	310 11 10	0 8 10⅜	Payable seam of coal was not obtained, owing probably through the bore not being deep enough.
13	1	Ash Island	do	. . .	708 8	708 8	2	14	59	3	1	6	4	89	18 01	82 19	163 4 9	0 4 8⅝	Boring for coal.
					8,292 3	.	42	91	910	177	69	79	36	1,404	13 67	83 32	3,724 9 10	0 8 11¾	

J. S. McNEIL.
D. McCULLOCH.

W. H. J. SLEE, F.G.S.,
Superintendent of Drills.

APPENDIX B.

SUMMARY of Diamond-drills, showing number of feet bored, total working cost to Department, average cost per foot, and amounts received for 1888.

No. of bore.	Locality.	Feet bored.	Wages.	Carriage: Railway.	Carriage: Other	Travelling expenses.	Repairs	Diamonds used.	Stores issued.	Fuel, water, and sundries	Proportion of balance of general account.	Proportion of balance of general stores issued.	Office salaries.	Store wages.	Rent.	Superintendent of Drills' travelling expenses.	Total.	Cost per foot	Amount receivable in full	Amount conceded by the Minister.	Total amount receivable, deducting Ministerial concessions	Amount receivable per foot.
		ft. in.	£ s. d	£ s d	£ s d	£ s. d	£ s. d.	£ s. d.	£ s. d.	£ s. d	£ s d	£ s. d.	£ s. d.	£ s. d	£ s. d.	£ s d	£ s. d	£ s. d.	£ s d	£ s. d.	£ s d	£ s. d.
A	Joadja, Bore No. 1	365 1	94 16 0	0 2 8	.	0 17 0	9 18 6	25 13 6	29 4 4	1 0 0	14 7 4	0 3 5	24 19 6	9 16 0	6 13 7	1 5 2	219 2 0	. .	294 1 2	.	294 1 2	.....
A	Joadja, Bore No. 2	382 0	101 15 8	0 7 0	0 2 6	1 10 5		6 14 2	3 2 11	.	14 7 4	0 8 5	24 19 5	9 16 0	6 13 7	1 5 2	171 2 7		305 16 4		305 16 4	.....
3	Redhead	213 3	33 12 0	. .	0 10 0	....	.	. . .	1 7 0	0 11 4	4 15 9	0 2 10	8 6 6	3 5 4	2 4 6	0 8 5	55 3 8		170 12 0	.	170 12 0	.....
3	Snake Creek	997 6	212 6 0	.	2 15 0	.	0 10 0	33 8 5	16 3 4	0 5 0	28 14 8	0 16 10	49 18 11	19 12 0	13 7 2	2 10 3	400 7 7	. . .	987 16 10	. ..	987 16 10	.....
3	Lochend	864 9	202 8 8	0 2 4	1 9 3	0 9 0	1 8 0	43 16 2	14 4 6	1 5 6	23 18 10	0 14 0	41 12 4	16 6 7	11 2 7	2 1 11	360 19 8	.. .	755 3 4		755 3 4	.....
4	Woodford	2,341 7	612 17 4	6 6 8	2 19 0	2 17 9	7 5 6	78 8 4	57 18 7	.	52 13 6	1 10 10	91 11 4	85 18 7	24 9 9	4 12 2	979 9 4		2,500 17 4	245 18 4	2,254 19 0	.....
8	Fassifern	294 5	118 7 8	4 11 7	0 8 0	3 8 0	8 2 6	72 18 6	51 13 2		9 11 7	0 5 7	16 13 1	6 10 8	4 9 1	0 16 9	297 16 2	.....	265 19 11	. ...	265 19 11	.....
8	Ballimore	501 1	362 6 0	0 7 8	3 2 0	4 9 9	4 12 6	37 1 11	11 18 5	1 1 0	43 1 11	1 5 3	74 18 4	29 8 0	20 0 8	3 15 5	597 8 10	. .	590 11 3	. .	590 11 3	.... .
11	Broken Hill	921 11	514 10 6	. ...	5 13 5	12 7 0	28 12 6	87 7 8	9 16 0	16 2 2	57 9 3	1 13 8	99 17 9	39 4 0	26 14 3	5 0 6	904 8 8		1,009 4 5	230 9 7	778 14 10	.. .
13	Hexham Island	702 0	208 16 0	. ..	3 12 0	1 10 6	20 12 1	8 5 5	36 14 4	11 7 1	19 3 2	0 11 3	33 5 11	13 1 4	8 18 1	1 13 6	367 10 8	.	604 10 0	.	604 10 0	. . .
13	Ash Island	708 8	134 9 8	0 11 10	0 11 6	1 5 8	..	6 6 11	10 3 5	. .	14 7 4	0 8 5	24 19 6	9 16 0	6 13 7	1 5 2	210 19 0	....	583 7 4		583 7 4	....
		8,292 3	2,596 5 6	12 9 9	21 2 8	28 15 1	81 1 7	420 1 0	242 6 0	31 12 1	282 10 8	8 5 6	491 2 7	192 14 6	131 6 10	24 14 5	4,564 8 2	0 11 0	8,067 19 11	476 7 11	7,591 12 0	0 18 3⅝

Comparative statement diamonds used per foot..... { 1887 = 1/6¼.
1888 = 1/0⅝.

J. S. McNEIL.
D. McCULLOCH.

W. H. J. SLEE, F.G.S.
Superintendent of Drills.

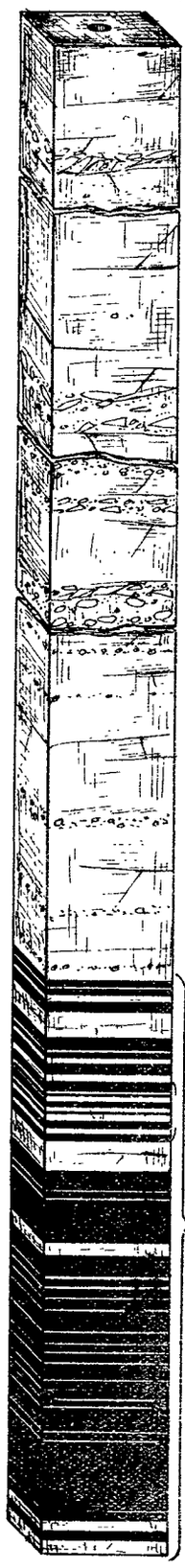
APPENDIX C.

DIAGRAMS Nos. 1 to 14.

DIAMOND DRILL SECTIONS.

SUPERINTENDENT OF DRILLS' REPORT.

Section of Bore
No A. Diamond Drill
at Joadja, Mittagong



Borehole 3" Diam.r	Nature of Strata	Thickness of Strata ft.	Thickness of Strata in	Depth from surface ft.	Depth from surface in
	Shale	6	0		
	Sandstone	8	6		
	Sandstone with ironstone bands	13	3		
	Conglomerated quartz sandstone & Sandstone	54	8		
	Coarse Sandstone with quartz pebbles	16	9		
	Coarse Sandstone, soft	53	6		
	Quartz Conglomerate	4	4		
	Sandstone with quartz Conglomerate bands	17	11		
	Quartz Conglomerate with ironstone bands	4	4		
	Sandstone	7	10		
	Quartz Conglomerate	63	6		
	Coarse Conglomerate	9	6		
	Sandstone & Shale	20	7		
	Fine Conglomerate	1	4		
	Sandstone	37	6		
	Conglomerate		6		
	Shaly sandstone	6	3		
	Fine Conglomerate	6	2		
	Shale		6		
	Sandstone		2	333	1
	Coal Seams	32	0		
	Total Depth			365	1

Coal Seams

Coal		2
band		1
Coal		2
blackband		4
Coal		6
Shale		4
Sandstone	1	0
Clay		2
Coal		6
blackband		3
Coal		2
blackband		4
Coal		5
blackband		5
Coal & bands	3	6
Chert	2	2
Coal, splint	1	0
band		2
Coal		3
Clay		2
Coal	2	6
band	1	0
Coal	1	0
band		5
Coal		5
band		1
Clay		1
Coal, splint		8
Clay		1
Coal		5
Clay		1
Coal	1	3
band		2
Coal		6
Clay		1
Coal		3
Clay		1½
Coal		5
band		0½
Coal		11
band		1
Coal		3
Clay		1
Coal		5
Clay		1
Coal		2
Clay		2
Coal	1	2
band		1
Coal		1
Clay		1
Coal	4	2
band		0½
Coal		6
band		2
Clay		1½
band		1
Coal		8
band		3
fireclay		6

Section of Bore № 1
№ A. Diamond Drill
at Joadja

Borehole 3" Diam.	Nature of Strata	Thickness of Strata ft.	Thickness of Strata in.	Depth from Surface ft.	Depth from Surface in.
	Shaft	4	0		
	Sandstone	3	0		
	Sandstone with quartz pebbles	6	0		
	Sandstone with ironstone bands	12	8		
	Conglomerate	3	0		
	Soft red sandstone with conglomerate	12	1		
	Soft red sandstone with ironstone bands	34	7		
	Conglomerate	4	9		
	Sandstone	3	5		
	Sandstone & conglomerate with ironstone bands	50	9		
	Conglomerate with ironstone bands	26	1		
	Sandstone & conglomerate	17	10		
	Shaly sandstone	4	0		
	Sandstone with quartz pebbles	14	5		
	Conglomerate & sandstone	32	8		
	Grey shale	19	2		
	Sandstone	10	2		
	Black stone, splint coal & clay bands mixed	8	6	267	1
	Splint coal & bands	1	3		
	Chert	1	6		
	Splint coal & bands	5	8		
	Chert	2	6		
	Splint coal		9		
	Coal (inferior) & bands mixed	13	2		
	Clay band	1	0		
	Coal & bands	1	11		
	Coal	2	0		
	Shale	6	3		
	Shaly sandstone	25	9		
	Shale	10	3		
	Coal & bands	1	7		
	Shaly sandstone	6	5		
	Sandstone	6	0		
	Conglomerate	14	3		
	Coal		2		
	Shaly sandstone	10	3		
	Blue shale	2	3		
	Coal & bands		8		
	Conglomerate	1	4		
	Total Depth			382	0

Section of Bore
No 3 Diamond Drill
at Snakes Creek, Charleston

Nature of Strata	Thickness of Strata ft.	in.	Depth from Surface ft.	in.
Standpipe	9	0		
Sandstone & Conglomerate	47	1		
Chert rock	1	5		
Black shale with coal bands	2	6		
Coal & bands	1	6		
Coal	1	2		
Coal & bands	3	3		
Sandstone & blue shale		4		
Coal	17	10		
Chert rock		3		
Black shale	1	2		
Coal		4		
Black shale	3	2		
Coal		3		
Shale & sandstone	3	3		
Blue shale with coal bands	2	11		
Blue shale	2	10		
Sandstone with shale	5	3		
Blue shale with coal bands	2	10		
Sandstone with shale	5	3		
Shale with coal partings	4	7	132	1
Chert rock	7	10		
Coal seams (See enlarged section)	43	7		
Chert rock & blue shale	14	10		
Sandstone with shale	5	2		
Conglomerate	46	9		
Sandstone	2	2		
Conglomerate	137	11		
Chert rock	1	1		
Sandstone	5	6	389	1
Coal seams (See enlarged section)	26	6		
Chert & shale	1	5		
Conglomerate & sandstone	53	0		
Chert rock	7	8		
Sandstone & shale	31	8		
Black shale & clay bands	14	9		
Chert	20	6		
Blue & black shale	12	8		
Coal & bands	2	11		
Coal		8		
Clay		5		
Coal		2		
Chert	11			
Blue shale with coal partings	1	11		
Coal		7		
Clay & coal bands	1	8		
Coal & bands	2	1		
Chert	3	0		
Coal & bands	1	8		
Shale & sandstone with coal partings	29	7		
Shale, sandstone & blue shale	2	7		
Coal & bands	1	1		
Clay	38	5		
Shale & sandstone with ironstone bands	53	6		
Blue shale with fossil leaves	9	7	708	9
Coal seams (See enlarged section)	15	5		
Blue shale with fossil leaves	9	2		
Chert rock	1	8		
Coal		1		
Band	2	6		
Coal	1	1		
Black shale & chert	25	11	773	8
Blue shale with ironstone bands	5	6		
Coal seams (See enlarged section)	12	9		
Blue shale with ironstone bands	2	0		
Coal & bands	23	8		
Blue shale	16	0		
Sandstone with shale	5	7		
Blue shale	2	5	841	7
Black shale	4	4		
Coal seams	56	10		
Blue shale, clay bands & sandstone	9	3		
Coal		9		
Shale with coal partings		6		
Coal		4		
Blue shale	7	5		
Coal		9		
Shale with sandstone		10		
Blue shale with fossil leaves		8		
Black shale	62	6		
Coal				
Sandstone	14	9		
Sandstone with shale bands			997	6
Total Depth				

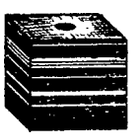
Coal Seams at 132'-1"

	ft.	in.
Coal & bands	1	8
Coal	1	4
Coal & bands	1	1
Blue shale	1	2
Sandstone & shale	4	1
Shale & coal bnd	2	0
Clay	1	0
Coal & bands		9
Clay		2
Coal & bands	1	1
Clay		10
Black shale		4
Clay		4
Coal & bands	2	1
Clay		6
Coal & bands		11
Clay		7
Blk shale & coal	2	4
Clay		11
Coal & bands	1	7
Clay		5
Coal & bands	2	4
Clay		7
Coal & bands	3	2
Clay		10
Coal & bands	5	6
Sandstone		4
Coal & bands	1	5
Sandstone	2	4
Shale & coal bds	1	7
Thickness	43	7

Coal Seams at 389'-1"

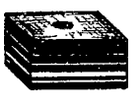
Coal	1	3
Fireclay		6
Coal	2	4
Coal & bands	1	7½
Coal		0½
Clay		6
Coal & bands		3½
Clay		1
Coal		0½
Clay		3½
Coal & bands	5	11
Shale & coal pipes		9
Coal & bands	2	1
Chert rock		3
Coaly band	1	
Coal		3
Coal & bands		7½
Coal	1	2
Coal & bands		
Coal	3	7
Coal & bands	1	2
Thickness	26	6

Coal Seams at 708'-9"



Coal		2
Band		1
Coal	1	3
Coal & clay band		3
Coal		11
Clay		0½
Coal	1	5
Band		1½
Coal		4
Clay		3
Coal	2	11
Thickness	9	7

Coal Seams at 773'-8"

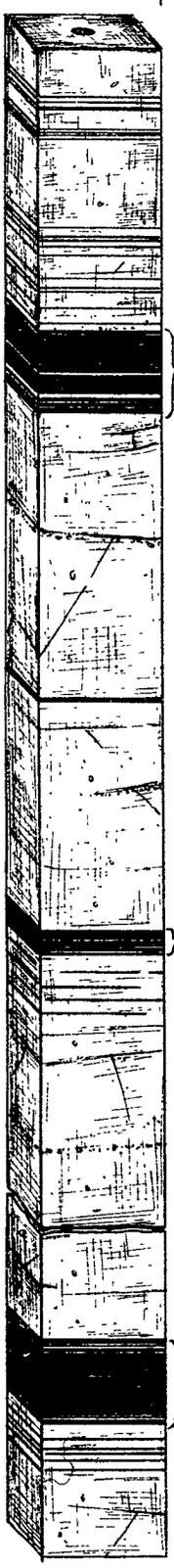


Coal	1	8
Band		2
Coal		19
Band		1
Coal		11
Slate		3
Coal		3
Band		3
Coal		11
Thickness	5	6

Coal Seams at 841'-7"

Coal		4
Band		0½
Coal		8½
Coal & bands		6
Shale & coal partg	2	6
Thickness	4	4

Section of Bore
No 3 Diamond Drill
at Redhead

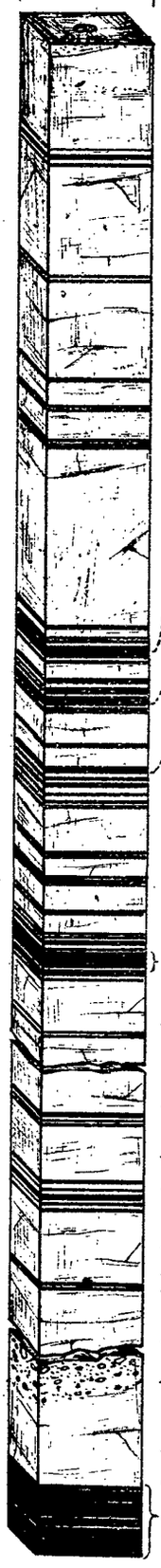


Borehole 3" Diamr.	Nature of Strata	Thickness of Strata ft.	Thickness of Strata in.	Depth from Surface ft.	Depth from Surface in.
	Depth bored to 31st December 1887			143	9
	Chertrock	4	3		
	Coal & bands	1	4		
	Chertrock	2	10		
	Coal & bands	1	1		
	Chertrock	11	0		
	Chertrock with coal bands	3	6		
	Blue Shale with coal partings	8	6		
	Blue Shale		6	176	9
	Coal 2 0; band 0½; Coal 4 6; Clay 1 4; Coal 2 0; band 1 3; Coal 3 1; band 1; Coal 6 1; band 0½; Coal 6 — Coal Seams	9	0		
	Blue Shale	3	4		
	Sandstone & Shale	7	8		
	Blue Shale with ironstone bands	13	0		
	Blue Shale with sandstone	10	0		
	Coal		5		
	Shale with Sandstone	10	0		
	Blue Shale	18	2	248	4
	Coal 1 0; band 0½; Coal 9; band 0½; Coal 1½; Coal & band 3 — Coal Seams	2	2		
	Shale with coal pipes	7	3		
	Blue Shale	1	6		
	Ironstone		4		
	Blue Shale	2	5		
	Sandstone & shale	3	6		
	Blue Shale	4	6		
	Ironstone		10		
	Sandstone & shale	5	8		
	Sandstone & Shale, & Sandstone	49	4		
	Blue & black Shale with clay bands	6	2	332	0
	Coal 5; Shale with Coal bands 8; Coal 1 4; Clay 1; Coal 2 6½; band 0½; Coal 4 4; Coal & bands 10; Coal 4 — Coal Seams	9	7		
	Shale with Coal bands	5	3		
	Sandstone	10	2		
	Total Depth			357	0

Section of Bore

No 3 Diamond Drill

at Lochend

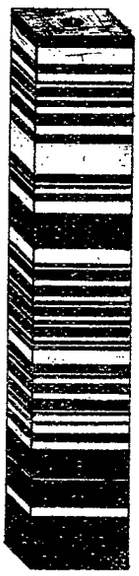


Nature of Strata	Thickness of Strata ft.	Thickness of Strata in.	Depth from Surface ft.	Depth from Surface in.
Standpipe	27	0		
Clay & Coal bands	4	10		
Grey Sandstone & Shale	26	8		
Black shale & indurated clay	1	2		
Coal & bands	1	8		
Chert & blue rock	3	7		
Grey sandstone & friable shale	17	9		
Black shale & clay	1	1		
Coal		3		
Blue post, shale & clay	6	0		
Coal & bands		7		
Blue shale & grey post	7	2		
Blue shale & Coal pipes		4		
Coal		9		
Blue shale & ironstone bands	5	4		
Grey siliceous Rock & grey shale	37	2		
Black shale	1	7		
Coal		7		
Black shale & sandstone	1	4		
Shale & coal bands		11		
Clay		6		
Coal, bright bituminous	2	3		
Coal & bands	1	10		
Shale & coal pipes	3	2		
Coal		3		
Clay		6		
Black shale, coal & fireclay	2	3		
Coal, inferior	1	3		
Shale & Coal bands	1	8		
Grey post & blue shale	7	4		
Coal		7		
Grey post	4	4		
Coal	1	2		
Blue shale & coal bands	8	7		
Grey shale & chert	7	2		
Shale & coal pipes	1	8		
Blue post	2	0		
Shale & coal pipes	1	2		
Grey post & shale	5	6		
Shale & thin layers of Coal	2	6		
Fine Conglomerate	6	1		
Coal & clay bands		5		
Shale, sandstone & grey shale	4	9		
Coal & shale bands	2	0		
Coal		8		
Coal & shale bands	1	2	216	5
Coal seams (See enlarged section)	3	8		
Blue shale & coal pipes	2	8		
Blue shale, ironstone & grey post	14	0		
Shale & coal pipes		5		
Chert & white indurated clay (Suitable for pottery & bricks)	24	8		
Black shale	2	5		
Coal		6		
Shale & coal pipes	2	1		
Blue shale & grey post	14	7		
Coal		3		
Soft white clay	1	3		
Coal & clay bands	1	1		
Coal		7		
Coal & shale bands	2	10		
Shale & coal bands	13	9		
Soft white clay	4	6		
Shale & coal bands	1	6		
Shale & Sandstone	4	8		
Blue shale & grey post with ironstone bands	24	0		
Fine grey conglomerate, Shale & Sandstone	67	0		
Shale & ironstone bands	12	1		
Cherty shale	2	8	417	7
Coal seams (See enlarged section)	16	6		
Carried forward			434	1

Coal Seams at 216'-5"

	ft.	in.
Bright bituminous coal	1	9
Band		0½
Bright bituminous coal		10½
Coal & bands		3½
Bright bituminous coal		8½
Thickness	3	8

Coal Seams at 417'-7"

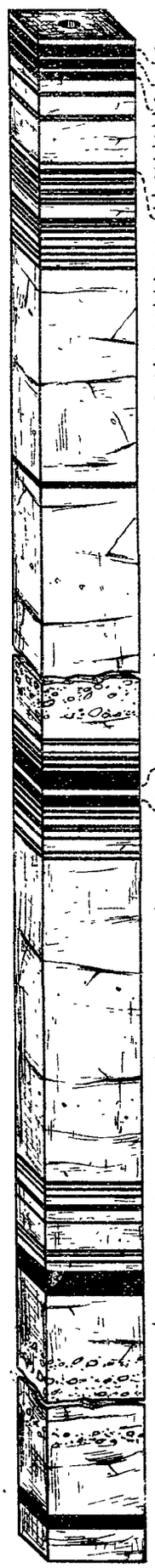


	ft.	in.
Coal		4
Sandstone		7
Coal & bands	2	4
Clay	1	1
Coal & bands		9
Clay		6
Coal	1	0
Clay		6
Coal & bands	1	6
Clay		2
Coal & bands		11
Clay		6
Coal & bands	2	4
Chert		4
Coal		10
Clay		2
Coal		9
Blue clay		5
Coal	1	6
Thickness	16	6

APPENDIX C.

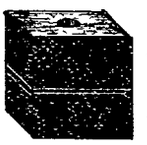
Lochend Bore, (Continued)

Diagram 6.



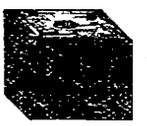
Brought forward			434	1	
Grey shale	1	1	435	2	
Coal seams (see enlarged section)	2	10			
band		2	438	2	
Coal seams	2	3			
Clay & black shale	1	1			
Bright bituminous coal	1	10			
Blue & grey shale	3	3			
Coal		9			
Ironstone		10			
Blue shale & coal pipes	1	1			
Cherty grey shale	1	3			
Coal & bands	2	3			
Blue sandstone & chert	11	0			
Blue shale & coal pipes		11			
Coal		10			
Clay		5			
Coal & bands	4	6			
Clay		5			
Coal & bands	1	6			
Shale & coal pipes	2	6			
Fireclay		7			
Bright bituminous coal	1	5			
Clay & coal		9			
Coal		9			
Grey shale & coal bands	3	10			
Clay		1			
Bright bituminous coal	2	1			
Shale & coal	1	2			
Grey siliceous rock	36	2			
Grey post	9	2			
Cherty grey shale	10	6			
Splint coal	1	0			
		¾			
Cherty grey & blue shale	34	0			
Fine conglomerate, blue shale & grey post	65	2			
Shale & coal		10			
Cherty grey shale	1	10			
Shale & coal		3			
Coal		10			
band		1			
Coal		6			
Indurated clay		½	645	4	
Coal seams	4	9½			
(See enlarged section)					
Indurated clay	1	6½	651	8	
Coal seams	2	3			
Coal & bands	3	3			
Indurated clay	1	8			
Coal & bands	2	10			
Blue shale	3	11			
Coal & bands	2	0			
Blue shale, blue post and indurated clay	14	7			
Blue shale, sandstone, grey & black shale	72	3			
Coal	1	1			
Blue & black shale & coal bands	5	0			
Coal		11			
Blue shale	2	6			
Shale & coal pipes		6			
Chert & clay	6	3			
Coal & bands	2	9			
Blue shale	1	9	774	2	
Coal seams (see enlarged section)	6	2			
Shale, sandstone, conglomerate & blue shale	73	6	853	10	
Coal seams (see enlarged section)	3	2			
Shale & sandstone	7	9			
Depth bored to 31st Dec'88			861	9	

Coal Seams at 435'-2"



	ft.	in
Bright bituminous Coal	1	6
Coal & bands		2
Bright bituminous coal	1	2
Thickness	2	10

Coal Seams at 438'-2"

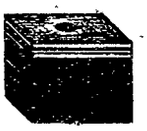


Bright bituminous Coal	1	11
band		0½
Coal		3¾
Thickness	2	3

Coal Seams at 645'-4"

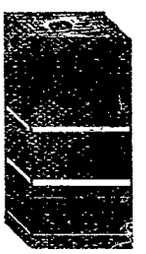
Brt bituminous Coal	1	8
Parting		0½
Brt bitms Coal		4½
Parting		0½
Brt bitms Coal		1½
Shale & Coal		10½
Brt bitms Coal		6½
Parting		0½
Coal		1¾
Indurated clay		2¾
Coal		3¼
Thickness	4	9½

Coal Seams at 651'-8"



Coal & bands		6½
bright bituminous coal		8½
Parting		0½
bright bituminous coal		11½
Thickness	2	3

Coal Seams at 774'-2"

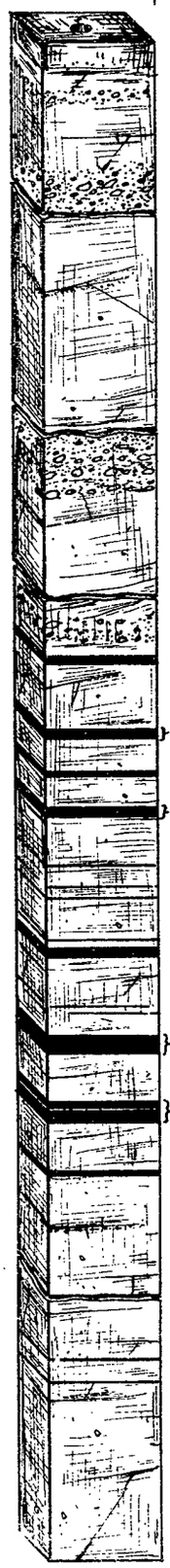


Coal	2	6½
band		2½
Coal	1	3½
band		4
Coal		3
band		0½
Coal	1	1
band		1
Coal		4
Thickness	6	2

Coal Seams at 853'-10"

Coal		2
black shale		1½
Coal		2½
black shale		4
Coal	2	4
Thickness	3	2

Section of Bore № 1
№ 4 Diamond Drill
at Woodford



Nature of Strata	Thickness of Strata ft.	in.	Depth from Surface ft.	in.
Standpipe	16	0		
Sandstone with Conglomerate and Cinnabar bands	13	3		
Grey & red Sandstone, Conglomerate & grey & Chocolate Shale	254	10		
Sandstone & Shale mixed and partings	407	10		
Blue Shale	9	0		
Shale & Sandstone	10	0		
Sandstone & Conglomerate	219	11		
Sandstone, Shale & Chert	30	0		
Sandstone, Shale & Conglomerate	239	6		
Dark Shale	4	7		
Coal, hard splint	1	5		
Coal, good	2	6		
Dark Shale	7	0		
Sandstone	23	4	1239	2
Coal Seams (See enlarged section)	3	6		
Sandstone	7	1		
Chert	6	6		
Coal, good	6	6		
Sandstone & Shale	15	7	1273	4
Coal Seams (See enlarged section)	3	3		
Hard Stone	1	0		
Dark Shale & hard Chert	10	1		
Dark Shale with Coal and Chert partings, broken strata	47	11		
Shale & Coal pipes	3	6		
Coal, splint	4	6		
Chert	8	7		
Shale & hard broken Chert	13	1		
Dark Shale & Coal pipes	4	11		
Dark Shale & Sandstone	9	3	1379	4
Coal Seams (See enlarged section)	7	7		
Dark Shale	12	0		
Sandstone & Shale	10	5	1409	4
Coal Seams (See enlarged section)	8	8		
Sandstone & Shale	23	0		
Splint Coal	2	0		
Sandstone & Shale	28	4		
Sandstone, fine	13	3		
Dark Shale	73	0		
Shale & ironstone bands	5	0		
Shale & Sandstone with Coal band	5	0		
Shale & Sandstone	5	0		
Shale & Sandstone with Coal band	5	0		
Shale & Sandstone	10	0		
Dark Shale	15	5		
Hard grey Rock	9	0		
Dark Shale & Shaly Sandstone	44	6		
Total Depth			1656	6

Coal Seams at 1239'-2"

	ft.	in.
Coal, good splint & bituminous	3	1½
band		0½
Coal, good		1⅜
Coal, hard		3
Parting		0⅛
Thickness	3	6

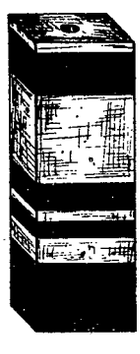
Coal Seams at 1273'-4"

Coal		2
hard band		2
Splint Coal		3
Clay		1
Coal		2
band		2
Coal		4
band		4
Coal, hard splint	1	4
Thickness	3	3

Coal Seams at 1379'-4"

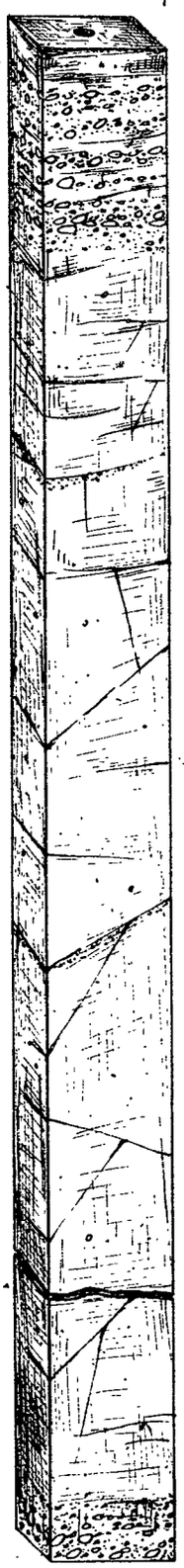
Fireclay		4
Coal		0½
band		1½
Coal, splint & bituminous	2	4
Dark band		4
Hard Coal		9½
Coal & bands		4½
Coal, good splint	1	6
Hard band		2½
Coal, good splint & bituminous	1	6½
Thickness	7	7

Coal Seams at 1409'-4"



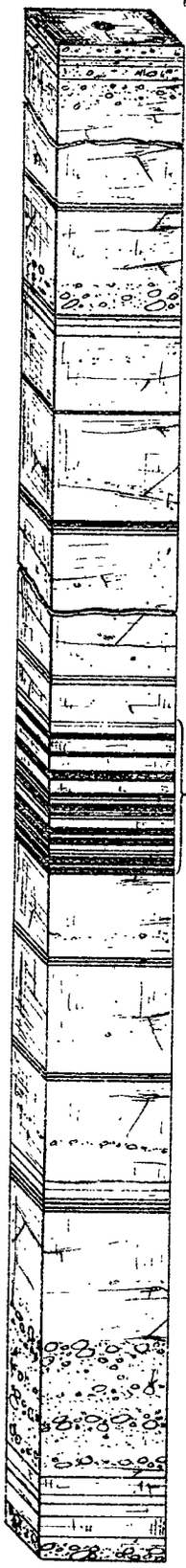
Fireclay		4
Coal, splint	1	3
Fireclay	2	8
Coal, splint		10
Fireclay		4
Coal		5
Fireclay		10
Coal	2	0
Thickness	8	8

Section of Bore № 2
№ 4 Diamond Drill
at Woodford



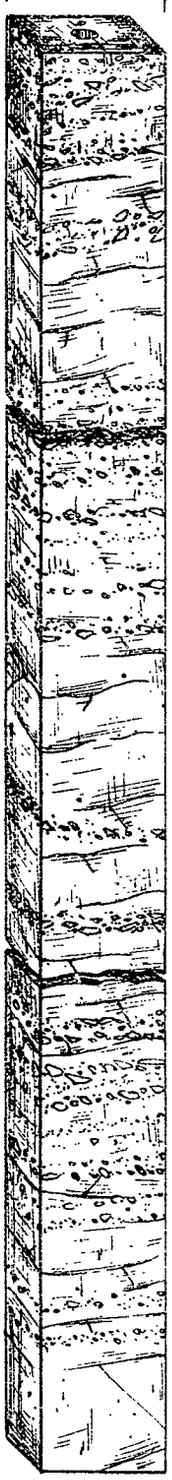
Borehole 3" Diam.r	Nature of Strata	Thickness of Strata ft	in	Depth from Surface ft	in.
	Standpipe	5	3		
	Sandstone	2	0		
	Conglomerate & Cinnabar bands	41	1		
	Broken Sandstone	32	0		
	Dark Shale	44	6		
	Sandstone & Chocolate Shale	49	8		
	Sandstone, Shale & Cinnabar	36	6		
	Sandstone & Cinnabar	29	1		
	Cinnabar bands & Shale	8	8		
	Hard grey Shale	26	1		
	Sandstone & Shale	380	2		
	Chocolate Shale	3	0		
	Shale, Sandstone & Conglomerate	27	1		
	Depth bored to 31st December 1888			685	1

Section of Bore
No 8 Diamond Drill
at Fassiefern



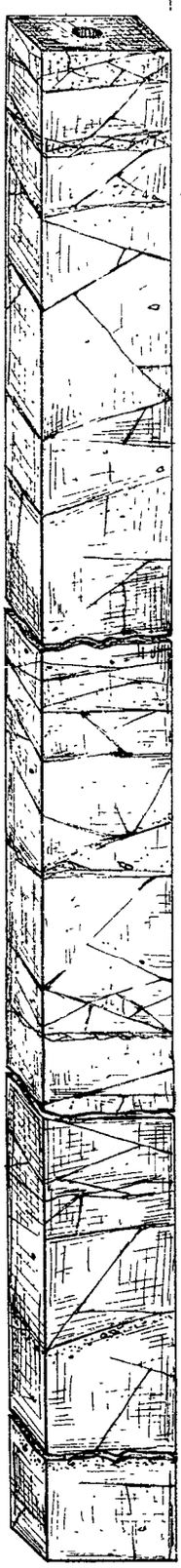
Nature of Strata	Thickness of Strata ft.	Thickness of Strata in.	Depth from Surface ft.	Depth from Surface in.
Total Depth of Shaft (vide 88.4206)			476	8
Fine Conglomerate with Coal pipes	5	3		
Conglomerate & Sandstone	41	9		
Coal bands	1	0		
Blue Shale	3	6½		
Sandstone, Shale & Conglomerate	15	1½		
Shale & Chert with Coal bands	4	6		
Black Shale	1	4½		
Chert		7		
Black & Blue shale	11	10		
Coal		2½		
Blue Shale	3	3½		
Sandstone	16	7		
Coal	1	7		
Shale with Coal pipes	2	8½		
Sandstone & Shale	34	8	620	8
Shale with Coal bands	1	6		
Sandstone	6	8		
Sandstone with Coal pipes	1	3		
Conglomerate		7		
Coal		10		
Chert	1	2		
Coal		8		
Grey Shale		6		
Black Shale with grey parting	1	11		
Coal		1		
Stone band		3		
Blue & black Shale	1	7		
Coal		10		
Clay & coal		5		
Coal		7		
Coal & clay		10		
Black Shale & coal pipes		5		
Chert		7		
Coal (dirty)	1	0		
Clay		1½		
Coal (dirty)		11½		
Clay		4		
Coal & clay bands	1	6½		
Coal		3½		
Coal & clay		3½		
Coal		3½		
Black Shale		7		
Sandstone	11	5		
Chert		7		
Sandstone with coal pipes	2	0		
Blue & black Shale & Sandstone	18	8		
Conglomerate with Coal pipes	1	8		
Chert		6		
Black Shale	2	1		
Shale & Sandstone & shale partings	9	1		
Conglomerate	1	5		
Sandstone	1	7		
Sandstone & Shale	3	11		
Sandstone with Coal pipes	3	10		
Black Shale & Coal	3	7		
Blue Shale		5		
Shale & Sandstone	12	6		
Blue Shale with fossil leaves	2	0		
Blue Shale & sandstone	7	10		
Conglomerate	23	6		
Shale & Coal pipes	12	11		
Grey Shale	1	6		
Conglomerate	2	4		
Depth to 31st December 1888			771	1

Section of Bore № 2
Nos. 10 & 8 Diamond Drills
at Ballimore



Borehole 2" diam.r	Nature of Strata	Thickness of Strata ft.	Thickness of Strata in.	Depth from Surface ft.	Depth from Surface in.
	Depth bored to 31st Decr '87			600	3
	Rough Conglomerate	36	9		
	Dark shale	14	10		
	Conglomerate	7	0		
	Sandy Shale & Dark Shale	35	4		
	Fine Conglomerate	48	9		
	Conglomerate with Coal partings	38	9		
	Shaly Sandstone	49	9		
	Conglomerate	2	6		
	White Sandstone, soft	17	11		
	Conglomerate & Shaly Sandstone alternating.	148	3		
	Blue Shale	4	0		
	Conglomerate	27	1		
	Shaly Sandstone	4	4		
	Conglomerate, fine	7	2		
	Shaly Sandstone & Conglomerate	25	0		
	Conglomerate & bed-rock	7	5		
	Sandstone	26	3		
	Total Depth			1101	4

Section of Bore
No II Diamond Drill
at Broken Hill

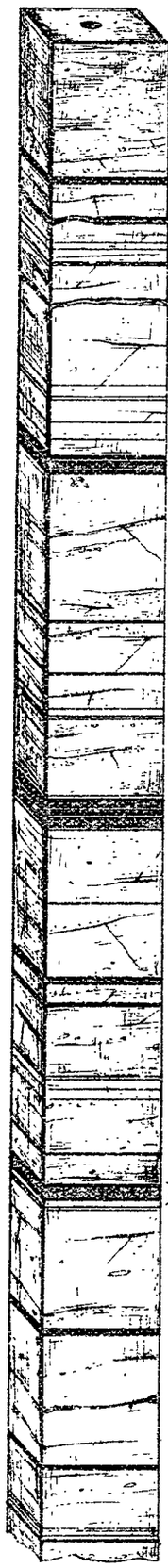


Nature of Strata	Thickness of Strata ft.	in.	Depth from Surface ft.	in.
Depth bored to 31st Decr 1887			200	1
Dark granite	16	4		
Gneiss with quartz	28	2		
Granite	8	6		
Gneiss with quartz	24	8		
Granite	1	1		
Gneiss with quartz	16	0		
Quartzite with altered mica schist	51	1		
Quartz with granite	24	5		
Quartzite with mica schist	4	0		
Quartz with gneiss	20	8		
Crystalized granite	8	7		
Quartzite with mica schist	23	3		
Quartz with gneiss	53	0		
Quartzite	102	0		
Hard quartzite	23	0		
Hard glassy quartz	20	0		
Quartzite with gneiss	35	8		
Quartzite	27	4		
Mica schist	51	5		
Quartzose schist with garnets and pyrites	46	7		
Gneiss rock	10	6		
Quartzite	82	8		
Gneiss	26	0		
Micaceous schist	35	0		
Porphyritic quartzite	23	0		
Quartz	5	0		
Micaceous schist	13	0		
Gneiss	37	0		
Schist	6	0		
Mica schist	63	0		
Schist	35	0		
Depth bored to 31st Decr'88			1122	0

Section of Bore
Nº 13 Diamond Drill
at Hexham Island

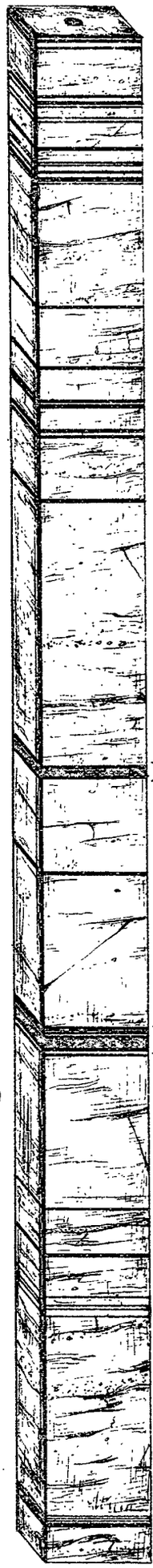
Borehole 3" Diamt.	Nature of Strata	Thickness of Strata ft	Thickness of Strata in	Depth from Surface ft	Depth from Surface in
	Alluvial, sandy clay and running sand	79	4		
	Sandstone chiefly, with mudstone and grey shale	30	1	109	5
	Coal	1	6		
	Sandstone, dark grey mudstone and shale	26	3½	137	2½
	Coal	3	1		
	Sandstone chiefly, with layers of dark grey mudstone & black shale	119	5½	259	9
	Coal, splint		3		
	Sandstone chiefly, with coal pipes & layers of dark grey mudstone & black shale	161	2	421	2
	Coal, good bituminous & dirty splint mixed	1	7		
	Sandstone, mudstone & black shale with glossopteris succeeding one another in about equal proportions with a little clay ironstone at 459 ft	89	3	512	0
	Coal 0 2; fireclay, yellow 0 2; Coal 0 1; fireclay, yellow 0 8; Coal 0 1; fireclay 1 0; Coal splint & bituminous 1 0; Band brown stony shale with streaks of iron pyrites 0 5; Coal, the upper nine inches splint & bituminous 1 9½ } Seam	5	4½		
	Clay shale, chiefly dark grey, with sandstone & a little clay ironstone	16	11¾		
	Coal & shale, alternating in layers about 3" thick	2	6		
	Mudstone, shale & sandstone	62	0	598	10
	Coal, burnt by dolerite		6		
	Dolerite	3	0		
	Mudstone, black slate & sandstone	28	2	630	6
	Coal, burnt by dolerite (Tomago Seam)	4	4		
	Dolerite	1	0		
	Shale, chiefly hard black, with a little mudstone & sandstone	24	2		
	Dolerite	2	0		
	Shale, black with abundant glossopteris	3	4	665	4
	Coal, burnt by dolerite	3	7		
	Dolerite	2	11		
	Dolerite & coal mixed		6		
	Sandstone with shaly partings	17	11		
	Dolerite partly decomposed	2	3	692	6
	Coal, burnt by dolerite	4	7		
	Dolerite	5	3		
	Total Depth			702	4

Section of Bore
No 13 Diamond Drill
at Ash Island



Borehole 3" Diamr	Nature of Strata	Thickness of Strata ft.	Thickness of Strata in	Depth from Surface ft.	Depth from Surface in.
	Stand-pipe in black loamy sand & clay overlying white sand & grey clay	29	6		
	Stiff grey clay & sand with marine shells	14	0		
	Soft sandy shale with layers of sandstone, white, coarse grained	13	0		
	COAL	1	8	58	2
	Sandstone, white & grey, mostly coarse, but fine and shaly in places & containing coal pipes in the lower 33 feet of this thickness	79	5		
	COAL & shale	1	0	138	7
	Sandstone chiefly, calcareous in places, alternating with black & grey shales	201	5		
	Sandstone, grey, with coal pipes, shaly at base of bed	33	6		
	Shale, black	4	0		
	COAL and shale 0 1 6; Yellow fireclay 0 2 3; COAL & shale 2 0 4; White fireclay 0 2 6; COAL 0 0 6 — COAL SEAM	4	1	381	7
	Sandstone, grey, alternating with grey shaly sandstone	36	5		
	Shale, sandy	8	0		
	COAL		2	426	2
	Sandy shale with layers of sandstone	14	10		
	COAL		1	441	1
	Shaly sandstone with 2" of clay ironstone	8	1		
	Black shale with thin partings of coal	3	3		
	Shaly sandstone with two bands of clay ironstone 3" & 5" thick	22	7		
	Shale and COAL partings	1	0		
	COAL 0 0 9; Sand, brown clay 0 0 7½; COAL 0 0 3½; Sand, yellow clay 0 0 3½; COAL 2 0 0; Sand, black stone 0 0 6; COAL 1 0 1; Stony COAL 0 1 1 — COAL SEAM (Tomago thick Seam)	7	3½	483	3½
	Shale with streaks of COAL		0½		
	Sandstone, whitish grey, coarse & fine alternating	13	0		
	Clayey Sandstone, dark grey, fine, with fossil plants	6	3		
	COAL and black pyritous Shale		3		
	Carbonaceous sandstone, mudstone & shales	19	9		
	Black shales crowded with fossil plants		6		
	COAL (Tomago thin seam)	1	3	524	4
	Coaly shale, rough leafy		6		
	Sandstone, clayey carbonaceous, and mudstone	5	0		
	COAL		3	530	1
	Sandstone hard calcareous, and mudstone with shaly partings	16	9		
	Black coaly shale with a little white fireclay, clay ironstone	8	3		
	Sandstone streaked with black shale	4	8		
	Mudstone, hard black laminated	4	3		
	Dolerite	3	5		
	Black mudstone and black sandy shale	2	11		
	COAL, calcined by dolerite		2		
	Crumbling black shales and hard grey shales	7	4		
	COAL 0 1 1; Band, stony 0 0 4; COAL 0 2 2; Coaly band 0 0 8; COAL 0 6 0; Shale & COAL 1 0 0; Band, stony 0 6 9; COAL 0 9 1 — COAL and Bands	4	0	581	10
	Black shale with coal pipes fossil leaves & sporangia and thin films of calcite at top of bed	2	1		
	Mudstone, dark grey with bands of streaky calcareous sandstone, black shale & clay ironstone, with abundant fossils	29	10		
	COAL	1	4	615	1
	Black leafy Shale with white & yellow fireclay	5	10		
	Shaly sandstone & mudstone, with a little clay ironstone	25	1		
	Crumbling black shale and hard chittery shale	1	3		
	COAL calcined by dolerite		10		
	Dark grey sandstone, mudstone & black sandy shales	14	2		
	Shiny Coaly Shale with small conchoidal fracture		10		
	COAL, calcined by dolerite	1	2		
	Coaly shale		3		
	COAL, calcined by dolerite		3		
	Carried forward			664	8

APPENDIX C. Ash Island Bore, (Continued) Diagram 14.



Brought forward			664	8	
Dolerite, coal & coaly shale intermixed	4	0			
Mudstone and black coaly shale	12	0			
COAL calcined by dolerite		4			
Dolerite		1			
COAL calcined & petrified by dolerite		10½			
Dolerite & coal mixed	1	5			
Dolerite	2	0			
COAL and shale mixed, calcined	1	2			
Dolerite, coarsely crystaline	1	3			
Dolerite intermixed with calcined coal	3	8			
COAL, calcined		4	693	9	
Shaly sandstone with bands of coaly shale and a little dolerite	2	9			
Black coaly shale with a little COAL	1	6			
Fireclay, pure white	1	2			
COAL & shale		2			
Fireclay, chiefly white	1	6			
COAL, calcined by dolerite	1	0			
COAL and black shale mixed		6			
Depth bored to end of 1888			708	8	
Mudstone, laminated sandstone & dark shale in thin beds	30	9			
Dolerite, coarsely crystaline	2	0			
Black shale calcined at contact with dolerite	3	10			
COAL		9	739	8	
Dolerite	5	9			
Mudstone and black sandy shale	9	8			
Dolerite		10			
Coaly shale calcined by dolerite		3			
COAL calcined by dolerite		9			
Mudstone and black shale	3	3			
Dolerite	3	0			
Stony coal & black shale calcined by dolerite	1	2			
COAL calcined by dolerite		3	764	9	
Band white clay calcined by dolerite		0½			
COAL, bituminous & clayey, calcined		10½			
Fireclay, pure white, calcined		7			
Coaly shale, calcined		10			
Dolerite with fragments of sandstone & black shale	4	4			
Coaly shale(?) or stony coal, calcined	1	0			
Dolerite, decomposed		9			
Black shale and COAL		4			
Grey sandstone streaked with black shale, and black shale	18	8			
COAL, splint and bituminous		2	792	4	
Mudstone, whitish grey sandstone, shaly in places	43	8			
Band of pebbles, ¼ inch to 1 inch in diameter		1			
Chiefly mudstone & clayey sandstone with 6'-8" of hard grey sandstone at base of bed	38	11			
COAL brittle bituminous 0 1 Black shaley bituminous COAL 0 2 Leary chittery shales 0 8 Dirty Splint COAL 0 3½ Black shale with mother of COAL 0 5 COAL bituminous 0 2 Black shale with ½ inch layers of bituminous COAL 1 2 } Black coaly Shale & COAL	2	11	877	11	
Sandstone, fine & coarse, with a little mudstone	29	0			
COAL		2	907	1	
Sandstone very fine grained, and delicately laminated, with black shale	13	10			
Grey sandstone, coarse & fine alternating, very calcareous in places with shaly partings & coal pipes	29	8			
Black sandy shale and mudstone		7½			
Soapy yellow clay		0½			
Black sandy shale with abundant fossils	1	2			
Dark shaly mudstone		5			
COAL, bituminous 0 0½ Hard coal & shale mixed 0 1 COAL, Chiefly bituminous with about 6" of splint COAL 1 10½ Band black Shale with streaks of COAL 0 1½ COAL, bituminous and splint 1 7 Band hard black shale with coaly films 0 1½ COAL, chiefly bituminous with occasional layers of splint COAL 0 9 } Rathluba lower Seam	5	7	958	5	
Sandstone, clayey, carbonaceous	1	8			
COAL		3	960	4	
Sandstone streaked with black shale	24	8			
Sandstone black shale and clayey sandstone	3	4			
Sandstone, hard whitish grey, with a little black mudstone and shale	14	7			
Black coaly Shales with 2 inches of COAL	2	3			
Sandstone, fine carbonaceous, with a little mudstone and black shale	12	7			
COAL		10	1018	7	
Black sandy shale		8			
Sandstone, dark grey, with shaly partings	8	6			
Laminated black mudstone, with 3" clay ironstone and 6" of black shales full of thin partings of COAL	7	7			
Sandstone, rather hard calcareous, with a little black shale	11	6			
Dolerite, hard, dense	1	9			
Black shale & crushed COAL with calcite		8			
Black ferruginous mudstones streaked with sandy shale	8	10			
Sandstone grey calcareous, gritty in places with occasional coal pipes, with two layers of black shale 2½" & 1½" thick, and nodules of clay ironstone 9" thick near middle of bed	31	0			
Black mudstone and sandy shale with partings of Coal	3	5			
COAL calcined by dolerite with calcite in the joints		4			
Dolerite	9	6			
Total Depth			1102	4	

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

APPENDIX D.

EXPENDITURE in connection with the recovering of Core-barrel at Clarence Siding, exclusive of office salaries, store wages, &c.

No. of drill.	Locality.	Days occupied.							Cost.	Remarks.
		Moving.	Erecting.	Repairing.	Reaming.	Delays.	Holidays.	Total.		
7	Clarence Siding.....	.....	.....	247	13	.....	10	270	£ s. d. 605 6 10	

335—2 K

APPENDIX E.

EXPENDITURE in connection with the recovering of Core-barrel at Clarence Siding, inclusive of all office salaries, store wages, &c.

No. of drill.	Locality.	Wages.	Carriage.		Travelling expenses.	Repairs.	Diamonds used.	Stores issued.	Fuel, water, and sundries.	Proportion of balance of general account.	Proportion of balance of general stores issued.	Office salaries.	Store wages.	Rent.	Superintendent of Drills' travelling expenses.	Total	Remarks.
			Railway.	Other.													
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
7	Clarence Siding....	398 12 0	8 13 8	1 8 8	4 10 3	13 16 0	86 19 3	28 18 2	13 3 0	47 17 8	1 8 1	83 4 10	32 13 3	22 5 3	4 3 9	747 13 11	

The boring operations at Clarence Siding have been a great trouble and anxiety to me. As the core-barrel had several times been lost by the late engineer Goodare, I discharged him and put engineer Symons in charge for the purpose of discovering the lost core-barrel. Several obstructions, such as long and short bolts and short lengths of rods (no doubt put in by some person unknown) were brought to the surface; but finding the expenditure to be too much, I recommended the withdrawal of the drill, which was done.

J. S. McNEIL.
D. McCULLOCH.

W. H. J. SLEE, F.G.S.,
Superintendent of Drills.

APPENDIX F.

REPORT of Water-auger work for the year 1888, exclusive of office salaries, store wages, rent, and superintendent's travelling expenses.

No. of Machine.	No. of Bores put down.	Locality.	Days occupied.										Depths.			Rate bored per day.	Cost of Carriage.	Working cost, exclusive of Carriage.	Working cost, inclusive of Carriage.	Cost per foot.		Remarks.
			Moving.	Erecting.	Boring.	Baling.	Repairing.	Delays.	Holidays.	Tank sinking.	Constructing for storing water.	Total.	At 31 Dec., 1887.	Bored during year 1888.	Total.					Exclusive of Carriage.	Total.	
		Bourke to Wanaaring Road—											ft. in.	ft. in.	ft. in.	ft. in.	£ s. d.	£ s. d.	£ s. d.	£ . d.	£ s. d.	
	1	101½ mile bore		..	64	..	9	..	5	..	7	90	674 5	291 5	965 10	4 6⅝	9 10 0	284 9 10	293 19 10	0 19 6¼	1 0 2	As will be seen, 291 feet was put down this year. Fresh artesian water tapped at 851 feet; at 965 feet the rate of water increased, flowing over the surface at the rate of 22,464 gallons per day. See Report of 1887, where full Section is given.
		Wanaaring to Milparinka Road—																				
	1	106 mile bore	3	37	94	..	33	9	2	..	8	186	.....	655 1	655 1	6 11⅝	119 10 9	543 7 0	662 17 9	0 16 7	1 0 2⅞	Strata very hard; thick layers of quartzite and limestone were met with.
	1	121 mile bore	..	21	92	1	37	3	3	..	23	180	.....	502 10	502 10	5 5½	104 7 9	316 3 10	420 11 7	0 12 6⅞	0 16 8⅝	Bore hard, quartzite and limestone forming the principal parts.
	1	91 mile bore	8	19	49	1	14	6	2	..	4	103	... ..	71 11	71 11	1 5⅝	62 4 7	120 11 6	182 16 1	1 13 6⅜	2 10 10	Had to be temporarily abandoned, owing to severe drought, there being no water and grass.
			16	77	299	2	93	18	12	..	42	559	.....	1,521 3	.....	5 1	295 13 1	1,264 12 2	1,560 5 3	0 16 7½	1 0 6⅛	
	2	*Tibbooburra	66	5	102	..	52	..	..	..	9	234	.....	341 0	341 0	2 9⅞	407 2 9	329 13 4	736 16 1	0 19 4	2 3 2½	The apparently large rate per foot, with carriage added, is due to the boring plant having to be brought from Hay, over 500 miles, being £407 2s. 9d. But the cost without carriage is 19s. 4d. per foot.
	..	†Milparinka	20	6	22	..	..	1	1	4	..	54	.....	99 9	99 9	4 6	0 5 0	91 16 8	92 1 8	0 18 5½	0 18 5½	This is intended for artesian water.
			102	88	423	2	145	19	13	4	51	847	.....	1,962 0	.....	4 7⅝	703 0 10	1,686 2 2	2,389 3 0	0 17 2¼	1 4 4¼	

* Fresh water tapped at 150 feet, rose within 108 feet of surface. Very large supply. At the depth of 233 feet the water greatly increased. † The cost of the Milparinka bore, although included in the above statement, was defrayed by the Public Watering-places Branch, and the amount does not appear in the balance-sheet.

J. S. McNEIL.
D. McCULLOCH.

W. H. J. SLEE, F.G.S.,
Superintendent of Drills.

APPENDIX G.

SUMMARY of Water-augers, showing number of feet bored, total working cost to Department, and average cost per foot, for 1888.

No. of Auger	Locality.	Feet bored.	Wages.	Carriage.		Travelling expenses.	Repairs.	Stores issued.	Sundries.	Proportion of balance of general account.	Proportion of balance of general stores issued.	Office salaries.	Store wages.	Rent.	Superintendent of Drills' travelling expenses.	Total.	Cost per foot.
				Railway.	Other.												
	Bourke to Wanaaring Road—	ft. in.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
	101½ mile bore	291 5	258 12 0	2 6 10	7 3 2	.....	1 2 6	9 3 9	6 10 0	8 13 2	0 8 5	24 19 6	9 16 0	6 13 7	1 5 1	336 14 0	1 3 1½
	Wanaaring to Milparinka Road—																
	106 mile bore	655 1	453 12 8	32 13 0	86 17 9	10 9 3	17 18 4	27 11 3	6 10 8	25 19 7	1 5 3	74 18 4	29 8 0	20 0 9	3 15 5	791 0 3	1 4 1¾
	121 mile bore	502 10	255 14 0	30 12 3	73 15 6	12 9 11	5 18 6	18 7 6	5 10 8	17 6 5	0 16 10	49 18 10	19 12 0	13 7 1	2 10 3	505 19 9	1 0 1½
	91 mile bore	71 11	92 3 0	30 12 4	31 12 3	3 7 4	.....	12 5 1	0 14 0	11 10 11	0 11 2	33 5 11	13 1 3	8 18 1	1 13 6	239 14 10	3 6 8
		1,521 3	1,060 1 8	96 4 5	199 8 8	26 6 6	24 19 4	67 7 7	19 5 4	63 10 1	3 1 8	183 2 7	71 17 3	48 19 6	9 4 3	1,873 8 10	1 4 7½
	Tibbooburra*	341 0	301 4 0	.....	407 2 9	.....	7 14 0	.....	20 15 4	.....	.....	.....	.....	.....	.....	736 16 1	2 3 2½
	Milparinka†	99 9	91 16 8	.....	0 5 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	92 1 8	0 18 5½
		1,962 0	1,453 2 4	96 4 5	606 16 5	26 6 6	32 13 4	67 7 7	40 0 8	63 10 1	3 1 8	183 2 7	71 17 3	48 19 6	9 4 3	2,702 6 7	1 7 6½

* The large item in carriage, £407 2s. 9d., has considerably increased the rate of boring at per foot for the first two bores at Tibbooburra, but should other bores be put down in the district the rate at per foot will be considerably lessened.

† The cost of the Milparinka bore, although included in the above statement, was defrayed by the Public Watering-places Branch, and the amount does not appear in the balance-sheet.

J. S. McNEIL.
D. McCULLOCH.

W. H. J. SLEE, F.G.S.,
Superintendent of Drills.

APPENDIX H.

DIAGRAMS Nos. 1 TO 6.

WATER AUGER SECTIONS.

SUPERINTENDENT OF DRILLS' REPORT.

(335-2L)

APPENDIX H

Diagram I.

Section of Bore
№ 2 Water Auger
at 106 Mile Post
Road Milparinka to Wanaaring

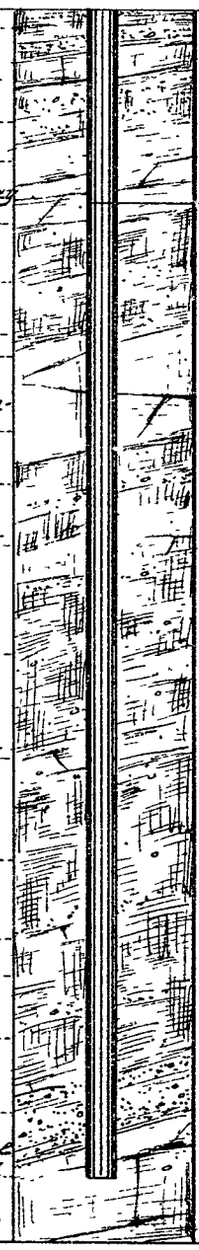
Thickness of Strata ft.	in.	Nature of Strata	Borehole	Height Water rose from point of tapping	Quality	Depth Water tapped ft.	in.
14	6	Shaft					
10	6	Hard cement sand					
17	9	Yellow sandstone					
40	3	White sand drift					
25	6	Pipeclay					
2	0	White shale		26 ft.			
29	0	Clay (various colours)			FRESH	126	0
23	0	White shale & yellow sandstone					
2	6	Ironstone band					
25	6	Sandstone with ironstone bands					
12	0	Bluish sandstone					
26	0	Limestone & blue sandy clay					
12	0	Hard sandstone & clay					
6	0	Fine sandy clay					
109	6	Blue clay					
43	3	Blue shaly clay					
2	3	Hard limestone					
15	0	Fine sandy blue clay					
16	6	Hard limestone boulder					
74	10	Blue clay & light sandstone					
1	4	Hard limestone					
77	0	Greenish blue sandstone, with shells and decomposed vegetable matter					
41	6	Blue sandstone					
3	0	Blue sand & boulder					
1	11	Boulder, limestone					
21	0	Blue sand & black clay					
1	6	Limestone boulder					
655	1	Depth bored to 31st Dec. 1888.					

Note:- Water, fair quality, tapped at 126 feet, rose to within 100 feet of surface Supply, small.

Water channels passed through a few feet above this, but neither the strata or tools indicated the presence of water.

APPENDIX H. Diagram 2.

Section of Bore
No 3 Water Auger
at 121 Mile Post
Road Milparinka to Wanaaring

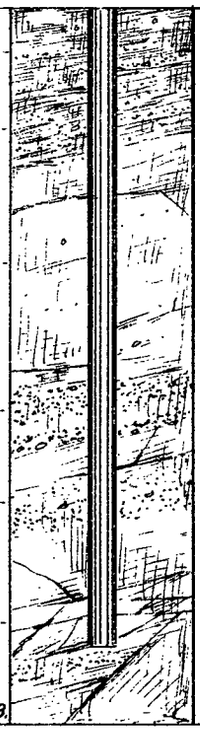
Thickness of Strata ft.	Thickness of Strata in.	Nature of Strata	Borehole	Height Water rose from point of tapping	Quality	Depth Water tapped ft.	Depth Water tapped in.
11	7	Shaft					
6	7	Sandy clay					
13	10	Sandstone					
23	3	Sandy clay, light					
19	0	Quartzite rock					
7	5	White sandstone & pipeclay			FRESH	81	0
9	1	Pipeclay					
44	3	White yellow clay					
3	4	Sandstone					
4	8	Yellow clay, stiff					
48	9	Blue sandstone & iron-stone					
23	10	Blue sandy clay					
28	11	Blue clay & grey rock					
71	8	Blue clay					
7	0	Blue clay & grey rock					
74	6	Blue clay					
	5	Limestone rock					
32	7	Green sandy clay					
33	1	Blue clay					
33	0	Blue sandy clay					
5	1	Blue clay & limestone					
1	0	Limestone rock, hard					
502	10	Depth bored to 31st Dec. 1888					

Note:- Fresh Water tapped at 81 feet, supply, 20 gals. per day.

APPENDIX H

Diagram 3.

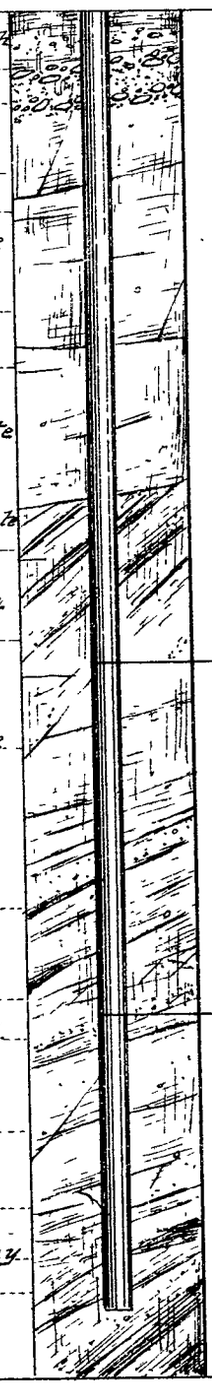
Section of Bore
№ 7 Water Auger
at 91 Mile Post
Road Milparinka to Wanaaring

Thickness of Strata ft.	in.	Nature of Strata	Borehole	Height Water rose from point of tapping	Quality	Depth Water tapped ft.	in.
10	0	Shaft					
7	3	Red sandy clay					
23	2	Red cement rock					
3	5	Red rock & yellow sand					
23	9	Yellow sand and white sandstone					
4	4	Quartzite rock					
71	11	Depth bored to 31st Dec. 1888.					

APPENDIX H. Diagram 4.

Section of Bore № 1
№ 11 Water Auger
at Tibbooburra

Thickness of Strata ft.	in.	Nature of Strata	Borehole	Height Water rose from point of tapping	Quality	Depth Water tapped ft.	in.
15	0	Loamy soil, gravel wash & boulders					
7	0	Cement & boulders					
18	0	yellow sandstone & slate					
3	10	Hard flinty rock					
9	0	yellow sandstone					
18	0	Blue slate					
5	0	Light sandstone					
31	0	Quartzite & blue slate					
11	10	Sandstone, quartzite & Blue slate					
27	0	Grey sandstone & blue slate		Rose 42 ft.	FRESH	150	0
31	0	Grey sandstone					
40	10	Blue slate		Rose 113 feet.			
	6	Quartzite			FRESH	233	0
14	0	Blue slate, hard					
31	3	Grey rock					
2	0	Quartzite					
5	6	Blue slate					
6	0	White swelling clay					
11	3	Blue slate					
288	0	Total Depth					



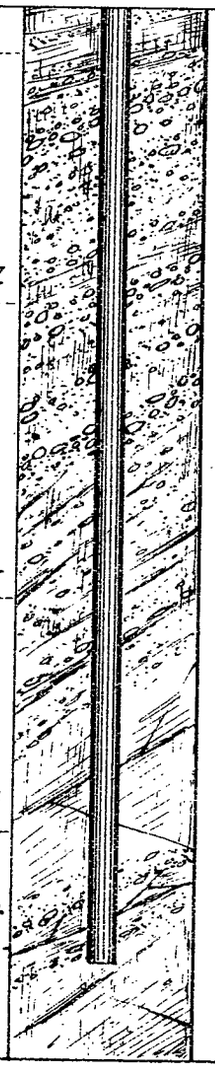
Note:- Fresh Water tapped at 150 feet, rose to within 108 ft. of Surface very large Supply.

Fresh Water tapped at 233 feet, rose to within 120 ft. of Surface Supply 10,000 gallons per day.

APPENDIX H.

Diagram 5

Section of Bore № 2
№ 11 Water Auger
at Tibbooburra

Thickness of Strata ft.	in.	Nature of Strata	Borehole	Height Water rose from point of tapping	Quality	Depth Water tapped ft.	in.
4	0	Surface loam					
21	0	Gravel wash and boulders					
15	0	Yellow slate sediment					
10	0	Hard rock & blue sediment					
3	0	Bands quartzite & yellow sediment					
53	0	Depth bored 1888					

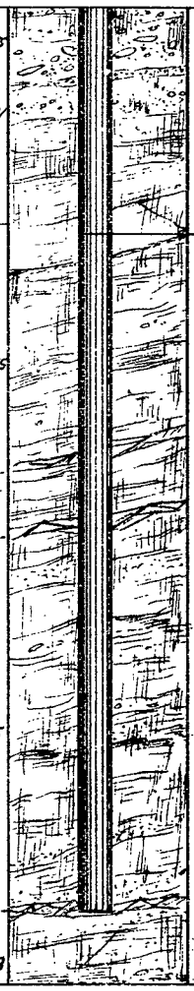
APPENDIX H

Diagram 6.

Section of Bore № 1

№ 11 Water Auger

at Milparinka

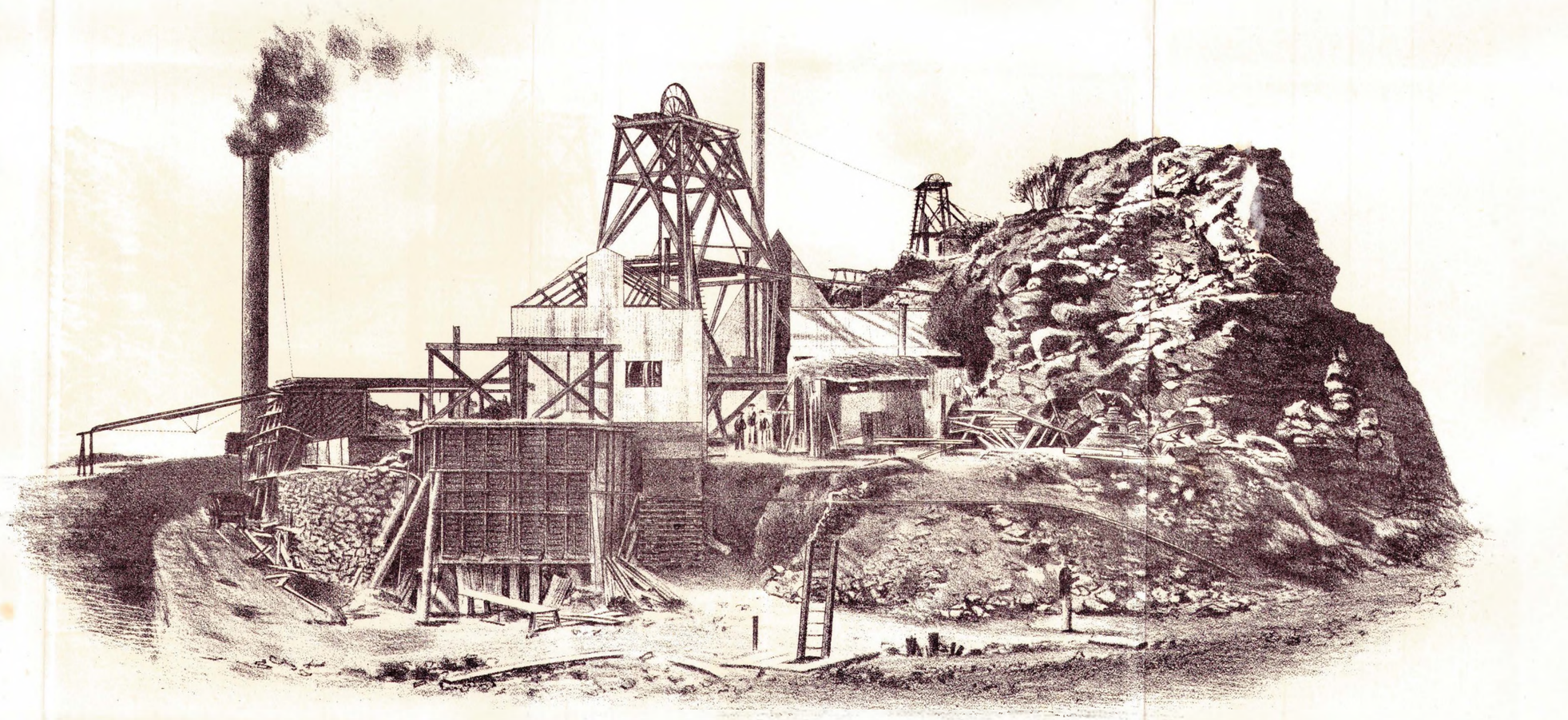
Thickness of Strata ft.	in.	Nature of Strata	Borehole	Height Water rose from point of tapping	Quality	Depth Water tapped ft.	in.
6	0	Gravel wash & boulders					
13	0	Gravel wash & Blue clay					
10	0	Sandstone		→	SALT	25	0
21	0	Hard cretaceous clays					
1	0	Quartzite					
6	6	Hard cretaceous clays					
	9	Quartzite					
41	0	Hard Cretaceous Clays					
	6	Quartzite					
99	9	Depth bored to 31st Dec. 1888					

Note:- Salt Water, (small supply) tapped at 25 feet.

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

Plate N° I.*

BROKEN HILL PROPRIETARY MINE



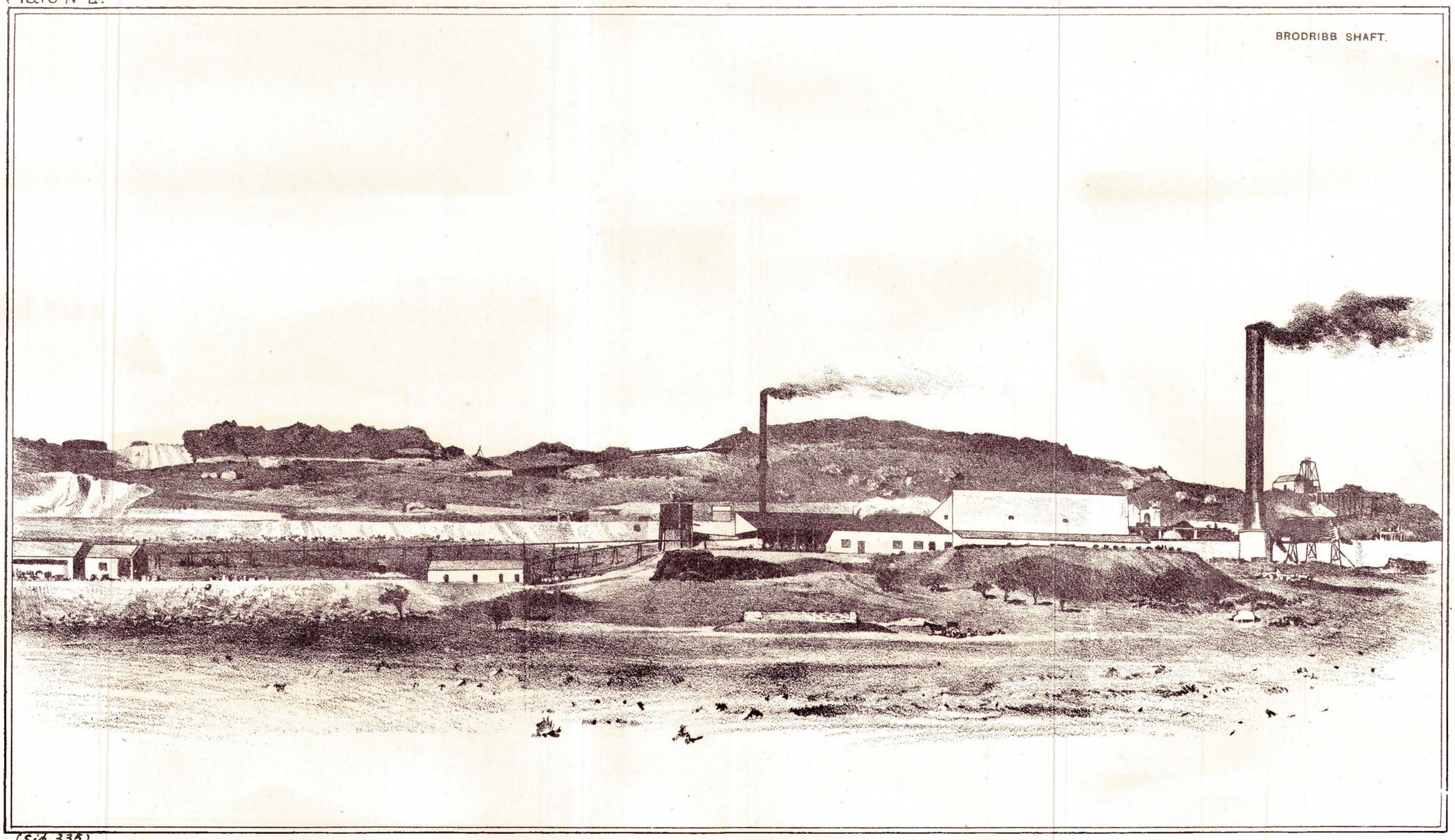
(S.G. 335)

VIEW OF JAMIESON SHAFT WITH BRODRIBB SHAFT IN THE DISTANCE.

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

BROKEN HILL PROPRIETARY MINE

Plate N° 2.**



(Sig. 336)

GENERAL VIEW OF THE NEW SMELTING WORKS—Consisting of the Three 80-ton Furnaces.

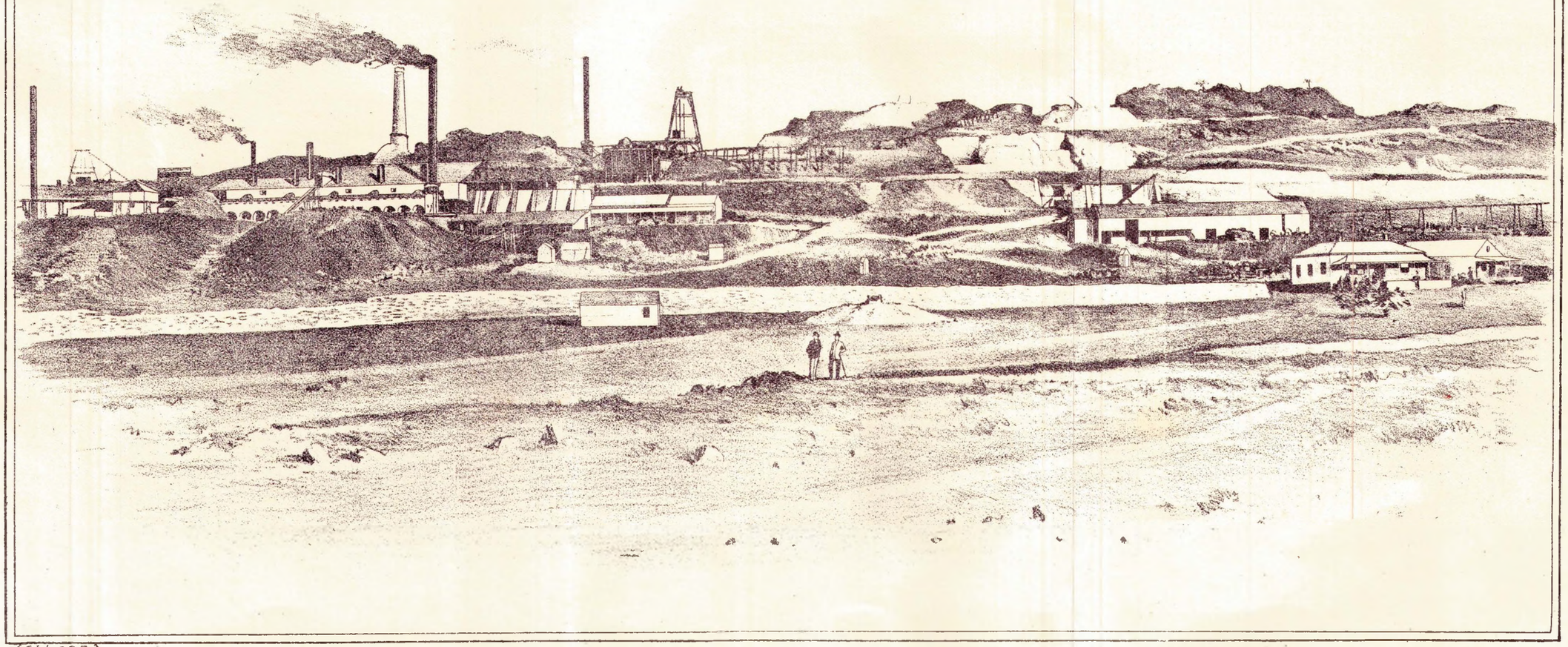
PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

BROKEN HILL PROPRIETARY MINE

Plate N°3

RASP SHAFT.

McCULLOCH SHAFT.



(Sig. 335.)

GENERAL VIEW OF THE OLD SMELTING WORKS—Consisting of the Five 30-ton Furnaces.

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

APPENDIX J.

INDEX TO WELLS.

SUPERINTENDENT OF DRILLS' REPORT.

Number of Well	County	Parish	Name of Run	Depth of Well	Size of Well	Water struck at feet from surface	Water stands at feet from surface	Yield per day in gallons	Quality	Height above sea
					ft ft					
1	Arrawatta		King's Plains	70	5½ x 5½	65	65	Never-failing	Brackish	
2	,,		,,	90	8 x 4		9	,,	,,	
3	,,		Swamp Oak	45	6 x 4		21	,,	,,	
4	,,		,,	40	6 x 4		4	,,	,,	
5	,,		Byron	21	4 x 4	20	15	,,	Slightly brackish	
6	Macquarie		Cutarbat	50	Circumference 8		25		Fresh and hard	
7	,,		Huntington	101	Circumference 8		71		Hard	
8	Manara		Kilfera	189	5 x 2½	80	80	50,000	Good stock	
9	,,		,,	162	5 x 2½	50	60	Unlimited	Salt	
10	Franklin		Moolbong	110	6 x 3		100	20,000	Good and fresh	
11	,,		,,	250		115 & 250		Unlimited.	Fresh	
12	Windeyer		Buckalow	150	6 x 4	130	110	24,000	Slightly brackish	
13	Taila ...		Malee Cliff	70	5 x 3					
14	,,		,,	18	5 x 3½	15	12	3,000	Slightly brackish	
15	,,		Bedura							
16	Wentworth		Gall Gall							
17, 18, 19	Taila		O B Turlee							
20	Wentworth		Gall Gall C	75 to 150					Salt	
21, 22	,,		West Perengi, A							
23 to 27	,,		Wamberrar							
28 to 34	,,		Outer Tapio							
35 to 37	,,		Octer Tilato							
38	Menindie		Burta	280	6 x 3	270	250	Not tested	Good stock	
39	Windeyer		Mallara	64	6 x 3	64	20	,,	Salt and poisonous	
40	Perry		Mooiara	100	6 x 3	82	82	17,500	Good stock	
41	,,		Pan Ban	100	6 x 3	80	80	Unlimited	Fair stock	
42	,,		North Pan Ban	78	6 x 3	78	75	8,000	,,	
43	Rankin		Barnato	150	6 x 3	135	135	5 000	Good stock— Slightly sweet	
44	,,		,,	200	6 x 3	190	140	7,000	Good stock	
45	Woore		Fulham	175	5 x 2½	169	168	3,296	,,	
46	,,		Moama	170	6 x 3	170		3,000	Very brackish	
47	,,		Baden Park	200	6 x 3			6,000	Good stock	
48	,,		Emerald	140	6 x 3	126			,,	
49	Booroondara		Paddington	200	8 x 4			5,000	Brackish	
50	Woore		Warfield	220	6 x 3			6,000	Good stock	
51	Blaxland		Bedooba	300		300	115		Good and fresh	
52	Mouramba ...		Priory	230	8 x 4				Good stock	
53	Canbelgo		Booroomugga	100	6 x 3½					
54	,,		Girilambone	155½	Bore	155	128		Good stock	
55	,,		,,	120	,,	116	105		Very salt	
56	,,		,,	100	,,					
57	Rankin		Donald's Plains A.	160	6 x 3		133	4,000	Fresh	
58			Mount Manara							
59	Booroondara		Donald's Plains I	90	4 x 2½			Limited	Fresh	
60	Cowper.		Coronga Peak	120	6 x 3			,,	Good stock	
61	Finch		Goondoobline	50	6 x 6	35	35	Not tested	Fresh	
62	Leichhardt		Polly Brown	20	6 x 5	18	10	1,000	Good and fresh	

J.

WELLS.

Nature of surrounding country.	Strata.	Remarks.
N., granite ridges; E. S., and W., ridges and plain.	Black soil, granite, rotten slaty bottom.	This well is only used in time of drought.
Forest, plain, and ridges, chiefly white gum timber.	Black soil, rotten granite and pipe-clay.	Water stands 5′ from the top in wet seasons.
N., barren ridges; E. and W., do.; S., forest and ridge.	Top brown soil, then basalt to bottom	
. . . . .	... .	In a wet season overflows.
Black soil plains and open forest country.	Black soil 15′, basalt 6′.	
Undulating, ridges running into rocky mountains.	Black alluvial soil, pipeclay, and slate rock.	The well is believed to be down to the level of river water. The water is hard, but used for household purposes.
Low ranges, with creeks running to river.	Soft slaty rock..	Sunk on a low ridge, believed to be down to level of river water; used for household purposes.
Salt bush plains, lignum, S. side ...	. . ..	Salt at 80′; got much better as we went deeper; last spring struck almost fresh, 100′ open shaft, 89′ bore, 3½″ diameter.
,, ,, ...	Gypsum, sandstone, and clay .	Salt at 50′; improved slightly when bored; open shaft 100′, bore 62′.
Salt and cotton bush, dark clayey soil.	Alluvial	Selection of site for well a matter of chance in some parts of Riverina. Good stock water is obtained at a depth of 100′ to 130′; in other parts two wells within 1 mile of each other salt water was obtained; midway between another shaft was put down and good water obtained.
,, ,, .. .	,,	
Broken plains	Alluvial, 120′ pipeclay and drift 30′..	This well is in a sandy box swamp, and gives one of the best supplies in the district; other shafts have been tried in the Mulga country and failed to strike water; two of them sunk 220′.
S., mallee and porcupine grass; W., N., and E., black oak.	Loamy soil 15′, drift sand 55′.	
Pine ridges, mallee, porcupine grass, and saltbush.	... .	This well is covered by the Murray water when in flood.
Red sandy soil or clay on saltbush plains. Red sandy soil in belar or oak scrub Red sandhills in mallee .. .. Red clayey soil in box flats .. .. .. White clay flats, with box timber	. . . .	One well on Gall Gall, C, we pumped for a considerable time in the summer, hoping the water would improve, but it did not do so. Have several soakage wells, with good stock water, all at shallow depths of not more than 20′, all sunk in the beds of dry creeks where the flood waters back up, and all within 5 miles of the river; the supply is not good, and are only made useful by making large chambers and drives at bottom of shaft.
Salt and cotton bush, light scrub, and undulating.	Hard clay, with gravel 100′, alluvial 80′, pipeclay and mica 30′, soft sandstone rock and clay 70′.	Open shaft 200′, bore 80′. This well is to be sunk to full depth of bore, when the supply is expected to increase. A Tiffen borer was used.
Sandhills and oak ridges, like decomposed limestone.	Pipeclay and drift	A good many trial shafts have been sunk on this run, salt water being struck in drift under 100′ in all of them.
Open salt and cotton bush plains, with oak clumps, &c.	Alluvial 82′, fine drift 18′	Have sunk fifty trial shafts on different parts of run, from 80′ to 100′; salt water struck in all; unfit for use.
Open saltbush plains, with oak ridges, &c.	Clay throughout	50,000 gallons per day have been obtained, but the supply seems practically inexhaustible; slightly brackish.
.. ,, ,,	Alluvial 20′, fine drift 58′.....	Cool, cloudy weather seems to increase the supply.
Sandstone ridges; red clay flats; mulga pine; beefwood.	Alluvial gravel, cement and sandstone rock.	There is a 30′ drive in this well.
Pine sandhill; mulga and belar ridges	Gravel and cement 100′, sandstone 60′ cement and blue clay 40′.	,, ,, ,,
Loamy flats, rocky ridge, and malee sandhills.	Loam, clay, and cement 167′, drift 8′	8 miles from this well a trial shaft was sunk 188′; no water struck; half-a-mile from the above well a shaft 6′ x 3′ was sunk to a depth of 96′, then a bore 130=226′, no water being struck; boring still going on.
Box flats and pine sandhills.... ..	Alluvial 100′, sandstone flags 70′, water in blue clay.	
Red clay flats and pine sandhills ...	Cement and sandstone.	
Open mulga, with ridges of malee ...	Hard sandstone 69′, chalk 1′, hard sandstone 70′.	The sandstone rock in this well required to be blasted; it is intended to put a drive in this well to increase the supply.
Ironstone rises; box flats; mulga; &c.	Alluvial pipeclay, cement, and sandstone rock.	
Red flats and pine sandhills	Pipeclay and cement, hard sandstone.	
Undulating	Blue slate	This well was sunk before present owners bought station. There are two long drives at bottom, not required for use.
Undulating barren and box flats and ironstone rises.	Cement and hard sandstone, water in sandstone.	
Undulating ridges; volcanic hills . .	Red clay 3′, red sandy drift 4′, coarse red drift 6′, red clay 7′, white sandy rock 10′, pipeclay 3′, white sandy rock 12′, fireclay 4′, white sandy rock, with occasional thin strata of fire and pipe clay 51′.	This well is not yet finished.
... .	Hard sandstone, rock, cement, quartz, and gravel.	
. ...	Quartz, gravel, and hard sandstone..	A shaft put down here would make 6,000 gallons per day
. ...	Hard slate, quartz, and hard rock, &c.	
... .	Pipeclay and cement	This well is in the bed of Tiltagoona Creek.
. . . .	....	Government well condemned as being unfit for stock. A well half-a-mile to the N.W., good water, supposed to be soakage.
Cottonbush, mulga rises, and sandstone hills.	Pipeclay, cement, and layers of drift	This well has never been used for stock purposes, owing to a 10,000-yard tank full of water in the vicinity.
Undulating, red, volcanic hills and mulga.	.....	Not required to be used.
Sandy pine ridges, then open box flats	Sand	
Buthar and pine timbers, small clear patches of saltbush.	White loose sand	This well was cleared out in the dry time, and it watered the whole of the stock on the place in the summer of 1881 and 1882.

Number of Well.	County.	Parish	Name of Run.	Depth of Well.	Size of Well.	Water struck at feet from surface.	Water stands at feet from surface.	Yield per day in gallons.	Quality.	Height above sea.
					ft. ft.					
63	Finch	...	Gingie ...	25	7 x 7	20	20	Limited	Good ...	...
64 to 78	Leichhardt ...	...	Euroka ...	45 to 68	...	...	...	...	Saline ...	...
79	Finch	...	Dungalear ...	120	...	100	80	...	Salt, unfit for stock	...
80 to 88	,, ...	...	,, ...	20 to 40	...	...	...	...	Fresh	...
89	, ...	...	Llanillo ...	45	6 x 4	...	...	...	,, ...	...
90	,, ...	...	,, ...	45	6 x 4	...	...	...	Salt ...	...
91	,, ...	...	,, ...	55	6 x 4	...	...	2,000	,, ...	...
92	,, ...	...	,, ...	45	6 x 4	...	...	...	,, ...	...
93	,, ...	...	,, ...	40	...	...	...	1,000	Fresh ...	...
04	,, ...	...	,, ...	60	...	...	...	1,000	,, ...	...
95	,, ...	...	,, ...	35	6 x 4	...	...	600	...	...
96	,, ...	...	,, ...	35	6 x 4	...	...	600	...	...
97	,, ...	...	,, ...	38	4 x 3	...	...	...	...	...
98	,, ...	...	,, ...	60	...	...	...	...	Salt ...	...
99	,, ...	...	,, ...	50	6 x 4	...	...	...	,, ...	...
100	Cowper ...	...	Glenariff ...	109	...	...	49	...	Fresh ...	...
101	,, ...	...	,, ...	209	...	...	101	...	Brackish ...	...
102	,, ...	...	,, ...	330	...	...	...	...	Salt ...	...
103	Killara ...	...	...	144	...	...	Artesian	60,000	Fresh ...	...
104	Landsborough	...	...	49	...	...	,,	20,000	,, ...	...
105	Mossgiel ...	...	...	360	...	...	180	...	,, ...	...
106	,, ...	...	...	312	...	...	...	...	,, ...	...
107	Gunderbooka	...	...	194	Bore	72′ 6″	10	...	Salt ...	...
108	,,	...	...	133	,,	198	38	...	,, ...	...
109	Barrona ...	...	...	114	,,	80	Artesian	440	Fresh ...	...
110	,, ...	...	...	201	,,	192	,,	...	,, ...	...
111	,, ...	...	...	474	,,	427	,,	...	,, ...	...
112	Pottinger ...	...	...	53	,,	40	...	...	,, ...	...
113	,, ...	...	...	25	,,	23	...	...	,, ...	...
114	,, ...	...	...	23	,,	23	...	...	,, ...	...
115	,, ...	...	...	41	,,	28	...	...	,, ...	...
116	,, ...	...	...	60	,,	57	...	...	,, ...	...
117	,, ...	...	...	41	...	38	...	...	,, ...	...
118	,, ...	...	...	30	Bore	27	...	...	,, ...	...
119	,, ...	...	...	48	,,	38	...	...	,, ...	...
120	,, ...	...	...	34	,,	24	...	...	,, ...	...
121	,, ...	...	...	132	,,	70	...	9,600	,, ...	...
122	Murchison ...	...	Bingera ...	80	...	80	...	...	,, ...	...
123	Couralie ...	Near Moree ...	...	130	...	130	90	...	,, ...	...
124	Denham ...	...	Gorion ...	174	...	174	78	24,000	,, ...	...
125	,, ...	...	,, ...	188	...	164	90	576	,, ...	...
126	Yancowinna ...	Near Silverton	...	40	...	40	...	...	,, ...	...
127	Delalah ...	...	Elsinora ...	390	Bore	370	...	Unlimited	,, ...	...
128	Clarence ...	...	...	184	...	126	...	...	Salt ...	...
129	Pottinger ...	...	...	78	...	...	54	...	Fresh ...	...
130	,, ...	...	...	82	...	77	62	...	,, ...	...
131	,, ...	...	...	81	...	81	4	...	,, ...	...
132	,, ...	...	...	90	...	...	...	...	,, ...	...
133	,, ...	...	...	136	...	...	85	...	,, ...	...
134	,, ...	...	...	60	...	...	35	...	,, ...	...
135	,, ...	...	...	40	...	...	28	...	,, ...	...
136	,, ...	...	...	70	...	...	60	...	,, ...	...
137	,, ...	...	...	71	...	...	41	...	,, ...	...
138	,, ...	...	...	40	...	...	...	...	,, ...	...
139	Robinson ...	...	...	640	...	579	...	...	,, ...	...
140	North'berland	Awaba ...	Teralba ...	568	Bore	197	Artesian	...	,, ...	22
141	Mootwingee ...	...	Morden ...	153	,,	153	100	...	,, ...	...
142	St. Vincent ...	...	...	850	,,	...	Artesian	...	,, ...	...

Nature of surrounding country.	Strata.	Remarks.
Open, red and black soil	Sand	This well is a simple sand-pocket, surrounded by clay, and catches the drainage of the adjacent hard ground; the supply is always limited, and if sunk too far salt water is struck.
		Fifteen bores by machinery on various portions of this station struck water in each of the first sand-drifts met with; further attempts at finding fresh water abandoned.
Very level, loamy soil		The only fresh-water wells here are small sand wells, no springs being tapped; would do for household purposes, or (say) 1,000 sheep.
	Sand	There are nine sandy wells, with only a limited supply of splendid clear fresh water; not sufficient to water any large number of stock; might be made available by having a receiving tank kept full for use in troughing; they are soon pumped dry, and take a considerable time to fill again; they are all in sand hollows, and fresh water is indicated by gum-trees growing in vicinity; if sunk too deep a clay bottom is struck, and continued through that for any distance salt water would be struck.
Belar and saltbush plains, loamy and sandy soil.		
Sandy basins, box, coolabar, &c.		
,, ,,		
Pine scrub and box flats		
Same		
Sandy soil, pine scrub, and saltbush		
Red soil, N.W. plains; S.E. pine ridges.	Drift sand.	
Red soil, ridges, pine and coolabar		There is a vein of country running from the Moonio River down to the lower Narran Lake, between the Narran and Barwon Rivers; it consists of sandy basins and low pine ridges, where water can be obtained at various depths from 20′ to 40′, in some places salt, in others fresh; on a portion of Llamillo Run there are two wells 30′ apart, one fresh wholesome water, the other barely fit for consumption; the supply influenced by the rainfall.
	Granite	Pumped with an Althouse windmill; waters 20,000 sheep.
	,,	Pumped 1,500 gallons per hour; mill and pump never without water.
	Slate	Boring being continued, a Wright and Edwards' machine being used.
		Rises 26′ above surface in tube.
	Sandstone 40′, clay 24, clay and sand 130′,	Water also struck at 22′, 60′, 64′ 6″, 66′, and 69′, all salt.
	Sandstone 20′ 9″, clay 39′ 3″, clay, sand, and drift 138′.	Salt water struck at 12′ and 24′. Fresh water at 31′, 32′ 6″, 45′, 53′, and 55′. Salt water struck at 198′, hard sandstone and conglomerate, and rose to 38′ very quickly.
	Clays 20′, mud and drift, 43′, clays 20′, sandstone, 31′.	Salt water struck at 20′; a large supply. Fresh water at 80′, rose 21′ over surface,
	Clay and sand 82′, sandstone 105′, shale, granite, pebbles, rock, &c., 14′	Fresh water struck at 80′, 100′ rose 8′ over surface, 80 gallons per hour; 107′, rose 8′ over surface; 122′ 6″ over surface, 600 gallons per hour; 192′ rose 10′ over surface.
		Salt water struck at 110′, rose to within 23′ of surface; 349′, brackish, rose 3′ over surface; 427′, fresh water, rose to 3′ 3″ over surface.
	Clay and gravel.	
	Clay and sandy loam 20′, drift 5′.	Large supply.
	Sandy loam and clay 20′, drift 3′.	
	Clay, sand, and gravel.	
	Clay and gravel 57′, rock 3′.	
	Sand and gravel	Very good water.
	Loam, clay, gravel, and boulders.	
	Sand, clay, and gravel.	
	Clay, drift, and clay	Large supply.
	Sand and gravel, clay and rock	Water tapped at 32′, and at 70′; large supply.
		Plentiful supply.
	Clay, sand, and drift	Salt water at 80′; brackish, 142′; fresh, 174.
	,, ,, ,,	Salt water at 80′; brackish, 141′; fresh, 164.
		150 gallons per day, after striking the water expected to increase to 1,000 gallons.
		Strong supply. Coal struck at 184′.
Black soil, flat	Soil 18′, rock 60′	Short supply.
	Red soil 77′, 5′ sand	Water in sand inexhaustible.
Level plain	Soil 34′, sand 1′ 8′, marl 45′ 4″	Water in gravel good. At 80′ kangaroo bones and bivalve shells.
	Pipeclay at surface. Unknown.	Overflowed once in consequence of ringbarking.
	Black soil 40′, stones, &c., 10′, red soil 30′, cement 5′, gravel, &c., 51′.	
Open plain	Loam, 45′, drift, 15′.	Good water.
,,	Black soil, 12′, clay and gravel, 16′, sand, 12′.	Water abundant.
Ironbark country	Black soil, 65′, sand, 5′	Supply excellent.
Black soil	Black soil, 7′, rotten rock, 64′	Excellent and good supply. Came through fissure in rock.
		Water supply in sand abundant.
		Bore, 75′ 10″ at bottom of shaft—Cobar Copper Mine. Water in slate.
	Shale, conglomerate, sandstone and coal seams.	
	Turf, sandy clay, gravelly clay, loose and compact sand and chalk.	Water struck at 47′; small supply; 116 ft. larger supply; at 153′ abundant supply, all fresh.

Number of Well	County	Parish	Name of Run	Depth of Well	Size of Well	Water struck at feet from surface	Water stands at feet from surface	Yield per day in gallons	Quality	Height above sea
					ft ft					
143	Cumberland	Gladesville		442	Bore	336	8		Fresh ...	27
144	,,	,,		365	,,		8		,,	27
145	Young			255	,,	218	70		Salt	
146	,,			128	,,	121	105	1,440	Fresh	
147										
148	Young			35					Salt	
149	,,		Netallie	104					,,	
150	,,			135				19,200	Fresh	
151	,,			135						
152	,,			404				720	,,	
153	Tandora		Glenlyon	240				20,000	,,	
154	,,			40					,,	
155	Yancowinna			150					,,	
156	,								,,	
157	,,			80					,,	
158	,	Silverton		100		93			,,	
159	,	,,		100					Salt	
160	,,	,		100				4,200	Fresh	
161	,,	,,		14					,,	
162	Waradgery		Mundagal	110			65	20,000	,,	
163	,,		,,	108			65	20,000	,,	
164	,		,,	70			65	40,000	,,	
165			Illilwah	137		137	60		,,	
166	,,		Ulonga	121			86		Salt	
167	,,		,,	75			65		,,	
168	,		,,	75			65		,,	
169	,,		,,	110			75		,,	
170	,		,,	87			75		,,	
171			,,	100			80		,,	
172	,		,,	110			60		,,	
173	Uiana		T S Reserve	141			111	7,500	1st class stock	
174	Denison		,,	131			112	7,500	,	
175	Waradgery		,	90			75	7,500	Brackish	
176	Nicholson		,,	94			67	8,000	Salt	
177	Walgeirs			130			110	10,000	Sweet	
178	Mossgiel		,,	140			90	Unlimited	Brackish	
179	Walgeirs		,,	130			101		1st class stock	
180	Baroona		Kerribee	200		180			Fair stock	
181	,		Wanga Wana	400		20			Salt	
182	Killara		Killara	734					,,	
183	Buradine	Buradine Township		122			108		Fresh	
184	White		T S Reserve	76			30	14,400		
185	Pottinger		,,	101						
186	,,		,,	97						
187	Manara		,,	126			97		Fresh	
188	,,		,,							
189	,,		,,							
190	Young		,,							
191	Yungnulgra		,,							
192	,		,,							
193	Yantara		,,							
194	Tonkowoko		,,							
195	Blaxland		,,	167			161	Unlimited	Fresh	
196	,		,,	136			118	10,000	,	
197	Sturt		,,	107			56		,	
198	Nicholson		,,	106			100		,,	
199	Franklin		,,	135					,,	

Nature of surrounding country	Strata	Remarks
	Conglomerate sandstone and shale.	
..	Sandstone and shale.	
	Clay, drift, and drift sand	Water also struck at 120′, rose to 70′ at the rate of 70 gallons per hour, at 196½′ also struck, rises to 75′, small supply; at 235′ drift sand, rises 100′ in tubes.
	Sand, clay, and drift	At 111′ good stock water rose to 105′, 720 gallons per day.
	Loam, 9′, clay, 30′; drift, 1′; stones, clay, &c, 47′; sandstone, 17′.	Well 90′, bore at bottom 14′, water poisonous.
	Loam, clay, sand, and drift	Good stock water.
	Drift, 100 ft, rock	Shaft 236′; bore 168
	Loam, clay, stone, drift, and sandstone	
		Soakage water magnesian
	Granite formation	Little water, but good
		Will water 2,000 sheep Fair stock water
	Sandy loam and mica slate.	
		24′ of drives 10′ from bottom First 600 gallons only fit for drinking
		Soakage water. Will water 10,000 sheep
		Good supply, struck small supply at 60′; shaft, 90′; bore, 47
		Struck large supply at bottom of bore.
		Water slightly salt
		Supply approximate
		Nearly completed
		Small supply
		Very little water struck at 20
		Not finished No water
		,, ,, ,,
		Not finished
		,, ,,
		,, ,,
		,, ,,
		,, ,,
		,, ,,
		,, ,,

APPENDIX J—*continued.*

INDEX to Wells and Bores—*continued.*

No.	Locality.	District	Strata	Remarks.
200	Youngarrina Springs.	Albert	..	Well 6 ft. deep; estimated 800 to 1,000 gals. good water per diem.
201	M'Crae's Well, Baongum-yarra.	,,		Well 27 ft. deep; 8 or 9 ft. in rock; good supply for stock; too brackish for domestic purposes.
202	Buckley's Well, Yantabulla	,,	Bottom on sandy drift	Well 40 ft. deep; water fairly good, but slightly impregnated with soda; daily yield about 150 gallons.
203	Rudder's Well, Warroo Station.	,,		Well 20 ft. deep; water rose 10 ft.; very salt.
204	Tyngamie Spring	,,		Well 40 ,, excellent water; estimated at about 10,000 gallons per diem.
205	Brindingabba, Moolort Block.	,,		Well 94 ft. deep; watered 12,000 sheep through drought; excellent quality.
206	,, ,,	,,		Well 120 ft. deep; water excellent; rose 90 ft. in shaft.
207	Kilfera, on Kilfera Block	,,		Well 150 ,, supply 100 gals per diem; good water.
208	Kenmare Block	,,		Well 38 ,, bore 197 ft.; water salt.
209	,,	,,		Well 35 ,, water very salt; very bitter; no supply.
210	Kilfera Block	,,		Well 100 ,, said to contain powerful mineral poison.
211	Polygonum Hut	Darling		On road Booligal to Wilcannia.
212	Barringan Well	Albert		On the "Border Run."
213	Wanganilla	Murrumbidgee		On South Wanganella Block.
214	Pretty Pine	,,		Lower Denilquin Run.
215	Beefwood Well, on "The Wells" Block	County Yungnulgra, Albert District.		
216	New Well, on Block Byjerk South, Paroo River	County Landsborough, Albert District		
217	Well	County Yungnulgra, Albert District.	Coolawundy	Well 157 ft. deep; good water.
218	Well, Block Germono East	County Yungnulgra	Coparto	Well 50 ,, water rises to 20 ft
219	Junction Well, Germano East	Albert		Well 80 ,, good water rises to 50 of surface.
220	Danbery Well, Danbery North Block	,,		Good stock-water
221	Minamithtoo Well, Dil koorba North Block.			300 ft. deep; good water rose to 65 ft. from surface.
222	Parkungi Block	Albert		298 ,, good water rose to 80 ft. from surface.
223	Well		Poolamacca	236 ,, good water.
224	Thackaringa Well	Albert		236 ,, ,,
225	Wanga Well	,,		270 ,, ,,
226	North Ita Well			240 ,, ,,
227	Melang West Well			20 ,, ,,
228	Moredevil Station	Liverpool Plains		Artesian fresh water
229	Myalmundi	Narromine		194 ft deep; good water.
230	Gap Well (45 miles west of Cobar)	South Warego		Salt.
231	Top Well, Newcombe	Muggaie Back B Block		70 ft. deep, good water.
232	Dungle Well (5 miles north of previous well).			70 ft, good for stock; at 75 ft, salt.
233	Walgett Wells	Town of Walgett		40 to 50 ft, good water in black-soil flats.
234	Triangi Well	Narromine		350 ft, good water; equal to 5,000 to 6,000 gals. per day.
235	Chapman's Well	,,		350 ft; water brackish.
236	Randwick Asylum	Randwick		Fresh water.
237	Bingagong Well	Yanko Creek		120 ft. deep; fresh water rose 52 ft. in shaft.
238	Goree Well	,,		172 ,, good water rose 105 ft.
238A	Packsaddle	Albert	Blue clay on drift	102 ,, 14,000 gals. in twenty-four hours, brackish.
239	,,	,,		Supply unlimited; 250 ft. deep
240	Tarella	,,	Shaly clay and slate	250 ft. deep; water obtained by driving 10,000 gals. in twenty four hours.
241	,,	,,	Conglomerate cement	Untested fresh; rose 60 ft. in shaft.
242	Packsaddle	,,		Trial shaft 40 ft, salt, large supply.
243	Cobbham	,,		Supply large; fresh water.
244	Big Plain Well			Fresh water.
245	Bulgrandra Well			Fresh water
246	Old Gunbar Well			Salt water
247	Gunbar Road (13 miles from Hay).			Fresh water
248	,, ,, ,,			Fresh water.
249	75 miles west of Bourke			Artesian water, 950 feet deep
250	101½ miles west of Bourke			Artesian water, 952 feet deep.
251	Tiboobura	Whillabrimah	Cretaceous	Fresh water, good supply, rose from 300 ft. to 70 ft. from surface.

W. H J. SLEE, F G.S,
Superintendent of Drills.

APPENDIX K

Balance Sheet, Diamond Drills, 1888.

	£ s d	£ s d		£ s d	£ s d.
To value of plant and machinery in the field at 1st January	13,009 3 7		By amount receivable for boring during the year	7,589 14 0	
Plant purchased in field	14 5 0		Amount receivable for tubing and stores	1 18 0	
		13,023 8 7	Inspection fees	25 4 0	
Value of stock in store at 1st January	655 19 2				7,616 16 0
Plant purchased through store	80 13 11			£ s d	
Stores purchased	285 18 2		Value of plant and machinery in field at 31st December	13,023 8 7	
		1,022 11 3	*Less* 5 per cent for depreciation	651 3 5	
Working expenses (exclusive of office salaries, store wages, rent, and Superintendent's travelling expenses)	3,724 9 10			12 372 5 2	
			Less plant issued and not used	225 8 5	
Office salaries	491 2 7				12,597 13 7
Store wages	192 14 6		Value of diamonds on hand	868 16 4	
Rent	131 6 10		Value of diamonds at drills	546 16 4	
Superintendent's travelling expenses	24 14 5				1,415 12 8
		4,564 8 2	Value of stock in store at 31st December, 1888		516 5 0
Recovering core barrel at Clarence Siding		747 13 11			
Value of diamonds on hand	1,268 13 0				
Value of diamonds at drills at 1st January . .	280 13 10				
Diamonds purchased	373 6 3				
		1,922 13 1			
Amount receivable in excess of expenditure		865 12 3			
	£	22,146 7 3		£	22,146 7 3

J. S McNeil.
D McCulloch

W H J SLEE, F G S,
Superintendent of Drills.

APPENDIX L.

Balance Sheet, Water Augers, 1888

	£ s d	£ s d		£ s d	£ s. d
To Value of plant and machinery in the field at 1st January	6,799 8 5		By Value of stock in store at 31st December		1 290 11 7
Value of stock in store at 1st January	1,440 18 9		Value of plant and machinery in the field at 31st Dec £6,845 7 7		
		8,240 7 2	*Less* 5 per cent. for depreciation 342 5 4		
Working expenses (exclusive of office salaries, store wages, rent, and Superintendent's travelling expenses)		1,560 5 3		6,503 2 3	
Office salaries	183 2 7		Plant issued and not used	57 19 2	
Store wages	71 17 3		Tubing do do .	105 8 4	
Rent	48 19 6				6,666 9 9
Superintendent's travelling expenses	9 4 3				
		313 3 7	Profit and loss during year, representing the value of work performed in search of water		2,240 4 3
Stores purchased	37 10 5				
Plant purchased	45 19 2				
		83 9 7			
	£	10,197 5 7		£	10,197 5 7

J S McNeil.
D. McCulloch

W H. J SLEE, F G S,
Superintendent of Drills

[Three Plates.]

Sydney Charles Potter, Government Printer.—1889

NEW SOUTH WALES
HYDROGRAPHICAL MAP
SHEWING POSITION OF WELLS

SCALE
MILES 20 10 0 10 20 30 40 50 60 70 80 90 100 MILES

Compiled from information furnished by the Government Geologist, the Chief Inspector of Public Watering Places, and the Superintendent of Diamond Drills.

COLONY OF QUEENSLAND

COLONY OF VICTORIA

SOUTH AUSTRALIA

TASMAN SEA

SOUTH PACIFIC OCEA

Brisbane
Point Danger
Cudgen
C. Byron
Tabulam
Casino
Ballina
Richmond R.
Corak
Tenterfield
Gordon
Iluka
Yamba
Southgate
Grafton
Glen Innes
Inverell
Warialda
Bokhara
Mogul
Bokhara R.
Narran R.
Gwydir River
Macintyre River
The Boomi
The Gilgil
Dumaresq River
Emmaville I Bore for Tin
Thurnapacna
Vernea
Ulinara
Peke
Eringonia
Large Waterhole
Gumbalie
West Bourke
Bourke
Barwon River
Gwydir River
Mitchell R.
Clarence River
Orara R.
Ross Rock
Solitary Pt
Bellingen
Bellingen R.
Nambucca R.
Wilson
Trial B.
Smoky C.
Korogora Pt
E. Kempsey
W. Kempsey
Macleay River
Port Macquarie
Hacking Pt
Camden Haven
Indian Hd
Crowdy Hd
Harrington Pt
Tarquari Pt
C. Hawke
Sugarloaf Pt
Yantarra L.
Torowoto Swp
Salt Lake
Gnorrilan
Millgawee Ck
Windoonka L.
Bencanya L. & Buntopoonool
Bunkera Ck
Nundora
Bambee Terumic
Tonga Ck
Millara
Bimbookar
Tingar
Bibban
Dunlop
Mumbar
Yanda
Cunderbouka
Darling River
Buckimbe
70 Mile Pt
Bouricalcalla
Danalage
Cultowa
Warunda
180 Channel
Wilcannia
Lake Gunyulka
Lake Pollio
Lake Tandure
Mulveneer
Gurranyoule
Coreya
Tinderalacy
Wyotheresa
Menindee
Talyawalka Ck
Nallego L.
Wandarillo
Tanbery
Peldpedilla
Moranna
Pooncaira
Tuckolo
Bullonmong
Pattinyeo
Andruco
Lake Victoria
Moorna
Wentworth
Coil Coil
Euston
Kulkyne
Anabranch of Darling R.
Darling R.
Murray River
Merrimerriwa
Marooba
M'Warranary
Euadgalong
Murrin
Yallambong
Uabba
McBillabong
Hillston N.
Calora
Walbundry
Booligal
Lachlan River
Oxley
Nap Nap
Maude
Yandaing
Balranald
L. Talia
L. Yonga
Level country destitute of water
Murrumbidgee River
Mirroul Creek
Goobang Creek
Merri Merri C.
Castlereagh
Marra C.
Bogan River
Gilgandra
Coonamble
Galargambone
Coban
Nyngan
Terabil
Cadukdary
Tabrogong
Dubbo
Wallanbon
Gerragong
E. & W. Molong
Cudal
Orange
Spring Hill
Hill End
Bathurst
Raglan
Perth
Blayney
Cowal L.
Gooloogong
Grenfell
Young
Bland Plains Yeo Yeo Ck
Belubula R.
Lachlan
Abercrombie R.
Boorowa
Cunningar
Binalong
Coolamundra
Conjedong
Bethungra
Muttama
Junee
Wallace
Narrandera
Yass
Bowning
Gunning
Collector
Goulburn
Bungonia
Lake George
L. Bathurst
Narrigo
Wee Waa
Narrabri
Bogabri
Gunnedah
Carroll
Tamworth
Moonbi
Walcha
Kentucky
Bendemeer
Manilla
Mullaley
Gwydir
Cobbadah
Barraba
Uralla
Armidale
Falcon
Goangra
Walgett
Bogalong
Boree
Dooral
Darling River
Namoi River
Castlereagh R.
Martindale
Merri Merri C.
Coonabarrabran
Breeza
Quirindi
Dungowan
Nundle
Murrurundi
Winden
Parkville
Scone
Aberdeen
Muscle Brook
Wickham
Denman
Barigan
Muswellbrook
Singleton
Campbelltown
Warkworth
Broke
Greta
Maitland
Raymond Terrace
Wallsend
Newcastle
Ellalong
Kahibah
Tuggerah
Tesralba I Bore for Coal
L. Creek I Bore for Coal
Couranbung 2 Bore for Coal
Stockton I Bore for Coal
Adamstown I Bore for Coal
Wyong Creek I Bore for Coal
Broken Bay
Wilberforce
Richmond
Windsor
Bowenfels
Hartley
Mt Victoria
Lithgow
Rydal
Mudgee
Dunedoo
Cudgegong
Rylstone
Dabee
Gulgong
Wellington
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Dabee
Gulgong
Wellington
Dubbo
Erskine Ck
Talbragar R.
Goobang Creek
Merrimerriwa
Marooba
M'Warranary
Euadgalong
Murrin
Yallambong
Uabba
McBillabong

1889.

NEW SOUTH WALES.

CHURCH AND SCHOOL LANDS.

(REGULATIONS FOR THE ISSUE OF GOLD MINING AND MINERAL LEASES.)

Presented to Parliament in pursuance of the provisions of the Church and School Lands Mining Acts of 1888 and 1889.

Department of Public Instruction,
Church and Schools Land Office,
Sydney, 8th October, 1889.

REGULATIONS RELATING TO GOLD-MINING LEASES IN THE CHURCH AND SCHOOL ESTATE.

His Excellency the Governor, with the advice of the Executive Council, has been pleased to make the following Regulations relating to gold-mining leases, in the Church and School Estate, in pursuance of the powers conferred by the Church and School Lands Mining Acts of 1888 and 1889.

J. H. CARRUTHERS,
Minister of Public Instruction.

To whom Authority to Prospect may be given.

1. The Minister may grant to any holder of a miner's right or mineral license, or to any number of persons conjointly, each being the holder of a miner's right or mineral license, an authority, in the form of the schedule hereto numbered 1, to enter upon and search for gold in any leased or unleased Church and School land other than land already held under lease for mining for gold or other minerals. Provided always that in the event of two or more applications being received at the same time for authority to prospect the same land, priority of application shall be determined by lot as provided in Regulation 6. The holder of an authority shall within seven days after the date thereof define the boundaries of the land to be prospected, by erecting at each corner of the land referred to in such authority posts 3 inches in diameter and projecting not less than 3 feet above the surface. Each such post shall be set in an ⌊ trench 6 feet long and 9 inches deep, which shall indicate the general direction of the boundary and one of such corners, or a tree adjacent thereto shall have a board or metal plate affixed, having legibly written thereon: "Held under prospecting authority by [*name to be inserted*]."

Protection to works to be provided.

2. The holder of a prospecting authority will be required to protect all shafts and dangerous places, and works sunk, made, or occasioned by or in his behalf, by fencing off or filling in all such shafts or workings prior to abandoning them and before commencing any further mining operations under such authority.

In carrying out the objects of such authority all works must be conducted so as to prevent any damage to the lessee other than shall be unavoidable, and the Minister may, on non-fulfilment of these conditions, declare such authority as cancelled.

Fee to accompany Application for Prospecting Authority. Area, &c., to be defined.

3. The fee to accompany each application for a Prospecting Authority, or for any renewal thereof, shall be at the rate of 5s. for any area not exceeding 5 acres; 10s. for any area exceeding 5 acres and not exceeding 10 acres; and 20s. for any area exceeding 10 acres and not exceeding 25 acres; and such applications must describe the locality and area upon which it is proposed to prospect.

Duration of Prospecting Authority

4. The period for which a prospecting authority shall be in force shall not exceed three calendar months, commencing from the date of issue. Prior to its expiration, the holder thereof must either obtain a renewal of such, which may, at the discretion of the Minister, be granted for a further period of three months on production of satisfactory evidence that prospecting operations have been carried on in a *bonâ fide* manner, or that, from some sufficient cause, applicant has been unable to prospect. Otherwise an application for a lease of the whole or any part of the land specified therein must be lodged in the manner hereinafter described. And in case of any failure or neglect by the holder of the aforesaid authority to comply with these regulations the Minister may declare all claim to the land void, and such land shall after the expiration of three clear days from the date of voidance be available to any other applicant.

Application for Renewal of Authorities.

5. All applications for authorities under the provisions of the Church and School Lands Mining Act of 1888, shall, if renewed by the applicant within thirty days after the passing of the Church and School Lands Mining Act of 1889, be dealt with as if such application had been lodged immediately after the passing of such Act, and shall in every respect be subject to all the conditions thereof. During such thirty days, but no longer, the land described or covered by any application shall be reserved from lease or other disposition.

Priority of Application for Authority, how dealt with.

6. In the event of more than one application being made for the same land, or any part thereof, whether by renewed application made within the thirty days, or subsequently by applications lodged at the same time, it shall be determined by lot in the following manner which of such applications shall take precedence. And for the purpose of determining as aforesaid by lot the order of priority of several applications for the

same land, the Officer in Charge of Church and School Lands shall write on tickets, of equal size, the names of the several applicants which shall be placed (by the applicants should they desire to do so) in a box to be supplied to the Officer in Charge of Church and School Lands for the purpose, and that officer shall without looking into such box, and in the presence of all the applicants, or such of them as shall choose to be present, draw one ticket from the box, and the application which shall take precedence shall be that of the applicant whose name shall be on the ticket so drawn; and the remaining applications may then be withdrawn and the deposits made therewith returned to the respective applicants, or the remaining tickets may be drawn out in rotation, and in that case the order of priority as between such remaining applications, shall be in accordance with the order in which the remaining tickets shall severally have been drawn out of the box. And the Officer in Charge shall thereupon note upon each such application the order of priority as aforesaid, and shall forward such application or such applications as shall not be withdrawn to the Minister of Public Instruction. If the first in order of such applications be granted, the other applications for the same land shall be deemed to be refused, and the fees deposited will be refunded to the depositors; but in the event of the first in order of such applications being refused on any ground that would not necessarily be a ground of objection to the next or any other of such applications, then such other applications shall be considered and dealt with in the order determined as aforesaid, until one of such applications shall be granted, or the whole of them refused.

Transfer of Prospecting Authority.

7. The Minister may, upon the application of the holder or holders of a prospecting authority, sanction or authorize the transfer of such authority to any person or persons, who shall thereupon be held responsible for the due fulfilment of the conditions thereof during the remainder of the term for which the authority has been granted: Provided that such transfer shall be in form of schedule hereto numbered 1A.

Governor may alter classification.

8. Upon production of satisfactory proof of the discovery of gold in any land specified in any prospecting authority, the Governor may alter the classification of any lands so as to include the same in the class of land suitable for mining operations.

Applicant for gold-mining lease must be holder of Authority.

9. No application for a gold-mining lease of any Church and School land that has not already been classified as land suitable for mining operations will be entertained unless the applicant shall be the holder or the transferee of an authority under these Regulations; and the miner's right or mineral license held by each applicant must be lodged with the application, or a statutory declaration made to the effect that he or they are the holder or holders of a miner's right or mineral license, and that such have been produced to the Justice of the Peace before whom said declaration is made.

Area of leased land.

10. The extent of the area in a lease shall not exceed 25 acres, nor be less than 1 acre: Provided always that should such minimum area not be available a lease may be granted for a less area, but in no case shall the rent be less than twenty shillings.

Dimensions of land.

11. In taking up land containing quartz veins or lodes, or in which quartz-veins or lodes will be chiefly worked, the length along the line of the vein or lode shall not exceed three times the width of said area. In taking up other land the maximum length shall not exceed twice the maximum width.

Mode of taking possession.

12. Prior to making application for a gold-mining lease the intending applicant or applicants, or some one of them, or some person or persons duly authorized on his or their behalf, shall make a conspicuous mark upon a tree at or near to each angle of the land for which he or they intends or intend to apply, and shall cut trenches 6 feet long and 9 inches deep, which shall respectively indicate the general direction of the boundary-lines, or shall erect at or as near as possible to each angle of such land a post 3 inches in diameter, projecting above the surface not less than 3 feet, and each such post shall be set in an L trench, 6 feet long and 9 inches deep, and some one of the trees or posts aforesaid shall be deemed the datum tree or post, and the person taking possession shall affix to such datum tree or post a board or metal plate having legibly written or painted thereon the words, "Applied for for gold-mining lease by [*name to be inserted*]," and such posts and boards or plates shall be kept erected, and the words and name aforesaid shall be kept legible till survey of the area shall be made, as hereinafter provided: Provided always that if the nature of the ground is such as to render the erection of posts or the cutting of trenches impracticable or extremely difficult, some other effective mode of marking the boundaries may be adopted; but if it shall appear to the Minister of Public Instruction that the trees have not been marked or the posts have not been erected, or the trenches have not been cut, or that the boards or plates aforesaid have not been affixed, when they might and should have been, it shall be lawful for the Minister of Public Instruction to refuse to receive or entertain the application for such land: Provided further that nothing contained in this regulation shall be deemed or construed to confer upon any applicant for a lease who shall not have deposited the first year's rent, deed, and survey fee as provided in the 14th Regulation, any right to any possession in respect of the land applied for.

Time of making and form of application.

13. Every application for a lease must be made during the currency of a prospecting authority as provided by the 4th regulation: except in cases where the land applied for has already been classified as land suitable for mining operations, in which case application for a lease must be made within ten days and not less than three days after marking out the land by the person or persons by or for whom possession shall have been taken as aforesaid. But every such application shall be in the form in the Schedule hereto numbered 2, and shall contain as full and accurate a description as can be given of the extent and position of the land applied for, and of the position of the datum post or tree in relation to some fixed point or well-defined marked tree. If letters are used for the purpose of marking any tree or other object referred to, they must be conspicuously marked. And every such application shall state the term for which the lease is applied for and when the applicant or applicants proposes or propose to commence work upon or in connection with the land applied for, and the number of miners to be employed upon the said land at the various stages of the mine works. And every such application shall be dealt with according to the reasonableness of the proposals relating to the time of commencing to work and the number of men to be employed, and the Minister of Public Instruction shall judge of the reasonableness of such proposals; and if in his opinion the time fixed for commencing to work is not sufficiently early, or that the number of men proposed to be employed is too small, he may refuse to entertain such application; and thereupon the money deposited as hereinafter provided with or in respect of such application, or the unexpended balance of such money shall be returned to the persons by whom such money shall have been deposited; and the decision of the Minister of Public Instruction shall in all such cases be final and conclusive upon all parties.

Mode of making application and receipt for rent and fees.

14. Every application as aforesaid shall be made to the Officer in Charge of Church and School lands, and therewith shall be deposited twenty shillings for each and every acre and fractional part of an acre applied for, and a further sum sufficient to cover cost of making survey of said land in accordance with the scale of charges contained in Schedule hereto numbered 3, together with one pound for deed fee, five shillings for stamp fee; and a receipt for such sums shall be issued by the aforesaid officer or any officer acting on his behalf in the form in Schedule hereto numbered 4.

Application not entertained unless deposit be sent.

15. The Minister of Public Instruction may refuse to entertain any application for a lease if the applicant or applicants, or depositor or depositors, shall have failed to lodge therewith the deposits specified in regulation number 14, and if the Minister of Public Instruction shall so refuse, or shall for any of the reasons aforesaid refuse to entertain any such application, such application shall thereupon become and be void, and the possession of the applicant or applicants shall thereupon cease and determine.

Determination of question of priority.

16. In the event of more than one application being made for the same land or any part thereof, the application which shall have been first lodged with the Officer in Charge of Church and School lands in manner aforesaid, shall be considered and dealt with under the provisions hereinbefore contained; unless it can be shown in evidence by statutory declaration that prior possession has been taken, in which case the Minister shall call for such investigation and reports as he may deem necessary, and the person establishing priority of possession shall be deemed the first applicant for the land, but if possession of the land shall have been taken by two or more persons at the same time, then it shall be determined by lot in manner hereinafter provided for, which of such applications shall take precedence.

Priority determined by lot.

17. For the purpose of determining as aforesaid by lot the order of priority of several applications for the same land, the Officer in Charge of Church and School lands shall write on tickets of equal size the names of the several applicants, which shall be placed (by the applicants should they desire to do so) in a box to be supplied to the Officer in Charge of Church and School lands for the purpose; and that officer shall, without looking into such box, and in the presence of all the applicants, or such of them as shall choose to be present, draw one ticket from the box, and the application which shall take

precedence shall be that of theapplicant whose name shall be on the ticket so drawn, and the remaining applications may then be withdrawn and the deposits made therewith returned to the respective applicants, or the remaining tickets may be drawn out in rotation, and in that case the order of priority as between such remaining applications shall be in accordance with the order in which the remaining tickets shall severally have been drawn out of the box. And the officer in charge shall thereupon note upon each such application the order of priority as aforesaid and shall forward such applications, or such applications as shall not be withdrawn, to the Minister of Public Instruction. If the first in order of such applications be granted, the other applications for the same land shall be deemed to be refused, and the rents and deed fees (and if survey of the land as hereinafter provided shall not have been made, the survey fees also), deposited as aforesaid, will be refunded to the depositors; but in the event of the first in order of such applications being refused on any ground that would not necessarily be a ground of objection to next or any other of such applications, then such other applications shall be considered and dealt with in the order determined as aforesaid, until such one of such applications shall be granted or the whole of them refused.

Copies and extracts may be made of reports, &c.

18. Any person shall upon application and payment of the respective fees specified in the Schedule hereto numbered 5, be furnished with a copy of the surveyor's report and plan of any land so applied for.

Governor may grant or refuse application.

19. If the Minister on receipt of the application, plan, and report from the surveyor, be of opinion that a lease for the land applied for should not be issued, he shall then submit the application to the Governor with such recommendation as he may think fit to make in the matter, and the Governor, with the advice of the Executive Council, after considering the application and recommendation of the Minister, and all the circumstances connected with such application may grant or refuse such application: Provided always that before or at the time of granting any such application, it shall be lawful for the Governor with the advice aforesaid to alter or modify such application in any manner that he may think fit, and to determine whether the whole or any part of the land therein applied for shall be included in the lease.

Land protected pending application for lease.

20. Pending any application for a gold-mining lease, it shall not be lawful for any person other than the applicant or applicants therefor or some person or persons legally entitled thereto, to enter upon, take possession of or occupy, or to mark out as a prospecting area, or to include within the boundaries of any prospecting area, the land applied for, or any part thereof; and no such entry, possession, occupancy, or marking shall confer any right or title to the said land.

Pendency of application.

21. The pendency of an application shall begin from the marking out of the land by the applicant or his agent, and shall continue until the applicant makes default in proceeding with his application in accordance with these Regulations, or until the Minister shall refuse to entertain such application, or until the Governor with the advice aforesaid, shall grant or refuse the same. But no application shall be recognised or considered as pending, the applicant for which shall not have made the deposits required and specified in 14th Regulation.

Land held under prospecting authority may be worked pending application.

22. The applicant or applicants for the conversion of a claim or any part of such claim held under a prospecting authority may, at his or their risk, work the land under said authority pending the granting or refusing of the application.

Governor's decision notified in *Gazette*.

23. As soon as possible after the Governor, with the advice aforesaid, shall have decided to refuse or grant any such application as aforesaid, notice of such refusal, or of the intention to grant a lease, shall be published in the *Government Gazette*. If the Governor, with the advice aforesaid, shall refuse to grant the lease, the application therefor shall be deemed to be abandoned, and such abandonment shall take effect from the date of the publication of the notice of such refusal in the said *Gazette*.

Form of lease.

24. If the Governor, with the advice aforesaid, shall determine to grant a lease of land applied for, or any part thereof, a lease shall be prepared in duplicate in the form in the Schedule hereto numbered 6, or as near thereto as the circumstances will permit, having regard to special requirements in certain cases, and shall contain the covenants, conditions, reservations, and exceptions, set forth in the said Schedule, and in these Regulations, and such others as the Governor, with the advice aforesaid, may, if he think fit, in certain cases direct, and every such lease shall bear date of the day of execution thereof by the Governor.

Execution and delivery of lease.

25. Forthwith after the execution as aforesaid by the Governor, the lease in duplicate shall be forwarded to some duly authorized officer for delivery to the applicants, and notice in the form of the Schedule hereto numbered 7 shall be sent to the applicant requiring him or his attorney, constituted as hereinafter provided, to execute and take delivery of such lease; and upon execution of the lease in duplicate, one of such forms shall, after being stamped, be delivered to the applicant or his attorney, and the other shall at once be returned to the Minister, provided always that the notice last aforesaid may be sent by post or otherwise to the address given by the applicant in his application.

Applicant, &c., may appoint attorney. Attorney may execute lease.

26. Any applicant or other person who may, by reason of absence or otherwise be unable personally to comply with the requirements of these regulations, may comply therewith by an attorney, constituted by the execution of a power of attorney, in the form of the Schedule, hereto numbered 8, or to the like effect; and every attorney so constituted shall, before being permitted to execute any lease, or sign any transfer of mortgage, be required to deposit such power of attorney or a certified copy thereof, with the officer in charge of Church and School lands.

Lease, if not executed, may be cancelled. Special permission may be given to execute lease.

27. If any successful applicant for a lease shall for a period of twenty-eight days after being called upon in the manner prescribed in the 25th regulation, fail to attend by himself or his attorney to execute and receive the lease granted to him, he shall forfeit all right, title, and interest, in and to the land referred to in such lease, and to the possession thereof, and shall also forfeit all moneys paid or deposited with his application and the lease shall be forthwith returned to the Minister for cancellation: Provided always that it shall be lawful for the Minister, in cases in which he shall be satisfied that the failure on the part of the successful applicant aforesaid to execute and receive the lease was due or caused by circumstances over which such applicant had no control, and that such applicant was in nowise blamable for such failure, to permit such applicant at any time within thirty days after the lease shall have been returned as aforesaid to execute and take delivery of such lease, but if such lease shall not be executed by the applicant within the thirty days aforesaid, such lease shall be absolutely cancelled.

Rent, and payment of.

28. The rent reserved under any gold-mining lease shall be twenty shillings per acre, payable annually in advance, the first payment to be made with the application, which payment shall cover the rent reserved under such lease for one year from the granting thereof; and thereafter the rent for each ensuing year shall be paid in advance to the Colonial Treasurer in Sydney, and in default of any such payment the lease may be forfeited.

Providing for Royalty.

29. On every lease issued for mining for gold the royalty reserved in respect thereof shall be one pound per centum of the value of the gold raised from the demised land.

Record of quantity of gold raised to be kept—Penalty if not so recorded.

30. At the expiration of each year or within one month thereafter, a statement shall be furnished to the Minister under the hand of the lessee or some one of them, or of the Manager of the mine setting out the quantity and value of the gold raised from the demised land, and the accuracy of every such statement shall be verified by the statutory declaration of the person making it. And the lessee, or lessees, or Manager of the mine shall keep a proper book in which he or they shall enter the quantity of gold raised each day from the demised land; and the value of such gold shall also be entered from time to time as soon as known; and such book shall at all times be open to the inspection of such officer as the Minister may authorise for the purpose. And it is further provided that if the lessee or lessees shall fail to pay the royalty reserved under his or their lease within thirty days after such shall have become due, although no formal demand shall have been made therefor, or shall fail to keep a proper record of the quantity and value of the gold raised, or shall refuse to allow such record to be inspected by any officer authorised by the Minister for that purpose, or shall fail to observe and perform the other conditions and covenants of his or their lease, the Governor may thereupon or at any time thereafter cancel such lease, and on publication in the *Gazette* of such cancellation the lease shall be absolutely void.

Duration, termination, and renewal of leases.

31. A lease for gold-mining purposes may be granted for any term not exceeding fifteen years, and during such term the holder of any such lease, and the executors, administrators, and assigns of such holder shall be entitled at any time, with the consent of the Governor, to surrender such lease. And it shall be lawful for the Governor, in the name and on behalf of Her Majesty, to grant to any such person as aforesaid a lease for any

term not exceeding fifteen years of the whole or any part of the land demised by such surrendered lease. And any such lease may, with such consent, be renewed for any period not exceeding fifteen years.

Mode of applying for renewal of lease, &c.

32. Applicants for a lease of the whole or any part of the land demised by a lease which shall have been surrendered as aforesaid shall proceed in the manner hereinbefore prescribed to take possession of such land and to make application therefor. But holders of leases who shall desire to obtain a renewal of the lease of the land demised to them may make application in writing addressed to the Minister of Public Instruction for such renewal; and if it shall appear to the Minister, after due consideration and inquiry, to be expedient, he shall recommend the Governor to grant such renewal, subject to the surrender of the lease previously granted; and provided all boundary-marks shall have been properly maintained it shall not (unless the Minister of Public Instruction in certain cases think otherwise) be necessary for the purpose of obtaining such renewal to retake possession or to resurvey the land. Provided always that every lease so renewed shall be subject to such conditions and provisions, including any increase of rent or royalty, as the Governor may determine.

Lessees may determine lease on notice.

33. Lessees may at any time determine their leases by giving the Minister of Public Instruction three months' notice of their desire to do so, but no rent shall in any case be refunded.

Registration of lease.

34. Every gold-mining lease or sub-lease, and every transfer, assignment, mortgage, or encumbrance thereof, or of any part or parts of the premises therein, shall be registered in such office in the City of Sydney, in or in connection with the Department of Public Instruction, as the Minister of Public Instruction shall from time to time appoint, and the officer for the time being appointed to make such registration shall be entitled to demand therefor such fees, and such only, as are prescribed in the Schedule hereto numbered 5; and the fees so received shall be applied as provided for in the Principal Act; and it shall be the duty of the officer appointed as last aforesaid to make registration of every gold-mining lease which shall have been granted, executed, and issued as aforesaid, of every sub-lease, transfer, assignment, mortgage, or encumbrance, sanctioned or authorized by the Minister, and of every assignment affected by operation of law; and such registration shall be made in such book or books and in such form as the Minister shall from time to time direct; and all such books shall be open during office hours, to be inspected on payment of the fee prescribed in the Schedule hereto numbered 5; and the officer aforesaid, shall afford every facility for such inspection, and shall supply copies of or extracts from entries in such books, and tracings of plans, on payment of the fees prescribed as aforesaid; but shall not permit any person other than an officer or clerk in the Department to make any such copy, extract, or tracing.

Transfers, &c., must be sanctioned and registered.

35. No transfer or assignment of any land demised as aforesaid, or of any interest therein (except an assignment by operation of law) and no sub-lease of any such land, or any part thereof, shall be valid or be recognised unless made with or under the license, sanction, or authority of the Minister of Public Instruction, and registered in the office, referred to in the preceding regulation. In the event of any lessee or any person having a legal interest in any land demised as aforesaid, desiring to transfer or assign such land or any interest therein, or in the event of any lessee desiring to sub-let such land or any part thereof, he shall make application in writing to the Minister of Public Instruction for such license, sanction, or authority, and upon such application, if made by the person who appears by the register aforesaid to be legally entitled to the lease of the land, or to the interest therein, as the case may be, it shall be lawful for the Minister of Public Instruction, if he think fit, to grant such license, sanction, or authority. And with every such application for a license or authority to transfer or assign, the applicant shall forward an instrument in the form of the Schedule hereto numbered 9, under the hands of the parties to the transfer or assignment; and the Minister of Public Instruction shall, if he grant such license, sanction, or authority, notify the same upon the face of the instrument. And every application for permission to sub-let shall state clearly whether it is proposed to sub-let the whole or only a portion, and if so, what portion of the land demised; and shall set out fully and distinctly the purpose for which it is proposed to sub-let such demised land or portion thereof, and the several terms, conditions, and restrictions to which such sub-lease shall be subject; and if the Minister shall see fit to license, sanction, or authorise such sub-lease, he shall place a minute to that effect upon such application; but before placing such minute upon the application, he may require such additions, alterations, or modifications to be made as he shall think fit. No application to license to transfer, assign, or sub-let shall be entertained, unless accompanied by the registration fee therefor prescribed in the Schedule hereto numbered 5; but in the event of such application being refused, the fee forwarded therewith shall be returned. Provided always that no such license, sanction, or authority, shall be required in the case of any assignment made by any person in whom the right to sell or assign is vested by operation of law, but nevertheless every assignment by such person shall be registered as aforesaid.

Amalgamation.

36. In cases where it can be shown to the satisfaction of the Minister of Public Instruction that adjoining leases can be more effectually worked together than separately, and that the owners of other leases will not be prejudicially affected by the amalgamation of such leases, the Minister may, on the application of the lessees, and payment of the fee specified in schedule 5, authorize the amalgamation of such leases, and thereupon such leases shall become one lease, and the number of men to be employed shall in no case be less than half the aggregate number required under the leases so amalgamated. And failure to employ the required number of men shall render the title thereto forfeited.

Power to declare application or lease void.

37. The Governor shall have power at any time during the progress of any application, and before the execution of the lease to declare by writing under his hand, that the application (describing it) is abandoned, and after the lease has been executed by him, and before its execution by the lessee, that such lease is void, and after such lease shall have been executed by the Governor and the lessee, on the breach by the lessee of any covenant or condition of the lease, the Governor may direct that such lease be cancelled. If the Governor shall declare any such application abandoned, or lease void, or any lease which has been issued, void or forfeited, or direct that any such lease be cancelled, the Minister of Public Instruction, or officer in charge, shall forthwith publish a notice in the *Government Gazette* to that effect, describing accurately the application or lease referred to, and such notice in the *Gazette* shall be conclusive evidence in all Courts throughout the Colony of such declaration having been made, and thereupon the land shall become and be open, as it would have been if such application had not been made, or if such lease had not been executed.

Suspension of work.

38. The registered holder, or majority of the registered holders, of any lease which shall have been registered in terms of the 34th Regulation may at any time, upon satisfying the Minister of Public Instruction by statutory declaration that any of the following causes for suspension of work actually exist—viz., (1) that the demised land and mine are unworkable from any cause; (2) that the registered holder or holders require to be absent, for some sufficient cause, from the locality of the demised land, or are unable, by reason of sickness or other sufficient cause, to work in such land and mine; (3) that the supply of water is insufficient to allow the working of the said land and mine to be properly carried on—obtain from the Minister aforesaid an order in writing permitting the holder or holders of such land to suspend work upon and in connection with such demised land for any period not exceeding six months, and may, on payment of the fee prescribed therefor in the Schedule hereto numbered 5, and delivery to him of the order aforesaid, require the officer referred to in the 34th regulation to register such permission as aforesaid.

Water Rights.

Definition.

39. A water-right shall include and mean the right to collect, store, divert, and convey water from any source, for mining purposes, in the manner hereinafter provided.

Classes of water-rights.

40. Water-rights shall be of four kinds, namely:—

1. "Stream water-rights," for water to be used in the bed of a stream, or diverted therefrom for use elsewhere.
2. Spring, lagoon, or swamp water-rights.
3. Watershed or storm water-rights.
4. Motive-power water-rights.

Sluice-heads—how measured.

41. Any miner diverting or using water shall use a gauge or measurement to be called a sluice-head, of the following dimensions:—A box sluice-head shall be a volume of water 1 inch by 12 inches; a ground sluice-head shall be a volume of water 3 inches by 12 inches, and shall be gauged in the following manner:—An open box, 6 feet in length, and 12 inches in width, with a scale of inches marked on the inner side at the

lower end, shall be placed as near as practicable at the head of the race—having a fall or inclination not exceeding 6 inches in the entire length of it; and the gauge of water as above specified shall be taken at the mouth of the box where the water is discharged. When the length of the race shall exceed one mile, the width of the box may be increased half an inch for each mile.

Limitation of water-right.

42. The quantity of water to which any miner shall be entitled under one water-right shall not exceed four ground sluice-heads, except under storm-water or watershed rights, when he shall be entitled to all water collected by him. Provided that no storm or watershed race shall be constructed above any similar existing race nearer than one quarter of a mile thereto.

Priority of water-rights.

43. The priority of water-rights derived from a common source shall be determined by the date of registration; and in case of the water supply being insufficient, the person last registered shall forego his rights during such insufficiency of water as against the person previously registered, and so on in rotation as the supply diminishes. Provided that in all rivers and creeks from which water is diverted for mining purposes there shall at all times be left running at least one ground sluice-head of water for general use if required.

Water—motive power.

44. Any miner shall be entitled to divert water from any stream or natural source to be used as a motive-power, provided that such water shall not be required for gold-washing purposes.

Water—when right thereto ceases.

45. The right to any water under any water-right shall terminate whenever the water shall be discharged into any natural stream or watercourse after being used.

Union of water-rights.

46. Where it is found that increased facility would be given in working claims and a waste of water prevented by the running of two or more water-rights through one race, the same shall be allowed, provided that all such rights shall follow in rotation and have precedence according to priority of registration.

Dams and reservoirs, &c.

47. Any person desirous of constructing a dam or reservoir shall make application to the Minister in the form in Schedule hereto numbered 12, and such application shall describe the site and area of the land, and therewith must be deposited the sum of 10s. for each and every acre applied for, together with survey fee, as provided in schedule hereto numbered 3. And the boundaries of such shall be defined by the erection of posts not less than 3 inches in diameter and showing at least 3 feet above the surface at each angle.

A copy of such application shall be conspicuously posted by the applicant upon one of such posts of the site or area applied for.

If at the end of fourteen clear days no objections shall have been lodged with the Officer in Charge of Church and School Lands, the application will be dealt with if unobjectionable.

Water for domestic use.

48. The Minister may set apart or withhold for domestic purposes any water-hole, spring, well or abandoned reservoir upon receipt of an application in writing signed by not less than twelve persons holding prospecting authorities or leases; and no person shall use for gold-washing purposes, or waste, or by any means defile the water so withheld.

Water-races.

Mode of application, dimensions, and rent therefor.

49. Every application for permission to cut and construct a water-race must fully describe the source from which it is proposed to take the water and the approximate length and dimensions of such race and with every such application shall be lodged the first year's rent and survey fee. The width allowed for every such race shall be 10 feet on each side of such race, but where the cutting exceeds 10 feet in depth or a tunnel is constructed, the width for such shall be 20 feet on each side thereof, and the width allowed for tressels for fluming shall be at the discretion of the Minister. And the rent reserved therefor shall not be less than 5s., per annum for every mile or fractional part thereof, payable annually in advance and the cost of survey at the rate for lineal measurement stated in schedule hereto numbered 3. Provided always that any extension or deviation thereof may be granted on application and payment of the fees hereinbefore provided. Every such race or extension or deviation thereof, if the application therefor be approved by the Minister of Public Instruction, shall be registered in the Church and School Lands Office upon the applicant or applicants therefor signing a contract in the form in Schedule hereto numbered 10, and his Excellency the Governor, on the recommendation of the Minister may for any breach of such contract or the non-payment of rent for a period of twenty-eight days after such shall have become due, although no formal demand shall have been made therefor, cancel such contract, which cancellation will be notified in the *Government Gazette*, and all moneys paid thereon shall become forfeited. Provided further that in the event of any application for a water-race being refused, all moneys deposited therewith, after deducting for any expenses incurred in obtaining reports, &c., shall be refunded.

Races through other claims.

50. Any miner shall be entitled to cut and construct a race through any claim or under, over, or across any other race, provided that such race shall be cut or constructed in such a manner as not to injure the claim or race across which it is cut or constructed.

Bridging roads, &c.

51. Wherever any race crosses any road or public footway, the owner of such race shall construct and keep in repair a good and substantial bridge over the same of the following dimensions:—

If over a road.....12 feet in width
If over a footway..... 6 „ „ „

Races, dams, &c., to be kept in repair.

52. No holder of a water-right shall allow the water thereby secured to him to run to waste, and in the event of any race, dam, or reservoir being out of repair, or being in an insecure condition, or the water being allowed to run to waste, the Minister, on complaint being made to him, may make such order as may be necessary to prevent waste of water or public injury.

Registration.

53. All water-rights, races, dams, or reservoirs, shares therein or any transfer of the same shall be registered with the officer-in-charge of Church and School Lands.

Machine sites may be allowed.

54. No application for a machine site will be entertained unless a prospecting authority under these regulations be first had and obtained; the first year's rent and survey fee to be lodged with application. The area thereof shall in no case exceed 3 acres, nor shall the rent be less than twenty shillings per acre, payable annually in advance. The applicants for such site will be required to enter into and sign a contract in the form in Schedule numbered 11, which shall be registered in the Church and School Lands Office. Provided always that, in the event of any breach thereof, or the non-payment of rent for a period of twenty-eight days after such shall have become due, although no formal demand shall have been made therefor, the Governor on the recommendation of the Minister may cancel such contract, and the cancellation thereof shall be notified in the *Government Gazette*, and all moneys paid thereon shall become forfeited. Provided further that in the event of any application for a machine site being refused, all moneys deposited therewith, after deducting for any expenses incurred in obtaining reports, &c., shall be refunded.

No.

Date

Issued to

of

DESCRIPTION.

£ : :

SCHEDULE No. 1.

Gold-mining (Prospecting Authority).

No.

£ : :

Date 18 .

Authority for Prospecting and Mining for on Church and School Lands.

Issued to of
under the provisions of the Church and School Lands Mining Act of 1888, and subject to Regulations prescribed thereunder, to be in force for three months only from this date.

SCHEDULE
Describing land over which this authority shall be exercised.

Area.	County.	Parish.	Description.

Officer in Charge.

The following conditions are to be observed in connection with this authority:—

Within seven days from the date of issue, the holder of this authority will be required to mark out the land described herein by placing posts at each corner thereof, three inches in diameter, and projecting not less than three feet above the surface, each of which must be set in trenches six feet long by

nine inches deep, to indicate the general direction of the boundaries. One of these posts, or a tree adjacent, must have a board or metal plate affixed thereto, with the words, "Held under Prospecting Authority by" [*name to be inserted*] legibly written thereon.

All shafts and dangerous places occasioned by or on behalf of the holder of this authority will be required to be protected, either by filling in or fencing off any such workings prior to abandoning them, and before commencing any further mining operations under this authority; and all works must be conducted in such a manner as to prevent any avoidable damage to the lessee; and the Minister may, on non-fulfilment of these conditions, declare such authority as cancelled.

Prior to the expiration of this authority, either an application for a lease of the whole or any part of the land must be made, or the holder may apply for a renewal of such authority, which may be granted at the discretion of the Minister for a further period of three months; but in no case will more than one renewal be allowed.

SCHEDULE No. 1*a*.

CHURCH AND SCHOOL LANDS.

Transfer of authority to prospect for over an *area of* acre. *County of* *Parish of*

("*I*" or "*We*") being registered as the holder of prospecting authority No. issued under the sanction of the Minister of Public Instruction to and dated the day of 188 , and numbered in Register do hereby transfer to

all my right, title, and interest in and to the prospecting authority aforesaid and the said

do hereby accept transfer of the right, title, and interest of the said in and to the prospecting authority aforesaid, subject to the provisions and conditions of the "Church and School Lands Mining Act of 1888," and hereby agree to be bound by all and singular the terms, conditions, covenants, provisoes, restrictions, and reservations contained in the said prospecting authority.

IN WITNESS whereof we have hereunto subscribed our respective names this day of 188 .

Witness to Signature.	Transferror.	Transferee.

I, hereby sanction and authorize the transfer of the interest of in the abovenamed prospecting authority to

Dated at this day of 18 .

(Signature)

I have this day of 18 , registered the above transferee as the holder of prospecting authority No.

Officer in Charge of Church and School Lands.

SCHEDULE 2.

CHURCH AND SCHOOL LANDS—GOLD-MINING LEASE REGULATIONS.

Application for Gold-mining Lease.

To the Honorable (*Place*)
The Minister of Public Instruction, (*Date*)
Sydney.

SIR,

("*I*" *or* "*We*") hereby make application for a gold-mining lease of that piece or parcel of land situated
County of parish of
containing of which took possession on the
day of under authority dated
for the purpose of mining thereon and therein for gold, for a period of years, by [*state how angles are marked*] at each angle thereof. The datum [*tree, post, or other mark*] is distant in a direction from

forward herewith ["*The sum of,*"] being the first year's rent in advance of the said land, and ["*The sum of,*"] to cover the cost of survey and deed fee. And hereby request that survey may forthwith be made of the said piece or parcel of land.

hereby acknowledge that this application is made upon the distinct understanding and condition that if shall abandon or fail to proceed with it, or if it is refused, the Minister of Public Instruction for the time being may deduct from the sum of [*Here insert the sum deposited as rent in advance*] deposited as aforesaid any cost to which in his opinion the Estate may have been put in or about or in respect of this application: and this application shall thereupon become and be void, and the possession aforesaid shall cease and determine. And if the lease shall be granted shall and will commence mining operations upon or in connection with the demised land within from and after the granting thereof, and shall and will employ upon such land not less than men during the first of the term thereby created, and not less than men during the remainder of such term. And shall and will at any time when called upon in terms of the Regulations relating to gold-mining leases on Church and School lands, to do so, execute, and take delivery of such lease, or failing therein for a period of twenty-eight days, after being so called upon shall and will forfeit the said sum of [*Here insert the sum deposited as rent in advance*] and all right, title, or interest in and to the said land and the possession thereof, and the said lease shall be forthwith cancelled.

have the honor to be,
Sir,
Your most obedient servant,

Signature of applicant, or of each applicant.

[*Name in full, and address of each applicant.*]

This application was received by me this day of 188 , at the hour of o'clock on the noon, and is numbered

Signature.
Officer in Charge.

NOTE.—In dealing with this application, the number of men proposed to be employed, and the time proposed for commencing operations, will be taken into consideration. And if (taking into account all the circumstances of the case) such proposals do not appear to the Minister of Public Instruction to be reasonable, he may refuse to entertain the application, and thereupon such application will become and be void.

SCHEDULE 3.

Scale of fees for Survey.

Areas of Portions in Acres.	Amount for separate portions. £ s. d.
Less than 1 acre	1 0 0
1 acre and less than 5 acres	1 10 0
5 acres and less than 10 acres	2 0 0
10 acres and less than 20 acres	3 0 0
20 acres and up to 25 acres	3 10 0
Lineal measurements to be paid for at the rate of £1 10s. per mile.	

SCHEDULE 4.

Receipt for Rent, Survey and Deed Fee.

Church and School Lands Office,
Sydney,

Received from this day of 18 the sum of pounds shillings and pence, being the first year's rent in advance, survey and deed fee for acres of land at applied for by the undermentioned applicant under the Regulations for gold-mining on Church and School lands.

Application No.
Name of Applicant address
£

Officer in charge of Church and School Lands.

SCHEDULE 5.

Scale of Fees for Registration, &c.

	£ s. d.
For each transfer	0 10 0
For each assignment	0 10 0
For each mortgage or other encumbrance	0 10 0
For each sub-lease	1 0 0
For registration of suspension of labour conditions	0 10 0
For copy of or extract from any entry, record, report, instrument, or document, per folio	0 1 6
For copy of any plan of one lease	0 5 0
For copy of every additional lease on same plan	0 2 6
For inspection of any record	0 1 0
For each lot amalgamated	0 10 0

SCHEDULE No. 6.

Form of Gold Mining Lease.

THIS INDENTURE—made the day of , in the year of our Lord one thousand eight hundred and , between Her Most Gracious Majesty Queen Victoria, of the one part, and

(hereinafter called the lessee) of the other part—Witnesseth: —That in consideration of the sum of paid by the said lessee on the day of 18 , and of the rents hereinafter reserved, and of the covenants and provisoes hereinafter contained, Her Majesty doth by these presents grant and demise unto the lessee , h executors, administrators, and transferees, all that piece or parcel of land, containing by admeasurement , and more particularly described and delineated in the Schedule hereto, or in the plan hereunto annexed and numbered , and all those mines, veins, seams, or deposits of gold in, on, and under the said land (hereinafter called the said mine); together with all and singular the shafts, levels, drifts, works, ways, fixtures, erections, liberties, easements, advantages, and appurtenances which are now or at any time during the term hereby granted may be held, occupied, or enjoyed therewith, for the purposes of mining on the said land for gold, and also with full power for the said lessee , h executors, administrators, and transferees, and his and their agents and workmen (including contractors, tributors, and so forth), to dig, sink, drive, make, and use excavations, pits, shafts, levels, tunnels, watercourses, and other works necessary for winning and raising the gold in, on, or under the said land; and to take and appropriate the same during the term hereby granted; and to make and construct on the said land races, drains, dams, reservoirs, roads, and tramways, and also to erect on the said land all buildings, engines, furnaces, pumps, machinery, and appliances necessary for the purpose of winning and obtaining the gold in, on, or under the said land, and for effectually carrying on the works, of the said mine; and also to erect on the said land such offices, cottages, and dwelling-houses for the use of the agents, workmen, and persons employed in the said mine and works, as the said lessee , h executors, administrators, and transferees shall think proper: To hold the said land, mine, and premises, with the appurtenances (subject nevertheless to such rights and interests as may be lawfully subsisting therein at the date of these presents) unto the said lessee , h executors, administrators, and transferees, from the date hereof, for the term of years, next ensuing, for the purpose of mining therein or thereon for gold, and working or winning the said gold, and for no other purpose,—yielding and paying therefor unto Her Majesty, Her Heirs, and Successors, yearly, and every year during the said term, the yearly rent of in advance, the first year's rent having been paid as aforesaid, on the day of the next payment shall be made to the Colonial Treasurer, in Sydney, on the day of next; and thereafter, on the day of in each and every year, the yearly rent aforesaid shall be paid to the Colonial Treasurer aforesaid, clear of all rates, taxes, and assessments to which the said land, mine, and premises are now, or at any time during the said term, may be subject or liable: Provided always, and it is hereby agreed, that if the said yearly rent shall be in arrear for thirty days after the same shall have become payable, whether such rent shall have been legally demanded or not, any officer appointed or authorized thereto by the Minister of Public Instruction may, by himself or his agent, enter upon the said land, and seize and distrain all gold, and all rock, earth, or other matter containing gold actually got and raised from the said mine; and all machinery, apparatus, tools, waggons, carts, carriages, engines, plant, and all other goods, chattels, and effects whatsoever in, upon, and about the said land and premises; and every distress thus made may take away, sell, and dispose of as in cases of distress for rent reserved in common leases; and out of the moneys arising thereby retain so much as shall be sufficient to satisfy the said arrears, and which shall at the time of such sale be unpaid; and all expenses incurred by him or them in or in respect of such seizure, distraint, removal, and sale; and if there be any surplus such officer shall pay the same to the said lessee , h executors, administrators, or transferees; and the acceptance or receipt of rent by or on behalf of Her Majesty, after breach of any covenant hereinafter contained, shall not be or be deemed a waiver of the right of Her Majesty, or of the Minister of Public Instruction, or other officer on behalf of Her Majesty, to enforce observance of such covenant. And the said lessee do hereby, for h sel , h heirs, executors, administrators, and transferees, covenant with Her Majesty, Her Heirs and Successors, in manner following, that is to say:—

1. That the said lessee , h executors, administrators, and transferees shall and will during the said term pay unto Her Majesty, Her Heirs and Successors, the rent hereby reserved, at the times and places hereinbefore appointed for payment thereof, clear of all deductions, and shall further pay as royalty the sum of one pound per centum per annum of the value of the gold raised from the demised land.

2. And shall and will after the expiration of from the date of delivery hereof, upon and during all lawful working days, except when prevented by inevitable accident, or during the execution of repairs, make, construct, and work the said land, mine, and premises in the best and most effectual manner, and to the best advantage, without interruption; and shall and will diligently explore and search for gold in, on, and under the said land, mine, and premises.

3. And shall and will, after the expiration of the said , employ in the construction of the works, or in mining operations on or under the said lands, during the first month of the said term, and during the usual hours of labour able and competent workmen and miners at the least, and during the remainder of the said term, and during the usual hours of labour, shall and will employ as aforesaid, not less than such workmen and miners, unless prevented by inevitable accident, or during the execution of repairs. Provided that the lessee, or if there be more than one lessee each lessee who shall work as aforesaid, shall count as and be deemed for the purposes of these presents to be a workman or miner employed as aforesaid.

4. And shall and will during the said term, effectually drain the said mine, and pump all water likely to cause injury thereto, or which would prevent or interfere with the working thereof, and if the said mine shall be affected, or be liable to be affected by the same flow or body of water as any other mine or mines contiguous thereto, shall and will, if and whenever requested so to do, contribute with the lessee or lessees, or owner or owners of such other mines, a reasonable proportion of the machinery and labour necessary to free and keep such mine or mines free from water to a workable extent; or if the said mine shall be kept free from water to a workable extent, either wholly or partially by means of the machinery and labour of a contiguous mine or mines, or by reason of any works constructed or money expended by the lessee or lessees, or owner or owners, of such contiguous mine or mines—then shall and will pay to such lessee or lessees, owner or owners, as aforesaid, a reasonable proportion of the cost of such machinery, labour, or works, or a reasonable proportion of the money so expended, and the Minister of Public Instruction for the time being, may, if, and whenever he shall think fit, depute some efficient person who shall have access to and inspection of all such mines, to determine when the said mine is so freed or kept wholly or partially free from water, and what are the reasonable proportions of such expenses aforesaid, and to whom and when the same are to be paid,—such decision to be final and conclusive on all parties.

5. And shall and will make such provision for the disposal of the detritus, dirt, waste, or refuse of the said mine that the same shall not be an inconvenience, nuisance, or obstruction to any roadway, river, creek, or private, Church and School, or Crown Lands, or shall not in any manner occasion any public or private damage or inconvenience.

6. And shall and will erect, and keep erected, during the said term, a post, painted white, or where it is impracticable to erect posts, shall and will erect, make, or establish some other approved boundary marks, at each angle of the said land, and at such points along the boundary-lines as shall be necessary, so as plainly and accurately to define the boundary-lines and angles of the said land; and in case posts shall be erected, each such post shall be fixed firmly in the ground, and shal project above the surface thereof not less than three feet.

7. And shall and will, as often as required so to do during the term, make and deliver to the Minister of Public Instruction for the time being, or any officer appointed or instructed to collect, obtain, or receive the same, all such true and proper plans and sections, returns, and statistics of the workings and operations of the said mine, made up to the last day of the preceding month (the truth and accuracy of which shall be verified by the statutory declaration of the lessee for the time being, or the manager, or other officer having the charge, control, and direction of the works of the said mine) as the Minister of Public Instruction shall from time to time direct. And shall and will, whenever required by the Minister of Public Instruction so to do, deliver to any officer appointed or instructed as aforesaid, samples of the alluvium or vein stuff found in or upon such mine and land.

8. And shall and will at the expiration of each year, or within one month thereafter, furnish a statement to the Minister under the hand of the lessee or someone of them, or of the manager of the mine, setting out the quantity and value of the gold raised from the demised land; and the accuracy of every such statement shall be verified by the statutory declaration of the person making it; and the lessee or lessees or manager of the mine shall keep a proper book in which shall be entered the quantity of gold raised each day from the demised land, and the value of such gold shall be entered from time to time as soon as known, and such book shall at all times be open to the inspection of such officer, as the Minister may authorize for the purpose.

9. And shall and will, during the said term, make proper and reasonable compensation to the occupier or occupiers, lessee or lessees from the Church and School Estate of any adjoining land in respect of any damage which may be sustained by him or them, by reason of the working of the said mine, or the carrying on of the works thereof or connected therewith, such compensation to be determined by the Minister of Public Instruction, or by some person authorised by him so to do.

10. And shall and will permit any mining surveyor, or other person duly authorised in that behalf, with all proper or necessary assistants, at all reasonable times, during the said term, quietly to enter into and upon the said land, mine, and premises, to survey and examine the state and condition thereof; and for the purposes aforesaid, to descend all pits and shafts, and to enter into and use all adits, levels, galleries, drives, and excavations, and to use all roads, ways, engines, ropes, machinery, gear, appliances, materials, labour, and other things in or on the said land and mine, which shall be by him deemed necessary, without making any compensation for the same, so nevertheless that in so doing no unnecessary interference is caused with the carrying on of the said mining works.

11. And further, shall and will at all times during the said term keep and preserve the said mine and premises from all avoidable injury or damage, and also the levels, drifts, shafts, watercourses, roads, ways, works, erections, and fixtures therein and thereon in good repair and condition, except such of the matters and things last aforesaid as shall from time to time be considered by a Mining Surveyor or other proper officer authorised by the Minister of Public Instruction to inspect and report upon such matters and things to be unnecessary for the proper working of the said mine or any contiguous mine, and in such state and condition shall and will at the end or sooner determination of the said term deliver peaceable possession thereof, and of all and singular the premises hereby demised to Her Majesty, Her Heirs and Successors, or to the officer authorised to receive possession thereof. Nevertheless the Minister of Public Instruction may, if he think fit, permit the lessee , h executors, administrators, and transferees, within such time as he shall fix after possession shall have been received as aforesaid to enter upon the said land, and to remove therefrom such machinery, plant, and apparatus as shall have been erected and fixed upon such land, and such earth, rock, stone, quartz, clay, sand, or soil containing gold as shall have been won from and raised to the surface of such mine.

12. And shall not nor will use or occupy, or permit to be used or occupied, the said land, or any part thereof for other than mining purposes, or for pasturage, or as sites for dwellings, or garden ground for the persons employed in, on, or about the said mine.

13. And shall not nor will transfer, underlet, or part with possession of the said land, mine, and premises, or any part thereof, or mortgage, charge, or encumber the same, without the license first had and obtained of the Minister of Public Instruction for the time being: Provided always that no such license shall be necessary in cases where, by operation of law or otherwise, a sale of the said land, mine, and premises, or any part or parts thereof, is made by any person or persons entitled to sell the same for the benefit of the creditors or a creditor of the lessee or h transferees, or in cases where the lessee or h transferees desire to let the said mine and premises, or any part thereof, to be worked on tribute.

14. And shall not nor will close up or obstruct any adit or adits to or from any contiguous mine or mines, whereby fresh air is admitted or ventilation promoted.

15. And shall not nor will plead acceptance of rent by or on behalf of Her Majesty as a waiver of the right of Her Majesty, or of the Minister of Public Instruction, or other officer on behalf of Her Majesty, to enforce observance of the covenants herein contained, or of the right of the Governor, with the advice of the Executive Council, to declare these presents void for breach of any such covenant: Provided always and it is hereby agreed and declared in manner following:—

16. That it shall be lawful for Her Majesty, Her Heirs, Successors and assigns, without compensation to the lessee, to make and use in, on, or under the said land any levels, drifts, leads, shafts, watercourses, adits, roads, ways, and passages for freeing and keeping free any other lands or mines from water, or for conveying water to any other lands or mines for mining purposes, or for supplying any other mines with fresh air, or for effectually working any other mines, or for any public purpose whatsoever, and to cut, dig, and remove all timber, stone, gravel, and other materials in or upon the said land which may be required for any public purpose, causing as little damage, obstruction, or interference as possible to or with the said mine and the works thereof.

17. And if the lessee , h executors, administrators, or transferees shall prove to the satisfaction of the Minister of Public Instruction that the said mine is unworkable from any cause whatsoever, or that the lessee , h executors, administrators, or transferees, require to be absent for some sufficient cause from the locality of the said land and mine, or is or are unable, by reason of sickness or other sufficient cause, to work in such land or mine, or that the supply of water is insufficient to allow the working of the said land, mine, and premises to be profitably carried on, and shall obtain from such Minister permission to suspend work therein or thereon h may in such manner as may be prescribed by any Regulations in that behalf relating to gold-mining leases register such land, mine, and premises for suspension of work therein or thereon, for any period not exceeding six months, and may during such period discontinue work without incurring in respect thereto any forfeiture or penalty for breach of any covenant herein contained.

18. And, lastly, that if the lessee , h executors, administrators, or transferees shall at any time during the said term fail to use such land *bona fide* for the purpose for which it has been demised, or if and whenever the said rent or royalty shall be in arrear for thirty days after the time appointed for payment thereof, whether the same shall have been legally demanded or not, or if and whenever there shall be a breach of or non-compliance with the covenants and provisoes herein contained by the lessee , h executors, administrators, or transferees, and the lessee , h executors, administrators, or transferees shall not have obtained from the Minister of Public Instruction permission to suspend work as aforesaid, in case the breach shall have been for the non-compliance with the covenants for the employment of workmen or miners, or for the working of the mine, the Governor, with the advice of the Executive Council, who alone and finally shall judge and determine the matter upon the evidence or reports submitted by the Minister of Public Instruction for the time being, may (notwithstanding the acceptance of rent of the demised land after such failure, breach, or non-compliance shall have happened or been committed), declare these presents void, and upon publication in the *Government Gazette* of notice of such declaration, all the right, title, and interest of the leseee , h executors, administrators, and transferees, under these presents shall cease and determine both at law and in equity, and the production of a copy of the *Government Gazette* containing a notice, purporting to be signed by the Minister of Public Instruction, declaring the lease void, shall be conclusive evidence in all Courts whatsoever in the Colony of New South Wales of a breach of or non-compliance with the covenants and provisoes herein contained sufficient to authorize and sustain such declaration having been lawfully made, and that the interest created hereunder has been lawfully determined; and thereupon, it shall be lawful for Her Majesty, Her Heirs and Successors, or her or their agents or officers, or for any bailiff or other person duly authorised thereto, or for any holder of a Prospecting Authority, who has the permission of the Minister of Public Instruction for the time being, without any previous demand whatsoever, to enter forthwith into and upon the said land and premises hereby granted, and the same to repossess and enjoy as fully and effectually to all intents and purposes as if these premises had not been made, and the said lessee , h executors, administrators, and transferees, to expel and remove without any legal process, and as effectually as the Sheriff might do in case judgment in ejectment had been obtained and a writ of *habere facias possessionem* had been issued on such judgment; and in case of such entry and any legal proceeding taken in respect thereof, the defendant or defendants in any such proceeding may plead leave and license in bar thereof; and these presents shall be conclusive evidence of such leave and license by the lessee , h executors, administrators, and transferees, or other the person or persons, plaintiff or plaintiffs, in such proceedings, for such entry or other matters complained of in such proceedings.

In Witness whereof, His Excellency the Right Honorable Charles Robert, Baron Carrington, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies, hath, on behalf of Her Majesty the Queen, caused the Seal of the said Colony to be affixed to this Grant, and also set his Hand, at Government House, Sydney, in the said Colony, the day and year first above written, and the lessee ha also set h hand and seal the day of 18 .

Signed, sealed, and delivered, by the within named in the presence of

PLAN.

Parish of

County of

Scale, chains to an inch

district.

[*Endorsement.*]

Registered in the Church and School Lands Office, at Sydney, this day of A.D. 18 , at the hour of o'clock in the noon, and numbered in the Register.

Officer in Charge.

No.

Dated A.D. 18 .

HER MAJESTY THE QUEEN

TO

GOLD-MINING LEASE.

D.

SCHEDULE No. 7.

CHURCH AND SCHOOL LANDS—GOLD-MINING LEASE REGULATIONS.

Notice to Applicant to execute Lease.

Department of Public Instruction,
Church and School Lands Office, Sydney,
18 .

I hereby notify you that the Gold-mining Lease for which you made application, No. on the day of 18 , has been granted and executed by His Excellency the Governor, and is now lying at the office awaiting execution by you. You are therefore hereby required to attend at such Office, on or before the day of to execute and take delivery of the said Lease; and failing so to do the Lease will be forthwith transmitted to the Honorable the Minister of Public Instruction for cancellation.

I have the honor to be,
Your obedient servant,
Officer in Charge.

SCHEDULE No. 8.

CHURCH AND SCHOOL LANDS—GOLD-MINING LEASE REGULATIONS.

Form of Power of Attorney.

Know all Men by these Presents:

That ["*I*," *or* "*We*," *adding the name, address, and description of each person*] do hereby make, nominate, constitute, and appoint, and in place or stead put of to be true and lawful Attorney for and in name and as act and deed, to sign, seal, and take delivery of the gold mining lease for which on the day of 18 , made application (No. at), under the provisions of the "Church and School Lands Mining Act of 1888," and the Regulations made thereunder, and which has been or shall be granted and issued by the Governor, and for and in name to enter into all such covenants and agreements as shall be required to enter into in and by the said lease and generally for and in name to do, execute, and perform all such other acts, deeds, and things, as may be necessary or may be required to be done, executed, or performed in and about the application for and execution of such lease; and do hereby ratify and confirm all and whatsoever the said shall lawfully do, or cause to be done in or about the premises, by virtue of this power.

In witness whereof, have hereunto set hand and seal, this day of 18 .

(*Signature.*)

Signed, sealed, and delivered by the abovenamed in the presence of

---

District of

SCHEDULE No. 9.

CHURCH AND SCHOOL LANDS—GOLD-MINING LEASE REGULATIONS.

Transfer of lease, lot County of Parish of

I ["*I*" *or* "*We*," *as the case may be*] being registered as the lessee of all that piece or parcel of land demised by a certain gold-mining lease granted by Her Majesty the Queen to and dated the day of 18 , and numbered in register in consideration of the sum of paid to by the Transferee , the receipt of which sum hereby acknowledge, do hereby transfer to all right, title, and interest in and to the piece or parcel of land as aforesaid, and do hereby accept transfer of the right, title, and interest of the said in and to the demised land aforesaid, subject to the provisions and conditions of the "Church and School Lands Mining Act of 1888" and the Regulations made thereunder, and hereby agree to be bound by all and singular the terms, conditions, covenants, provisoes, restrictions, and reservations contained in the said lease.

In witness whereof, we have hereunto subscribed our respective names this day of 18 .

Witness to Signature.	Transferror.	Transferee.

I, hereby sanction and authorize the transfer of the interest of in the abovenamed lease to

Dated at this day of 18 .

(*Signature*)

I have this day of 18 .
Registered the above Transferee as the holder of Gold-mining Lease No.

Officer in Charge of
Church and School Lands.

SCHEDULE 10.

CHURCH AND SCHOOL LANDS—GOLD-MINING REGULATIONS.

Application for permission to rent land for the purpose of constructing a Water-race.

To the Honorable (*Place*)
The Minister of Public Instruction,
Sydney. (*Date*)

SIR,

(*I or We*) hereby make application for permission to rent a portion of the Church and School Estate for the purpose of constructing a water-race, commencing at the and terminating at the County of parish of . The approximate length is and the dimensions thereof feet at the top, feet at the bottom, and feet deep.

forward herewith being the first year's rent in advance, at the rate of five shillings per mile or fractional part thereof, and to cover cost of survey, and request that survey may forthwith be made of the land applied for.

hereby acknowledge that this application is made upon the distinct understanding and condition that if should abandon or fail to proceed with it, or if it is refused, the Minister for the time being may deduct from the sum deposited as aforesaid any cost to which, in his opinion, the estate may have been put, in or about, or in respect of, this application, and this application shall thereupon become and be void; and, if the application be granted, hereby undertake and guarantee to indemnify the Crown and the Church and School Estate from any claim whatsoever for severance or other injury that may accrue to the lessee or lessees of the Church and School Estate through which the race passes by and through the construction of such race or operations in connection therewith, and also undertake to erect proper and serviceable bridges over all roads and tracks in use and at such places as the lessee or lessees aforesaid may desire.

And further agree that, failing compliance on part, of all or any of these conditions, and the regulations pertaining to water-rights, shall and will forfeit all moneys paid by , and all right, title, and interest to the land and race herein referred to, and the said right, title, and interest shall be forthwith cancelled.

have the honor to be,
Sir,
Your obedient Servant,

(*Signature of Applicant or Applicants*)

[*Name in full of each applicant must be given and witnessed, and address given.*]

This application was received by me this day of 18 , at the hour of o'clock in the noon.

Officer in Charge

SCHEDULE 11.

CHURCH AND SCHOOL LANDS—GOLD-MINING REGULATIONS.

Application for Machine Site.

To the Honorable (*Place*)
The Minister of Public Instruction, (*Date*)
Sydney.

SIR,

[*"I," or "We"*] hereby make application for a lease of that piece or parcel of land situated
County of Parish of containing of which took possession on the day of under authority dated for the purpose of erecting machinery thereon for mining operations for a period of years, by [*State how angles are marked*] at each angle thereof. The datum [*Tree, post, or other mark*] is distant in a direction from

forward herewith [*"The sum of"*] being the first year's rent in advance of the said land, and [*"The sum of"*] to cover the cost of survey and deed fee. And hereby request that survey may forthwith be made of the said piece or parcel of land.

hereby acknowledge that this application is made upon the distinct understanding and condition that if shall abandon or fail to proceed with it, or if it is refused, the Minister of Public Instruction for the time being may deduct from the sum of [*Here insert sum deposited as rent in advance*] deposited as aforesaid any cost to which in his opinion the estate may have been put in or about or in respect of this application; and this application shall thereupon become and be void, and the possession aforesaid shall cease and determine. And if the lease shall be granted shall and will at any time when called upon in terms of the regulations relating to Gold or other Mining Leases on Church and School Lands, to do so, execute, and take delivery of such lease, or failing therein for a period of twenty-eight days, after being so called upon shall and will forfeit the said sum of [*Here insert the sum deposited as rent in advance*] and all right, title, or interest in and to the said land and the possession thereof, and the said lease shall be forthwith cancelled.

have the honor to be,
Sir,
Your most obedient Servant,

(*Signature of Applicant, or of each Applicant.*)

[*Name in full, and address of each Applicant.*]

This application was received by me this day of 188 , at the hour of o'clock on the noon, and is numbered

(*Signature*)

Officer in Charge.

SCHEDULE No. 12.

Application for permission to rent land for construction of dam or reservoir.

* the undersigned, hereby make application to rent an area of situated parish of , county of , for the purpose of constructing a † and forward herewith the sum of , being the first year's rent, and the sum of , to cover cost of survey.

In the event of this application being granted, hereby undertake and guarantee to indemnify the Crown and the Church and School Estate from any claim for injury that may accrue therefrom.

And further agree that, failing compliance on , part of all or any of the conditions and regulations pertaining to water-rights, shall and will forfeit all money paid by , and all right, title, and interest to the land and improvements thereon, and the said right, title, and interest shall be forthwith cancelled.

have the honor to be,
Sir,
Your obedient servant,

‡ Signature of applicant or applicants.

This application received by me, this day of , 18 , at the hour of o'clock in the noon.

Officer in Charge of Church and School Lands.

* I or we.
† Dam or reservoir.
‡ Name in full of each applicant must be given, and witnessed and address given.

Department of Public Instruction,
Church and School Lands Office,
Sydney, 8th October, 1889.

REGULATIONS RELATING TO MINERAL LEASES IN THE CHURCH AND SCHOOL ESTATE.

HIS Excellency the Governor, with the advice of the Executive Council, has been pleased to make the following Regulations relating to Mineral Leases in the Church and School Estate, in pursuance of the powers conferred by the Church and School Lands Mining Acts of 1888 and 1889.

J. H. CARRUTHERS,
Minister of Public Instruction.

To whom Authority to Prospect may be given.

1. The Minister may grant to any holder of a miner's right or mineral license, or to any number of persons conjointly, each being the holder of a miner's right or mineral license, an authority, in the form of the Schedule hereto, numbered 1, to enter upon and search for any mineral other than gold in any leased or unleased Church and School land other than land already held under lease for mining for gold or other minerals. Provided always that in the event of two or more applications being received at the same time for authority to prospect the same land, priority of application shall be determined by lot as provided in Regulation 6. The holder of an authority shall, within seven days after the date thereof, define the boundaries of the land to be prospected, by erecting, at each corner of the land referred to in such authority, posts 3 inches in diameter, and projecting not less than 3 feet above the surface. Each such post shall be set in an ⌊ trench, 6 feet long and 9 inches deep, which shall indicate the general direction of the boundary, and one of such corners, or a tree adjacent thereto, shall have a board or metal plate affixed, having legibly written thereon: "Held under prospecting authority by [*name to be inserted*]."

Protection to works to be provided.

2. The holder of a prospecting authority will be required to protect all shafts and dangerous places and works sunk, made, or occasioned by or in his behalf, by fencing off or filling in all such shafts or workings prior to abandoning them and before commencing any further mining operations under such authority.

In carrying out the objects of such authority, all works must be conducted so as to prevent any damage to the lessee other than shall be unavoidable, and the Minister may, on non-fulfilment of these conditions, declare such authority as cancelled.

Fee to accompany Application for Prospecting Authority.—Area, &c., to be defined.

3. The fee to accompany each application for a prospecting authority, or for any renewal thereof, shall be, for minerals other than coal or shale, at the rate of 5s. for any area not exceeding 20 acres, 10s. for any area exceeding 20 acres and not exceeding 40 acres, and 20s. for any area exceeding 40 acres and not exceeding 80 acres, and for coal or shale shall be 50s. for any area not exceeding 320 acres, and 100s. for any area exceeding 320 acres and not exceeding 640 acres Every application must describe the locality and area upon which it is proposed to prospect.

Duration of Prospecting Authority.

4. The period for which a prospecting authority for minerals other than coal or shale shall be in force shall not exceed three calendar months, and for coal or shale six calendar months, commencing from the date of issue. Prior to its expiration, the holder thereof must either obtain a renewal of such, which may, at the discretion of the Minister, be granted for similar periods on production of satisfactory evidence that prospecting operations have been carried on in a *bonâ fide* manner, or that, from some sufficient cause, applicant has been unable to prospect. Otherwise an application for a lease of the whole or any part of the land specified therein must be lodged in the manner hereinafter described. And in case of any failure or neglect by the holder of the aforesaid authority to comply with these regulations, the Minister may declare all claim to the land void, and such land shall, after the expiration of three clear days from the date of voidance, be available to any other applicant.

Application for renewal of Authorities.

5. All applications for authorities under the provisions of the Church and School Lands Mining Act of 1888, shall, if renewed by the applicant within thirty days after the passing of the Church and Schools Lands Mining Act of 1889, be dealt with as if such application had been lodged immediately after the passing of such Act, and shall in every respect be subject to all the conditions thereof. During such thirty days, but no longer, the land described or covered by any application shall be reserved from lease or other disposition.

Priority of application for Authority, how dealt with.

6. In the event of more than one application being made for the same land, or any part thereof, whether by renewed application made within the thirty days, or subsequently by applications lodged at the same time, it shall be determined by lot

in the following manner which of such applications shall take precedence. And for the purpose of determining as aforesaid by lot the order of priority of several applications for the same land, the Officer in Charge of Church and School Lands shall write on tickets, of equal size, the names of the several applicants, which shall be placed (by the applicants should they desire to do so) in a box to be supplied to the Officer in Charge of Church and School Lands for the purpose, and that officer shall, without looking into such box, and in the presence of all the applicants, or such of them as shall choose to be present, draw one ticket from the box, and the application which shall take precedence shall be that of the applicant whose name shall be on the ticket so drawn; and the remaining applications may then be withdrawn and the deposits made therewith returned to the respective applicants, or the remaining tickets may be drawn out in rotation, and in that case the order of priority as between such remaining applications shall be in accordance with the order in which the remaining tickets shall severally have been drawn out of the box. And the Officer in Charge shall thereupon note upon each such application the order of priority as aforesaid, and shall forward such application or such applications as shall not be withdrawn to the Minister of Public Instruction. If the first in order of such applications be granted, the other applications for the same land shall be deemed to be refused, and the fees deposited will be refunded to the depositors; but in the event of the first in order of such applications being refused on any ground that would not necessarily be a ground of objection to the next or any other of such applications, then such other applications shall be considered and dealt with in the order determined as aforesaid, until one of such applications shall be granted, or the whole of them refused.

Transfer of Prospecting Authority.

7. The Minister may, upon the application of the holder or holders of a prospecting authority, sanction or authorize the transfer of such authority to any person or persons, who shall thereupon be held responsible for the due fulfilment of the conditions thereof during the remainder of the term for which the authority has been granted: Provided that such transfer shall be in form of Schedule hereto numbered 1A.

Governor may alter classification.

8. Upon production of satisfactory proof of the discovery of any mineral in any land specified in any prospecting authority, the Governor may alter the classification of any lands so as to include the same in the class of land suitable for mining operations.

Applicant for mineral lease must be holder of Authority.

9. No application for a mineral lease of any Church and School Land that has not already been classified as land suitable for mining operations will be entertained unless the applicant shall be the holder or the transferee of an authority under these Regulations; and the miner's right or mineral license held by each applicant must be lodged with the application, or a statutory declaration made to the effect that he or they are the holder or holders of a miner's right or mineral license, and that such have been produced to the Justice of the Peace before whom said declaration is made.

Extent of mineral lot and form of measurement.

10. The area of any mineral lease shall not exceed 640 acres, and (unless specially authorized by the Minister) shall not be less than 40 acres for coal-mining lots, and shall not exceed 80 acres, nor (unless specially authorized by the Minister) be less than 20 acres for other minerals. All mineral lots shall be measured in the form of a square, except in cases in which the Minister may authorize a departure from that form.

Mode of taking possession.

11. Prior to making application for a mineral lease, the intending applicant or applicants, or some one of them, or some person or persons duly authorized on his or their behalf, shall make a conspicuous mark upon a tree at or near to each angle of the land for which he or they intends or intend to apply, and shall cut trenches 6 feet long and 9 inches deep, which shall respectively indicate the general direction of the boundary-lines, or shall erect at or as near as possible to each angle of such land a post 3 inches in diameter, projecting above the surface not less than 3 feet, and each such post shall be set in an L trench, 6 feet long and 9 inches deep, and some one of the trees or posts aforesaid shall be deemed the datum tree or post, and the person taking possession shall affix to such datum tree or post a board or metal plate having legibly written or painted thereon the words "Applied for for a mineral lease by [*name to be inserted*];" and such posts and boards or plates shall be kept erected, and the words and name aforesaid shall be kept legible till survey of the area shall be made, as hereinafter provided: Provided always that if the nature of the ground is such as to render the erection of posts or the cutting of trenches impracticable or extremely difficult, some other effective mode of marking the boundaries may be adopted; but if it shall appear to the Minister of Public Instruction that the trees have not been marked or the posts have not been erected, or the trenches have not been cut, or that the boards or plates aforesaid have not been affixed, when they might and should have been, it shall be lawful for the Minister of Public Instruction to refuse to receive or entertain the application for such land: Provided further that nothing contained in this Regulation shall be deemed or construed to confer upon any applicant for a lease who shall not have deposited the first year's rent, deed, and survey fee as provided in the 12th Regulation, any right to any possession in respect of the land applied for.

Time of making and form of application.

12. Every application for a lease must be made during the currency of a prospecting authority, as provided by the 4th regulation: except in cases where the land applied for has already been classified as land suitable for mining operations, in which case application for a lease must be made within ten days and not less than three days after marking out the land by the person or persons by or for whom possession shall have been taken as aforesaid. But every such application shall be in the form in the Schedule hereto numbered 2, and shall contain as full and accurate a description as can be given of the extent and position of the land applied for, and of the position of the datum post or tree in relation to some fixed point or well defined marked tree. If letters are used for the purpose of marking any tree or other object referred to they must be conspicuously marked. And every such application shall state the term for which the lease is applied for and when the applicant or applicants proposes or propose to commence work upon or in connection with the land applied for, and the number of miners to be employed upon the said land at the various stages of the mine works. And every such application shall be dealt with according to the reasonableness of the proposals relating to the time of commencing to work and the number of men to be employed, and the Minister of Public Instruction shall judge of the reasonableness of such proposals; and if in his opinion the time fixed for commencing to work is not sufficiently early, or that the number of men proposed to be employed is too small, he may refuse to entertain such application; and thereupon the money deposited as hereinafter provided with or in respect of such application, or the unexpended balance of such money, shall be returned to the persons by whom such money shall have been deposited; and the decision of the Minister of Public Instruction shall in all such cases be final and conclusive upon all parties.

Mode of making application and receipt for rent and fees.

13. Every application as aforesaid shall be made to the officer in charge of Church and School lands, and therewith shall be deposited five shillings for each and every acre and fractional part of an acre applied for, and a further sum sufficient to cover cost of making survey of said land in accordance with the scale of charges contained in Schedule hereto numbered 3, together with one pound for deed fee and five shillings for stamp fee; and a receipt for such sums shall be issued by the aforesaid officer, or any officer acting on his behalf, in the form in Schedule hereto numbered 4.

Application not entertained unless deposit be sent.

14. The Minister of Public Instruction may refuse to entertain any application for a lease if the applicant or applicants, or depositor or depositors, shall have failed to lodge therewith the deposits specified in Regulation number 11, and if the Minister of Public Instruction shall so refuse, or shall for any of the reasons aforesaid refuse to entertain any such application, such application shall thereupon become and be void, and the possession of the applicant or applicants shall thereupon cease and determine.

Determination of question of priority.

15. In the event of more than one application being made for the same land or any part thereof, the application which shall have been first lodged with the officer in charge of Church and School lands in manner aforesaid shall be considered and dealt with under the provisions hereinbefore contained, unless it can be shown in evidence by statutory declaration that prior possession has been taken, in which case the Minister shall call for such investigation and reports as he may deem necessary, and the person establishing priority of possession shall be deemed the first applicant for the land, but if possession of the land shall have been taken by two or more persons at the same time, then it shall be determined by lot, in manner hereinafter provided for, which of such applications shall take precedence.

Priority determined by lot when not established by possession.

16. For the purpose of determining as aforesaid by lot the order of priority of several applications for the same land, the officer in charge of Church and School lands shall write on tickets of equal size the names of the several applicants, which shall be placed (by the applicants should they desire to do so) in a box to be supplied to the officer in charge of Church and School lands for the purpose; and that officer shall, without looking into such box, and in the presence of all the applicants, or such of them as shall choose to be present, draw one ticket from the box, and the application which shall take precedence shall be that of the applicant whose name shall be on the ticket so drawn, and the remaining applications may then be withdrawn and the deposits made therewith returned to the respective applicants, or the remaining tickets may be drawn

out in rotation, and in that case the order of priority as between such remaining applications shall be in accordance with the order in which the remaining tickets shall severally have been drawn out of the box. And the officer in charge shall thereupon note upon each such application the order of priority as aforesaid and shall forward such applications, or such applications as shall not be withdrawn, to the Minister of Public Instruction. If the first in order of such applications be granted, the other applications for the same land shall be deemed to be refused, and the rents and deed fees (and if survey of the land as hereinafter provided shall not have been made, the survey fees also), deposited as aforesaid, will be refunded to depositors; but in the event of the first in order of such applications being refused on any ground that would not necessarily be a ground of objection to next or any other of such applications, then such other applications shall be considered and dealt with in the order determined as aforesaid, until such one of such applications shall be granted or the whole of them refused.

Copies and extracts may be made of reports, &c.

17. Any person shall, upon application and payment of the respective fees specified in the Schedule hereto numbered 5, be furnished with a copy of the surveyor's report and plan of any land so applied for.

Governor may grant or refuse application.

18. If the Minister, on receipt of the application, plan, and report from the surveyor, be of opinion that a lease of the land applied for should not be issued, he shall then submit the application to the Governor, with such recommendation as he may think fit to make in the matter, and the Governor, with the advice of the Executive Council, after considering the application and recommendation of the Minister, and all the circumstances connected with such application may grant or refuse such application: Provided always that before or at the time of granting any such application, it shall be lawful for the Governor, with the advice aforesaid, to alter or modify such application in any manner that he may think fit, and to determine whether the whole or any part of the land therein applied for shall be included in the lease.

Land protected pending application for lease.

19. Pending any application for a mineral lease, it shall not be lawful for any person other than the applicant or applicants therefor or some person or persons legally entitled thereto, to enter upon, take possession of, or occupy, or to mark out as a prospecting area, or to include within the boundaries of any prospecting area, the land applied for, or any part thereof; and no such entry, possession, occupancy, or marking shall confer any right or title to the said land.

Pendency of application.

20. The pendency of an application shall begin from the marking out of the land by the applicant or his agent, and shall continue until the applicant makes default in proceeding with his application in accordance with these Regulations, or until the Minister shall refuse to entertain such application, or until the Governor, with the advice aforesaid, shall grant or refuse the same. But no application shall be recognized or considered as pending, the applicant for which shall not have made the deposits required and specified in 11th Regulation.

Land held under prospecting authority may be worked pending application.

21. The applicant or applicants for the conversion of a claim or any part of such claim held under a prospecting authority may, at his or their risk, work the land under said authority pending the granting or refusing of the application.

Governor's decision notified in *Gazette*.

22. As soon as possible after the Governor, with the advice aforesaid, shall have decided to refuse or grant any such application as aforesaid, notice of such refusal, or of the intention to grant a lease, shall be published in the *Government Gazette*. If the Governor, with the advice aforesaid, shall refuse to grant the lease, the application therefor shall be deemed to be abandoned, and such abandonment shall take effect from the date of the publication of the notice of such refusal in the said *Gazette*.

Form of lease.

23. If the Governor, with the advice aforesaid, shall determine to grant a lease of land applied for, or any part thereof, a lease shall be prepared in duplicate in the form in the Schedule hereto numbered 6, or as near thereto as the circumstances will permit, having regard to special requirements in certain cases, and shall contain the covenants, conditions, reservations, and exceptions, set forth in the said Schedule, and in these Regulations, and such others as the Governor, with the advice aforesaid, may, if he think fit, in certain cases direct, and every such lease shall bear date of the day of execution thereof by the Governor.

Execution and delivery of lease.

24. Forthwith, after the execution as aforesaid by the Governor, the lease in duplicate shall be forwarded to some duly authorized officer for delivery to the applicants, and notice in the form of the Schedule hereto numered 7 shall be sent to the applicant, requiring him or his attorney, constituted as hereinafter provided, to execute and take delivery of such lease; and upon execution of the lease in duplicate, one of such forms, after being stamped, shall be delivered to the applicant or his attorney, and the other shall at once be returned to the Minister: Provided always that the notice last aforesaid may be sent by post or otherwise to the address given by the applicant in his application.

Applicant, &c., may appoint attorney.—Attorney may execute lease.

25. Any applicant or other person who may, by reason of absence or otherwise be unable personally to comply with the requirements of these Regulations, may comply therewith by an attorney, constituted by the execution of a power of attorney, in the form of the Schedule hereto numbered 8, or to the like effect; and every attorney so constituted shall, before being permitted to execute any lease, or sign any transfer of mortgage, be required to deposit such power of attorney or a certified copy thereof, with the officer in charge of Church and School lands.

Lease, if not executed, may be cancelled.—Special permission may be given to execute lease.

26. If any successful applicant for a lease shall for a period of twenty-eight days after being called upon in the manner prescribed in the 24th Regulation, fail to attend by himself or his attorney to execute and receive the lease granted to him, he shall forfeit all right, title, and interest, in and to the land referred to in such lease, and to the possession thereof, and shall also forfeit all moneys paid or deposited with his application, and the lease shall be forthwith returned to the Minister for cancellation: Provided always that it shall be lawful for the Minister, in cases in which he shall be satisfied that the failure on the part of the successful applicant aforesaid to execute and receive the lease was due to or caused by circumstances over which such applicant had no control, and that such applicant was in nowise blamable for such failure, to permit such applicant at any time within thirty days after the lease shall have been returned as aforesaid to execute and take delivery of such lease, but if such lease shall not be executed by the applicant within the thirty days aforesaid, such lease shall be absolutely cancelled.

Rent, and payment of.

27. The rent reserved under any mineral lease shall be five shillings per acre, payable annually in advance, the first payment to be made with the application, which payment shall cover the rent reserved under such lease for one year from the granting thereof; and thereafter the rent for each ensuing year shall be paid in advance to the Colonial Treasurer in Sydney, and in default of any such payment the lease may be forfeited.

Providing for Royalty.

28. On every lease issued for mining for any specified minerals other than coal or shale the royalty reserved shall be 5s. per centum of the value at the mine, and for coal or shale 6d. per ton. Provided that if the royalty in respect of the coal or shale raised during any one year exceeds the rent paid for such year, the amount paid as rent may be deducted from the sum payable as royalty. But if the royalty as aforesaid in any one year amounts to less than the rent paid for such year, the lessee shall not for such year be required to pay royalty.

Record of quantity of mineral raised to be kept—Penalty if not so recorded.

29. At the expiration of each year or within one month thereafter a statement shall be furnished to the Minister under the hand of the lessee or some one of them, or of the Manager of the mine setting out the quantity and value of the mineral raised from the demised land, and the accuracy of every such statement shall be verified by the statutory declaration of the person making it. And the lessee, or lessees, or Manager of the mine shall keep a proper book in which he or they shall enter the quantity of mineral raised each day from the demised land; and the value of such mineral shall also be entered from time to time as soon as known; and such book shall at all times be open to the inspection of such officer as the Minister may authorise for the purpose. And it is further provided that if the lessee or lessees shall fail to pay the royalty reserved under his or their lease within thirty days after such shall have become due, although no formal demand shall have been made therefor, or shall fail to keep a proper record of the quantity and value of the mineral raised, or shall refuse to allow such record to be inspected by any officer authorised by the Minister for that purpose, or shall fail to observe and perform the other conditions and covenants of his or their lease, the Governor may thereupon or at any time thereafter cancel such lease, and on publication in the *Gazette* of such cancellation the lease shall be absolutely void.

Expenditure by lessees.

30. Lessees shall, within the first three years of their lease, expend at the rate of five pounds sterling per acre upon the land demised, and, in the application to be made as aforesaid, shall state how he or they purpose to expend such sum, and

when such expenditure shall commence: Provided always that it shall be at the discretion of the Minister to sanction a reduction in the amount of expenditure should sufficient cause for so doing be clearly shown; and it is further provided that, for the purposes of these Regulations, and any lease granted under these conditions, lessees shall be deemed to have complied to employ a given number of miners or workmen, if they, the lessees, to a number equal to the given number, work upon the demised land.

Duration, termination, and renewal of leases,

31. A lease for mining for minerals other than gold may be granted for any term not exceeding twenty years, and during such term the holder of any such lease, and the executors, administrators, and assigns of such holder shall be entitled at any time, with the consent of the Governor, to surrender such lease. And it shall be lawful for the Governor, in the name and on behalf of Her Majesty, to grant to any such person as aforesaid a lease for any term not exceeding twenty years of the whole or any part of the land demised by such surrendered lease. And any such lease may, with such consent, be renewed for any period not exceeding twenty years.

Mode of applying for renewal of lease, &c.

32. Applicants for a lease of the whole or any part of the land demised by a lease which shall have been surrendered as aforesaid shall proceed in the manner hereinbefore prescribed to take possession of such land and to make application therefor. But holders of leases who shall desire to obtain a renewal of the lease of the land demised to them may make application in writing addressed to the Minister of Public Instruction for such renewal; and if it shall appear to the Minister, after due consideration and inquiry, to be expedient, he shall recommend the Governor to grant such renewal, subject to the surrender of the lease previously granted; and provided all boundary-marks shall have been properly maintained it shall not (unless the Minister in certain cases think otherwise) be necessary for the purpose of obtaining such renewal to retake possession or to resurvey the land. Provided always that every lease so renewed shall be subject to such conditions and provisions, including any increase of rent or royalty, as the Governor may determine.

Lessees may determine lease on notice.

33. Lessees may at any time determine their leases by giving the Minister of Public Instruction three months' notice of their desire to do so, but no rent shall in any case be refunded.

Registration of lease.

34. Every mineral lease or sub-lease, and every transfer, assignment, mortgage, or encumbrance thereof, or of any part or parts of the premises therein, shall be registered in such office in the City of Sydney, in or in connection with the Department of Public Instruction, as the Minister of Public Instruction shall from time to time appoint, and the officer for the time being appointed to make such registration shall be entitled to demand therefor such fees, and such only, as are prescribed in the Schedule hereto numbered 5; and the fees so received shall be applied as provided for in the Principal Act; and it shall be the duty of the officer appointed as last aforesaid to make registration of every mineral lease which shall have been granted, executed, and issued as aforesaid, of every sub-lease, transfer, assignment, mortgage, or encumbrance, sanctioned or authorized by the Minister, and of every assignment affected by operation of law; and such registration shall be made in such book or books and in such form as the Minister shall from time to time direct; and all such books shall be open during office hours, to be inspected on payment of the fee prescribed in the Schedule hereto numbered 5; and the officer aforesaid shall afford every facility for such inspection, and shall supply copies of or extracts from entries in such books, and tracings of plans, on payment of the fees prescribed as aforesaid; but shall not permit any person other than an officer or clerk in the Department to make any such copy, extract, or tracing.

Transfers, &c., must be sanctioned and registered.

35. No transfer or assignment of any land demised as aforesaid, or of any interest therein (except an assignment by operation of law), and no sub-lease of any such land, or any part thereof, shall be valid or be recognized unless made with or under the license, sanction, or authority of the Minister of Public Instruction, and registered by the officer, referred to in the preceding regulation. In the event of any lessee or any person having a legal interest in any land demised as aforesaid, desiring to transfer or assign such land or any interest therein, or in the event of any lessee desiring to sub-let such land or any part thereof, he shall make application in writing to the Minister for such license, sanction, or authority, and upon such application, if made by the person who appears by the register aforesaid to be legally entitled to the lease of the land, or to the interest therein, as the case may be, it shall be lawful for the Minister, if he thinks fit, to grant such license, sanction, or authority. And with every such application for a license or authority to transfer or assign, the applicant shall forward an instrument in the form of the Schedule hereto numbered 9, under the hands of the parties to the transfer or assignment; and the Minister shall, if he grant such license, sanction, or authority, notify the same upon the face of the instrument. And every application for permission to sub-let shall state clearly whether it is proposed to sub-let the whole or only a portion, and if so, what portion of the land demised; and shall set out fully and distinctly the purpose for which it is proposed to sub-let such demised land or portion thereof, and the several terms, conditions, and restrictions to which such sub-lease shall be subject; and if the Minister shall see fit to license, sanction, or authorize such sub-lease, he shall place a minute to that effect upon such application; but before placing such minute upon the application, he may require such additions, alterations, or modifications to be made as he shall think fit. No application to license to transfer, assign, or sub-let shall be entertained unless accompanied by the registration fee therefor prescribed in the Schedule hereto numbered 5; but in the event of such application being refused, the fee forwarded therewith shall be returned. Provided always that no such license, sanction, or authority, shall be required in the case of any assignment made by any person in whom the right to sell or assign is vested by operation of law, but nevertheless every assignment by such person shall be registered as aforesaid.

Amalgamation.

36. In cases where it can be shown to the satisfaction of the Minister of Public Instruction that adjoining leases can be more effectually worked together than separately, and that the owners of other leases will not be prejudicially affected by the amalgamation of such leases, the Minister may, on the application of the lessees, and payment of the fee specified in schedule 5, authorize the amalgamation of such leases, and thereupon such leases shall become one lease, and the number of men to be employed shall in no case be less than half the aggregate number required under the leases so amalgamated. And failure to employ the required number of men shall render the title thereto forfeited.

Lessee to give notice of intention to work additional metals or minerals.

37. The Minister of Public Instruction upon receipt of notice from the holder of a mineral lease of his desire to mine for any mineral or metal other than that named in the lease, may grant to such person license or authority to mine in and win from the land demised as aforesaid such other mineral or metal named in such notice, upon and subject to such terms, conditions, and limitations as he may see fit in each case to impose; and every such license or authority shall be in the form in the Schedule hereto numbered 10, but with such additions, alterations, or modifications thereto or therein as the Minister may in each case see fit to make.

Power to declare application or lease void.

38. The Governor shall have power at any time during the progress of any application, and before the execution of the lease to declare by writing under his hand, that the application (describing it) is abandoned, and after the lease has been executed by him, and before its execution by the lessee, that such lease is void, and after such lease shall have been executed by the Governor, and the lessee, on the breach by the lessee of any covenant or condition of the lease, the Governor may direct that such lease be cancelled. If the Governor shall declare any such application abandoned, or lease void, or any lease which has been issued, void or forfeited, or direct that any such lease be cancelled, the Minister of Public Instruction, or officer in charge, shall forthwith publish a notice in the *Government Gazette* to that effect, describing accurately the application or lease referred to, and such notice in the *Gazette* shall be conclusive evidence in all Courts throughout the Colony of such declaration having been made, and thereupon the land shall become and be open, as it would have been if such application had not been made, or if such lease had not been executed.

Suspension of work.

39. The registered holder, or majority of the registered holders, of any lease which shall have been registered in terms of the 34th Regulation may at any time, upon satisfying the Minister of Public Instruction by statutory declaration that any of the following causes for suspension of work actually exist—viz., (1) that the demised land and mine are unworkable from any cause; (2) that the registered holder or holders require to be absent, for some sufficient cause, from the locality of the demised land, or are unable, by reason of sickness or other sufficient cause, to work in such land and mine; (3) that the supply of water is insufficient to allow the working of the said land and mine to be properly carried on—obtain from the Minister aforesaid an order in writing permitting the holder or holders of such land to suspend work upon and in connection with such demised land for any period not exceeding six months, and may, on payment of the fee prescribed therefor in the Schedule hereto numbered 5, and delivery to him of the order aforesaid, require the officer referred to in the 34th Regulation to register such permission as aforesaid.

No.

Date

Issued to

of

DESCRIPTION.

£ : :

SCHEDULE No. 1.
(Prospecting Authority.)

No.
£ : :

Date 18 .

Authority for Prospecting and Mining for on Church and School Lands.

Issued to of
under the provisions of the Church and School Lands Mining Act of 1888, and subject to Regulations prescribed thereunder, to be in force for three months only from this date.

SCHEDULE.
Describing land over which this authority shall be exercised.

Area.	County.	Parish.	Description.

Officer-in-Charge.

The following conditions are to be observed in connection with this authority:—

Within seven days from the date of issue, the holder of this authority will be required to mark out the land described herein by placing posts at each corner thereof, three inches in diameter, and projecting not less than three feet above the surface, each of which must be set in trenches six feet long by nine inches deep, to indicate the general direction of the boundaries. One of these posts, or a tree adjacent, must have a board or metal plate affixed thereto, with the words, "Held under Prospecting Authority by [*name to be inserted*]," legibly written thereon.

All shafts and dangerous places occasioned by or on behalf of the holder of this authority will be required to be protected, either by filling in or fencing off any such workings prior to abandoning them, and before commencing any further mining operations under this authority; and all works must be conducted in such a manner as to prevent any avoidable damage to the lessee; and the Minister may, on non-fulfilment of these conditions, declare such authority as cancelled.

Prior to the expiration of this authority, either an application for a lease of the whole or any part of the land must be made, or the holder may apply for a renewal of such authority, which may be granted at the discretion of the Minister for a further period of three months; but in no case will more than one renewal be allowed.

SCHEDULE No. 1*a*.

CHURCH AND SCHOOL LANDS.

Transfer of authority to prospect for over an area of acre. County of Parish of

("*I*" or "*We*") being registered as the holder of prospecting authority No. issued under the sanction of the Minister of Public Instruction to and dated the day of 18 , and numbered in Register do hereby transfer to

all my right, title, and interest in and to the prospecting authority aforesaid and the said

do hereby accept transfer of the right, title, and interest of the said in and to the prospecting authority aforesaid, subject to the provisions and conditions of the "Church and School Lands Mining Act of 1888," and hereby agree to be bound by all and singular the terms, conditions, covenants, provisoes, restrictions, and reservations contained in the said prospecting authority.

IN WITNESS whereof we have hereunto subscribed our respective names this day of 18 .

Witness to signature.	Transferror.	Transferee.

I, hereby sanction and authorize the transfer of the interest of in the abovenamed prospecting authority to

Dated at this day of 18 .

(Signature)

I have this day of 18 , registered the above transferee as the holder of prospecting authority No.

Officer in charge of Church and School Lands.

SCHEDULE 2.

CHURCH AND SCHOOL LANDS—MINERAL LEASE REGULATIONS.

Application for Mineral Lease.

To the Honorable (*Place*)
The Minister of Public Instruction, (*Date*)
Sydney.

SIR,

("*I*" or "*We*") hereby make application for a mineral lease of that piece or parcel of land situated County of parish of containing of which took possession on the day of under authority dated for the purpose of mining thereon and therein for for a period of years, by [*state how angles are marked*] at each angle thereof. The datum [*tree, post, or other mark*] is distant in a direction from

forward herewith ["*The sum of,*" "] being the first year's rent in advance of the said land, and ["*The sum of,*" "] to cover the cost of survey and deed fee. And hereby request that survey may forthwith be made of the said piece or parcel of land.

hereby acknowledge that this application is made upon the distinct understanding and condition that if shall abandon or fail to proceed with it, or if it is refused, the Minister of Public Instruction for the time being may deduct from the sum of [*Here insert the sum deposited as rent in advance*] deposited as aforesaid any cost to which in his opinion the Estate may have been put in or about or in respect of this application; and this application shall thereupon become and be void, and the possession aforesaid shall cease and determine. And if the lease shall be granted shall and will commence mining operations upon or in connection with the demised land within from and after the granting thereof, and shall and will employ upon such land not less than men during the first of the term thereby created, and not less than men during the remainder of such term. And shall and will at any time when called upon in terms of the Regulations relating to mineral leases on Church and School lands, to do so, execute, and take delivery of such lease, or failing therein for a period af twenty-eight days, after being so called upon shall and will forfeit the said sum of [*Here insert the sum deposited as rent in advance*] and all right, title, or interest in and to the said land and the possession thereof, and the said lease shall be forthwith cancelled.

have the honor to be,
Sir,
Your most obedient servant,

Signature of applicant, or of each applicant.
[*Name in full, and address of each applicant.*]

This application was received by me this day of 18 , at the hour of o'clock on the noon, and is numbered

Signature.

Officer-in-charge.

NOTE.—In dealing with this application, the number of men proposed to be employed, and the time proposed for commencing operations, will be taken into consideration. And if (taking into account all the circumstances of the case) such proposals do not appear to the Minister of Public Instruction to be reasonable, he may refuse to entertain the application, and thereupon such application will become and be void

SCHEDULE 3.

Scale of fees for Survey.

Area and Portion in Acres.	Amount for separate portion.	Amount for each additional Portion conterminous.
	£ s. d.	£ s. d.
20 acres and less than 40 acres	4 0 0	3 0 0
40 do. do. 80 do.	5 0 0	3 15 0
80 do. do. 160 do.	6 0 0	4 10 0
160 do. do. 320 do.	7 0 0	5 5 0
320 do. to 640 acres inclusive	8 0 0	6 0 0

Lineal measurements to be paid at the rate of £1 10s. per mile

SCHEDULE 4.

Receipt for Rent, Survey and Deed Fee.

Church and School Lands Office,
Sydney,

Received from this day of 18 the sum of pounds shillings and pence, being the first year's rent in advance, survey and deed fee for acres of land at applied for by the undermentioned applicant under the Mineral Lease Regulations for mining on Church and School lands.

Application No.

Name of Applicant address

£

Officer-in-charge of Church and School Lands.

SCHEDULE 5.

Scale of Fees for Registration, &c.

For each transfer	0	10	0
For each assignment	0	10	0
For each mortgage or other encumbrance	0	10	0
For each sub-lease	1	0	0
For each lot amalgamated	0	10	0
For registration of suspension of labour conditions	0	10	0
For copy of or extract from any entry, record, report, instrument, or document, per folio	0	1	6
For copy of any plan of one lease	0	5	0
For copy of every additional lease on same plan	0	2	6
For inspection of any record	0	1	0
For each lot amalgamated	0	10	0

SCHEDULE No 6.

Form of Mineral Lease.

THIS INDENTURE—made the day of , in the year of our Lord one thousand eight hundred and , between Her Most Gracious Majesty Queen Victoria, of the one part, and

(hereinafter called the lessee) of the other part—Witnesseth:—That in consideration of the sum of paid by the said lessee on the day of 18 , and of the rents hereinafter reserved, and of the covenants and provisoes hereinafter contained, Her Majesty doth by these presents grant and demise unto the lessee , h executors, administrators, and transferees, all that piece or parcel of land, containing by admeasurement , and more particularly described and delineated in the Schedule hereto, or in the plan hereunto annexed and numbered , except the surface of that portion thereof bounded by lines coloured red, containing acres, more or less, and all those mines, veins, seams, or deposits of [the mineral or metal proposed to be worked] in, on, and under the said land (hereinafter called the said mine); together with all and singular the shafts, levels, drifts, works, ways, fixtures, erections, liberties, easements, advantages, and appurtenances which are now or at any time during the term hereby granted may be held, occupied, or enjoyed therewith, for the purposes of mining upon and under the said land for , and also with full power for the said lessee , h executors, administrators, and transferees, and his and their agents and workmen (including contractors, tributors, and so forth), to dig, sink, drive, make, and use excavations, pits, shafts, levels, tunnels, water-courses, and other works necessary for winning and raising the in, on, or under the said land; and to take and appropriate the same during the term hereby granted; and to make and construct on the said land races, drains, dams, reservoirs, roads, and tramways, and also to erect on the said land all buildings, engines, furnaces, pumps, machinery, and appliances necessary for the purpose of winning and obtaining the in, on, or under the said land, and for effectually carrying on the works of the said mine; and also to erect on the said land such offices, cottages, and dwelling-houses for the use of the agents, workmen, and persons employed in the said mine and works, as the said lessee , h executors, administrators, and transferees shall think proper: To hold the said land, mine, and premises, with the appurtenances (subject nevertheless to the reservation or exception of that portion of the surface of the said land shown on the plan aforesaid, bounded by the lines coloured red, and to such rights and interests as may be lawfully subsisting therein at the date of these presents) unto the said lessee , h executors, administrators, and transferees, from the date hereof, for the term of years, and days next ensuing, for the purpose of mining therein or thereon for , working or winning the said , and for no other purpose,—yielding and paying therefor unto Her Majesty, Her Heirs and Successors, yearly, and every year during the said term, the yearly rent of in advance, the first year's rent having been paid as aforesaid, on the day of the next payment being the rent of the said land for month and days at the rate of fivepence per acre per month, from the day of to the thirty-first day of December, 18 , shall be made to the Colonial Treasurer, in Sydney, on or before the thirtieth day of November, 18 ; and thereafter, on or before the thirtieth day of November in each and every year, the yearly rent aforesaid (being the rent of the land hereby demised for the year commencing the first day of January next after each such payment) shall be paid to the Colonial Treasurer aforesaid, clear of all rates, taxes, and assessments to which the said land, mine, and premises are now, or at any time during the said term, may be subject or liable: Provided always, and it is hereby agreed, that if the said yearly rent shall be in arrear for thirty days after the same shall have become payable, whether such rent shall have been legally demanded or not, any officer appointed or authorized thereto by the Minister of Public Instruction may, by himself or his agent, enter upon the said land, and seize and distrain all minerals, metals, and ores actually got and raised from the said mine; and all machinery, apparatus, tools, waggons, carts, carriages, engines, plant, and all other goods, chattels, and effects whatsoever in, upon, and about the said land and premises; and every distress thus made may take away, sell, and dispose of as in cases of distress for rent reserved in common leases; and out of the moneys arising thereby retain so much as shall be sufficient to satisfy the said arrears, and which shall at the time of such sale be unpaid; and all expenses incurred by him or them in or in respect of such seizure, distraint, removal, and sale; and if there be any surplus such officer shall pay the same to the said lessee , h executors, administrators, or transferees; and the acceptance or receipt of rent by or on behalf of Her Majesty, after breach of any covenant hereinafter contained, shall not be or be deemed a waiver of the right of Her Majesty, or of the Minister of Public Instruction, or other officer on behalf of Her Majesty, to enforce observance of such covenant. And if the said lessee , h executors, administrators, or transferees, shall mine for or win from the said land, mine, and premises, any gold, or any earth, rock, stone, quartz, clay, sand, gravel, or soil containing gold, or any mineral or metal with which gold is associated or combined, without the express sanction first had and obtained of the Minister of Public Instruction for the time being, the Governor, with the advice of the Executive Council, may declare these presents void, and thereupon all the right, title, and interest of the lessee ; h executors, administrators, and transferees under these presents shall cease and determine both at law and in equity. And the said lessee do hereby, for h sel , h heirs, executors, administrators, and transferees, covenant with Her Majesty, Her Heirs and Successors, in manner following, that is to say:—

1. That the said lessee , h executors, administrators, and transferees, shall and will during the said term pay unto Her Majesty, Her Heirs and Successors, the rent hereby reserved, at the times and places hereinbefore appointed for payment thereof, clear of all deductions; and shall further pay as royalty the sum of

2. And shall and will upon and during all lawful working days, except when prevented by inevitable accident, or during the execution of repairs, make, construct, and work the said land, mine, and premises in the best and most effectual manner, and to the best advantage, without interruption; and shall and will diligently explore and search for in, on, and under the said land, mine, and premises.

3. And shall and will on and from the day of next, employ in the construction of the works, or in mining operations on or under the said land, during the first three years of the said term, and during the usual hours of labour able and competent workmen and miners at the least; and during the remainder of the said term, and during the usual hours of labour, shall and will employ as aforesaid, not less than such workmen and miners, unless prevented by inevitable accident, or during the execution of repairs, so that within the first three years of the term hereby created there shall be expended upon the said land, mine, and premises, such a sum of money as shall be equal to pounds sterling upon each and every acre hereby demised: Provided that the lessee, or if there be more than one lessee, each lessee who shall work as aforesaid, shall count as and be deemed for the purposes of these presents to be a workman or miner employed as aforesaid.

4. And shall and will during the said term, effectually drain the said mine, and pump all water likely to cause injury thereto, or which would prevent or interfere with the working thereof, and if the said mine shall be affected, or be liable to be affected by the same flow or body of water as any other mine or mines contiguous thereto, shall and will, if and whenever requested so to do, contribute with the lessee or lessees, or owner or owners of such other mines, a reasonable proportion of the machinery and labour necessary to free and keep such mine or mines free from water to a workable extent; or if the said mine shall be kept free from water to a workable extent, either wholly or partially by means of the machinery and labour of a contiguous mine or mines, or by reason of any works constructed or money expended by the lessee or lessees, or owner or owners, of such contiguous mine or mines—then shall and will pay to such lessee or lessees, owner or owners, as aforesaid, a reasonable proportion of the cost of such machinery, labour, or works, or a

reasonable proportion of the money so expended, and the Minister of Public Instruction for the time being, may, if, and whenever he shall think fit, depute some efficient person who shall have access to and inspection of all such mines, to determine when the said mine is so freed or kept wholly or partially free from water, and what are the reasonable proportions of such expenses aforesaid, and to whom and when the same are to be paid,—such decision to be final and conclusive on all parties.

5. And shall and will make such provision for the disposal of the detritus, dirt, waste, or refuse of the said mine that the same shall not be an inconvenience, nuisance, or obstruction to any roadway, river, creek, or private, or Crown, or Church and School lands, or shall not in any manner occasion any public or private damage or inconvenience.

6. And shall and will erect, and keep erected, during the said term, a post painted white, at each angle of the said land, and at such points along the boundary-lines as shall be necessary so as plainly and accurately to define the boundary-lines and angles of the said land; and each such post shall be fixed firmly in the ground, and shall project above the surface thereof, not less than three feet.

7. And shall and will, as often as required so to do during the term, make and deliver to the Minister of Public Instruction for the time being, or any officer appointed or instructed to collect, obtain, or receive the same, all such true and proper plans and sections, returns, and statistics of the workings and operations of the said mine, made up to the last day of the preceding month (the truth and accuracy of which shall be verified by the statutory declaration of the lessee for the time being, or the manager or other officer having the charge, control, and direction of the works of the said mine) as the Minister of Public Instruction shall from time to time direct. And shall and will, whenever required by the Minister of Public Instruction so to do, deliver to any officer appointed or instructed as aforesaid, samples of the minerals, metals, and ores, or any of them, found in or upon such mine and land.

8. And shall and will at the expiration of each year, or within one month thereafter, furnish a statement to the Minister under the hand of the lessee or some one of them, or of the Manager of the mine, setting out the quantity and value of the mineral raised from the demised land; and the accuracy of every such statement shall be verified by the statutory declaration of the person making it; and the lessee, or lessees, or Manager of the mine shall keep a proper book in which shall be entered the quantity of mineral raised each day from the demised land, and the value of such mineral shall be entered from time to time as soon as known, and such book shall at all times be open to the inspection of such officer as the Minister may authorise for the purpose.

9. And shall and will, during the said term, make proper and reasonable compensation to the occupier or occupiers, lessee or lessees from the Church and School Estate of any adjoining land in respect of any damage which may be sustained by him or them, by reason of the working of the said mine, or the carrying on of the works thereof or connected therewith, such compensation to be determined by the Minister of Public Instruction, or by some person authorized by him so to do.

10. And shall and will permit any mining surveyor, or other person duly authorized in that behalf, with all proper or necessary assistants, at all reasonable times, during the said term, quietly to enter into and upon the said land, mine, and premises, to survey and examine the state and condition thereof, and for the purposes aforesaid, to descend all pits and shafts, and to enter into and use all adits, levels, galleries, drives, and excavations, and to use all roads, ways, engines, ropes, machinery, gear, appliances, materials, labour, and other things in or on the said land and mine, which shall be by him deemed necessary, without making any compensation for the same, so nevertheless that in so doing no unnecessary interference is caused with the carrying on of the said mining works.

11. And further, shall and will at all times during the said term keep and preserve the said mine and premises from all avoidable injury or damage, and also the levels, drifts, shafts, water-courses, roads, ways, works, erections, and fixtures therein and thereon in good repair and condition, except such of the matters and things last aforesaid as shall from time to time be considered by a mining surveyor or other proper officer authorized by the Minister of Public Instruction to inspect and report upon such matters and things to be unnecessary for the proper working of the said mine or any contiguous mine, and in such state and condition shall and will at the end or sooner determination of the said term deliver peaceable possession thereof, and of all and singular the premises hereby demised to Her Majesty, Her Heirs and Successors, or to the officer authorized to receive possession thereof. Nevertheless the Minister of Public Instruction may, if he think fit, permit the lessee , h executors, administrators, and transferees, within six months after possession shall have been received as aforesaid, to enter upon the said land, and to remove therefrom such machinery, plant, and apparatus as shall have been erected and fixed upon such land, and such earth, rock, ore, mineral, or metal as shall have been won from and raised to the surface of such mine.

12. And shall not nor will use or occupy, or permit to be used or occupied, the said land, or any part thereof, for other than mining purposes, or for pasturage, or as sites for dwellings, or garden ground for the persons employed in, on, or about the said mine,

13. And shall not nor will mine in or upon the said mine, land, and premises, for any mineral, metal, or ore other than without the express sanction of the Minister of Public Instruction.

14. And shall not nor will transfer, underlet, or part with possession of the said land, mine, and premises, or any part thereof, or mortgage, charge, or encumber the same, without the license first had and obtained of the Minister of Public Instruction for the time being. Provided always that no such license shall be necessary in cases where, by operation of law or otherwise, a sale of the said land, mine, and premises, or any part or parts thereof, is made by any person or persons entitled to sell the same for the benefit of the creditors or a creditor of the lessee or h transferees, or in cases where the lessee or h transferees desire to let the said mine and premises, or any part thereof, to be worked on tribute.

15. And shall not nor will close up or obstruct any adit or adits to or from any contiguous mine or mines, whereby fresh air is admitted or ventilation promoted.

16. And shall not nor will plead acceptance of rent by or on behalf of Her Majesty as a waiver of the right of Her Majesty, or of the Minister of Public Instruction, or other officer on behalf of Her Majesty, to enforce observance of the covenants herein contained, or of the right of the Governor, with the advice of the Executive Council, to declare these presents void for breach of any such covenant. Provided always and it is hereby agreed and declared in manner following:—

17. That it shall be lawful for Her Majesty, Her Heirs, Successors, and Assigns, to make and use in, on, or under the said land, any levels, drifts, leads, shafts, water-courses, adits, roads, ways, and passages for freeing and keeping free any other lands or mines from water, or for conveying water to any other lands or mines for mining purposes, or for supplying any other mines with fresh air, or for effectually working any other mines, or for any public purpose whatsoever, causing as little damage, obstruction, or interference as possible to or with the said mine and the works thereof. And if, at any time during the term hereby created, any part or parts of the land hereby demised, or any part or parts of the surface thereof, shall be required for the purpose of any township, village, railway, road, canal, water-course, reservoir, or for any other public purpose, it shall be lawful for the Governor for the time being, with the advice of the Executive Council, on giving three months' notice of his intention so to do, to cause to be set out the part or parts of the said land, or of the surface thereof, which shall be so required; and as soon as the same shall be so set out, such part or parts of the said land, or of the surface thereof, shall cease to be included in the land hereby demised, and the lessee , h executors, administrators, or transferees, shall not be entitled to any abatement of rent, or any compensation whatever in respect thereof.

18. And if the lessee , h executors, administrators, or transferees, shall prove to the satisfaction of the Minister of Public Instruction for the time being that the said mine is unworkable from any cause whatsoever, or that the lessee , h executors, administrators, or transferees, is or are unable, by reason of sickness or other sufficient cause, to work in such land or mine, or that the supply of water is insufficient to allow the working of the said land, mine, and premises, to be profitably carried on, the said Minister of Public Instruction may grant permission to suspend work therein or thereon, for any period not exceeding six months, without the lessee , h executors, administrators, or transferees, incurring in respect thereto any forfeiture or penalty for breach of any covenant herein contained.

19. And, lastly, that if the lessee , h executors, administrators, or transferees, shall at any time during the said term fail to use such land *bonâ fide* for the purpose for which it has been demised, or if and whenever the said rent or royalty shall be in arrear for days after the time appointed for payment thereof, whether the same shall been legally demanded or not, or if and whenever there shall be a breach of or non-compliance with the covenants and provisoes herein contained by the lessee , h executors, administrators, or transferees, and the lessee , h executors, administrators, or transferees, shall not have obtained from the Minister of Public Instruction for the time being permission to suspend work as aforesaid, in case the breach shall have been for non-compliance with the covenants for the employment of workmen or miners, or for the working of the mine, the Governor, with the advice of the Executive Council, who alone and finally shall judge and determine the matter upon the evidence or reports submitted by the Minister of Public Instruction for the time being, may declare these presents void; and upon publication in the *Government Gazette* of notice of such declaration, all the right, title, and interest of the lessee , h executors, administrators, and transferees, under these presents shall cease and determine both at law and in equity; and the production of a copy of the *Government Gazette* containing a notice, purporting to be signed by the

Minister of Public Instruction, declaring the lease void, shal be conclusive evidence in all Courts whatsoever in the Colony of New South Wales, of a breach of or non-compliance with the covenants and provisoes herein contained sufficient to authorize and sustain such declaration having been lawfully made, and that the interest created hereunder has been lawfully determined; and thereupon it shall be lawful for Her Majesty, Her Heirs, and Successors, or Her or their agents or officers, or for any bailiff or other person duly authorized thereto, or for any holder of a prospecting authority, who has the permission of the Minister of Public Instruction for the time being, without any previous demand whatsoever, to enter forthwith into and upon the said land and premises hereby granted, and the same to repossess and enjoy as fully and effectually to all intents and purposes as if these premises had not been made, and the said lessee , h executors, administrators, and transferees, to expel and remove, without any legal process, and as effectually as the Sheriff might do in case judgment in ejectment had been obtained and a writ of *habere facias possessionem* had been issued on such judgment; and in case of such entry and any legal proceeding taken in respect thereof, the defendant or defendants in any such proceeding may plead leave and license in bar thereof; and these presents shall be conclusive evidence of such leave and license by the lessee , h executors, administrators, and transferees, or other the person or persons, plaintiff or plaintiffs in such proceedings, for such entry or other matters complained of in such proceedings.

In witness whereof, His Excellency the Right Honorable CHARLES ROBERT, BARON CARRINGTON, a Member of Her Majesty's Most Honorable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and St. George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies, hath, on behalf of Her Majesty the Queen, caused the Seal of the said Colony to be affixed to this Grant, and also set his Hand, at Government House, Sydney, in the said Colony, the day and year first above written, and the lessee ha also set h hand and seal the day of 18 .

Signed, sealed, and delivered, by the within named in the presence of }

PLAN.

Parish of
County of

Scale, chains to an inch

District.

SCHEDULE No. 7.

CHURCH AND SCHOOL LANDS—MINERAL LEASE REGULATIONS.

Notice to Applicant to execute Lease.

Department of Public Instruction,
Church and School Lands Office, Sydney,
18 .

I hereby notify you that the Mineral Lease for which you made application, No. on the day of 18 , has been granted and executed by His Excellency the Governor, and is now lying at the office awaiting execution by you. You are therefore hereby required to attend at such Office, on or before the day of to execute and take delivery of the said Lease; and failing so to do the Lease will be forthwith transmitted to the Honorable the Minister of Public Instruction for cancellation.

I have the honor to be,
Your obedient servant,
Officer-in-Charge .

SCHEDULE No. 8.

CHURCH AND SCHOOL LANDS—MINERAL LEASE REGULATIONS.

Form of Power of Attorney.

Know all men by these Presents:

That ["*I*," *or* "*We*," *adding the name, address, and description of each person*] do hereby make, nominate, constitute, and appoint, and in place or stead put of to be true and lawful Attorney for and in name and as act and deed, to sign, seal, and take delivery of the mineral lease for which on the day of 18 , made application (No at), under the provisions of the "Church and School Lands Mining Act of 1888," and the Regulations made thereunder, and which has been or shall be granted and issued by the Governor, and for and in name to enter into all such covenants and agreements as shall be required to enter into in and by the said lease and generally for and in name to do, execute and perform all such other acts, deeds, and things as may be necessary or may be required to be done, executed, or performed in and about the application for and execution of such lease; and do hereby ratify and confirm all and whatsoever the said shall lawfully do, or cause to be done in or about the premises, by virtue of this power.

In witness whereof, have hereunto set hand and seal, this day of 18 .

(*Signature.*)

Signed, sealed, and delivered by the abovenamed in the presence of

---

District of

SCHEDULE No. 9.

CHURCH AND SCHOOL LANDS—MINERAL LEASE REGULATIONS.

Transfer of lease, lot County of
Parish of

["*I*" *or* "*We*," *as the case may be*] being registered as the lessee of all that piece or parcel of land demised by a certain mineral lease granted by Her Majesty the Queen to and dated the day of 18 , and numbered in register in consideration of the sum of paid to by the Transferee , the receipt of which sum hereby acknowledge, do hereby transfer to all right, title, and interest in and to the piece or parcel of land as aforesaid, and do hereby accept transfer of the right, title, and interest of the said in and to the demised land aforesaid, subject to the provisions and conditions of the "Church and School Lands Mining Act of 1888" and the Regulations made thereunder, and hereby agree to be bound by all and singular the terms, conditions, covenants, provisoes, restrictions, and reservations contained in the said lease.

In witness whereof, we have hereunto subscribed our respective names this day of 18 .

Witness to Signature.	Transferror.	Transferee.

I, hereby sanction and authorize the transfer of the interest of in the above-named lease to
Dated at this day of 18 .

(*Signature*)

I have this day of 18 .
Registered the above Transferee as the holder of Mineral Lease No.

Officer in charge of
Church and School Lands.

SCHEDULE 10.

License to mine for other metals or minerals.

I, the Minister of Public Instruction, of the Colony of New South Wales, hereby authorize you who appear to be the present legal holder of the Mineral Lease granted by Her Majesty the Queen, to and dated the day of 18 , and numbered in the register and your executors, administrators, and transferees, to work for, and win from the mine, comprised in such lease for in addition to the metal or mineral mentioned in the said lease, for the residue of the term thereby granted, subject to the payment of rent, at the rate per acre of the land demised by the said lease, in addition to the rent reserved under the said lessee, and to the following conditions, terms, and limitations, that is to say:—[Here set forth the terms, &c.] And this license is granted upon the express condition that the rent aforesaid shall be payable and recoverable in the same manner as rent reserved under the said lease; and the covenants, provisoes, and agreements in the said lease shall be applicable in all respects to the rent hereby made payable, and to the hereby authorized to be worked, and the said lease shall be read throughout as the said hereby authorized to be worked, demised by the said lease, and the rent hereby made payable was reserved and made payable in the said lease.

Dated at this day of 18 .

Minister of Public Instruction.

Sydney: Charles Potter, Government Printer.—1889.

[1*s.* 3*d.*] 701—B

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

MINING.

FURTHER CORRESPONDENCE RESPECTING CANCELLATION OF GOLD LEASES NOS. 650 AND 661, HUNTER AND MACLEAY; ALSO, APPLICATION FOR SAME LAND BY J. ABIGAIL AND ANOTHER AND T. A. PAULSON AND OTHERS.)

Ordered by the Legislative Assembly to be printed, 1 *March*, 1889.

[*Laid upon the Table of the Honorable the Legislative Assembly of New South Wales by the Secretary for Mines, further correspondence, reports, and minutes in connection with the cancellation of gold leases Nos.* 650 *and* 661, *Hunter and Macleay Mining District; also, subsequent applications for the same land. In continuance of Returns ordered to be printed* 21*st December*, 1888, *and* 8*th January*, 1889.]

F. Abigail, Esq., M.P., to The Secretary for Mines.

Sir, Department of Mines, Sydney, 17 January, 1889.

I have the honor to direct your attention to certain allegations that have been made about a certain gold-lease claim known as the Mountain Maid. It has been said and repeated over and over again by some people, that I, while acting as Secretary for Mines, improperly and corruptly used my position for the benefit of one of the applicants because he was my brother, and gave him a lease which could not and would not have been given if the names had been different. I desire to point out that if these statements have any foundation in truth it must prove one of two things—that I either ruthlessly discarded the reports of the proper officer of the Department in this case, or else they, the officers, lent themselves to an improper transaction to please me. In either case a very gross wrong would have been done. Now, knowing as I do, that there is not one word of truth in these charges, that in fact the case was dealt with in exactly the same way that I have dealt with the thousands of cases that came before me during the last two years, without any thought as to the names of the applicants, and wishing to relieve the Department from a charge which, if true, would sap the foundation of the public confidence in a Department which is dealing with the vast mineral lands of the Colony, and believing you would not for party or political reasons or purposes lend yourself to any action which is not founded on truth, I ask that you will cause a full inquiry to be made into the facts of this case, so that the truth may be known, and if any are guilty of wrongdoing they should be pointed out to the public. Asking your early attention and reply.

I have, &c.,
F. ABIGAIL.

Submitted to Under Secretary for report.—J.M.C., 17/1/89.

The Under Secretary for Mines to J. McElhone, Esq., M.P.

Sir, Department of Mines, Sydney, 14 January, 1889.

I have the honor to invite your attention to my letter of the 12th ultimo, referring to Mr. John M'Cracken's complaint against the conduct of the Warden at Bingera, Mr. C. Lawson, and requesting that you would be good enough to call at this office and see the papers relating to the matter.

I have, &c.,
HARRIE WOOD,
Under Secretary.

I have no wish to see the papers referred to. The person wrote me making certain statements. I sent the letter to the Minister for Mines. After the action of the Mines Department in the case of Mr. Abigail's brother, I doubt if the public can place any confidence in the officers and Head of the Department.—J. McELHONE, Sydney, 16/1/89. Mr. H. Wood, Under Secretary, Mines.

It would perhaps be well for the Under Secretary to apply to Mr. De Courcy Browne asking him to be good enough to furnish the *précis* he read last night *re* Mountain Maid in Parliament, and when it is received Mr. Wood should prepare a report in reply to it for presentation to Parliament. It would assist this work if the Under Secretary read Mr. Browne's speech in *Hansard*.—F.A., 17/1/89.

Ask Mr. De Courcy Browne, M.P., to favour me with a copy of the *précis*.—H.W., 17/1/89. Asked.—18/1/89.

Report of the Under Secretary for Mines to the Honorable the Minister for Mines.

Upon the complaints respecting the non-observance of the labour conditions of gold lease No. 650, known as the Curreki Mine, and gold lease No. 661, known as the Mountain Maid Mine, both in the Coolongolook Division of the Hunter and Macleay Mining District.

Sir, 19 January, 1889.

Pursuant to your instruction of the 17th instant upon the letter of the late Minister for Mines, I have the honor to submit the following report:—

Curreki Mine.

Under date 8th November, 1887, Mr. Henry Tagg, of Coolongolook, complained of the non-observance of the labour conditions of the lease (No. 650) known as the Curreki Claim.

Upon this complaint the lessees, Messrs. Dickson, Cooper, and Paulson, were, in the usual manner, called upon to show cause why said lease should not be cancelled for non-observance of the conditions thereof.

Under date 5th December, 1887, Mr. Paulson, one of the lessees, complained that the labour conditions of gold leases Nos. 650 and 661 were not being observed, and asked that they be cancelled.

He was thereupon informed that action was being taken on a prior complaint.

No cause was shown, and consequently, after ascertaining from the Warden that work had not been resumed on lease No. 650, it was in due course cancelled. Owing to representations made chiefly by the Warden, that Mr. Paulson had been victimised and kept idle by his co-lessees beforehand notice was sent to him, and he retook possession of the land formerly comprised in the cancelled lease No. 650 (the Curreki Mine), and in due course lodged application No. 182 for a lease of that land. Messrs. James Hassall, Thomas H. Jones, Paul Paulson, and Alfred S. Paulson were joined with Mr. T. A. Paulson in this application.

In July, 1888, Mrs. C. J. Kirchner wrote asking that action upon the above application might be delayed to enable Mr. Kirchner to establish his right to an interest therein. In consequence of this letter action was stayed as requested, but in October, finding no steps had apparently been taken by Mr. Kirchner, a letter was written to Mrs. Kirchner informing her that unless steps were taken at once the application would be dealt with, and accordingly, after waiting a reasonable time, action was resumed, and the application No. 182 is now ready for approval.

Mountain Maid Mine.

On the 23rd April, 1888, Messrs. Wm. Jennings and John Perry wrote stating they had applied for 10 acres of land at Coolongolook, held by Messrs Paulson and party, and which had not been worked for two years, and referring to Paulson and party having locked up some 50 acres, which, if thrown open, would give employment to a number of miners.

Upon this, Mr. Abigail, who was always strongly opposed to the locking up of mining lands, directed an immediate inquiry. The reply obtained from the Warden was that the statement of Messrs. Perry and Jennings was untrue. Upon further reference to the Warden, it was stated by him that no complaint had been made by Messrs. Perry and Jennings of the non-working of leases at Coolongolook.

On the 7th May, 1888, Mr. Paulson wrote asking what had been done respecting the cancellation of gold-mining lease No. 661, and on the 18th of the same month Messrs. Jennings and Perry sent in a complaint of non-work upon the same lease.

On the 21st May, 1888, the lessees were called upon to show cause why gold lease No. 661 (the Mountain Maid Mine) should not be cancelled for non-observance of conditions. Neither of the lessees showed cause, but Mr. Kirchner, who claimed an interest in the lease, sent in a letter which was regarded as an admission of non-work. Thereupon the Warden was asked to report whether work had been resumed on gold lease No. 661. In reply the Warden forwarded two telegrams from the Warden's Clerk at Coolongolook, in which he, referring to an entirely different piece of ground, stated it was held by Shaw and party, and that over 100 tons of quartz had been raised. Upon discovering this error, I again requested the report previously asked for, and, owing to the loss of time occasioned by the error, marked it very urgent. Upon receipt of a report that work had not been resumed thereon it was decided that the lease 661 be cancelled. It was subsequently cancelled in due course, and the cancellation was published in the *Government Gazette* on the 20th July, 1888.

On the 31st May, 1888, Messrs. Jennings and Perry wrote urging that Mr. Paulson was not entitled to beforehand notice, and that such notice should be given to them as the only *bonâ fide* complainants. Thereupon the Minister noted that the letter should receive serious consideration before giving any beforehand notice. The effect of this was, I think, that no beforehand notice was sent to either of the complainants (it is possible, though I have no recollection of it, that notice was given verbally to one or both parties), but on the 21st July, 1888, Messrs. Perry and Jennings took possession of the land formerly comprised in cancelled lease No. 661 at 1 o'clock in the morning, and at 8 o'clock on the morning of the same day Messrs. Paul and Alfred Paulson took possession of the same. The Messrs. Paulson lodged their application No. 187 on the 24th July, 1888, at 12 o'clock noon; Messrs. Perry and Jennings lodged their application No. 188 on the same day at a quarter to 3 o'clock in the afternoon. Messrs. Perry and Jennings being the first in possession after the title under Gold Lease 661 had been cancelled they would be regarded as the persons whose application would be dealt with, and that of the Messrs. Paulson would be refused; but as both applications had been lodged before the time prescribed by the Regulations I recommended that both be refused, and that as Messrs. Jennings and Perry were first in possession they should receive beforehand notice. This recommendation was approved by the Minister.

On the 10th of August, Messrs. Hassall, Jones, and T. A. Paulson lodged an application, No. 189, for the same land, and as the applications 187 and 188 were then pending, I recommended that it also be refused. This was approved by the Minister.

Before sending these applications to the Executive Council for refusal, inquiry was made, as is usual in similar cases, whether any other applications had been lodged for the same land, and finding there were no further applications, Nos. 187, 188, and 189 were, in due course, refused, and the refusal was gazetted on the 20th September, 1888. I believe beforehand notice was given, in accordance with my recommendation, to Messrs. Jennings and Perry. This is in accordance with the usual practice in similar cases.

On

On the 21st September, 1888, Messrs. Abigail and Perry took possession of the land at 2 o'clock, in the afternoon, and on the 29th September lodged their application, No. 190, to lease the land. I was informed, I think, by Mr. Perry, that Mr. James Abigail had taken the place of Mr. Jennings for some reason connected with Mr. Jennings' private affairs.

Messrs. Hassall, Jones, and Paulson having lodged an objection to application No. 190, on the ground that they claimed the land under application No. 189, I suggested to the Warden to advise them to withdraw their objection, because application No. 189 having been refused before Messrs. Abigail and Perry took possession, their objection could not be sustained, and if an inquiry were held they would probably lose the £5 deposited with their objection. Mr. Paulson having refused to withdraw, the inquiry was held, and evidence was given showing that the objectors relied upon their title under application No. 189, which, as before stated, had been refused. Upon receipt of the Warden's report forwarding the evidence, I recommended that as application 189 had been refused before Messrs. Abigail and Perry took possession, application No. 190 be allowed to go on, that the objectors be informed of the ground of refusal of application No. 189, and that the objectors' deposit, or so much of it as the Warden might award, be applied towards payment of the costs incurred by the applicants. Action upon application No. 190 was expedited because I understood the applicants were anxious to commence work, and because it had been represented that the locality, which is a promising one, was in a languishing state owing to so much of the land having been locked up.

In conclusion, I beg leave to state that I do not know of any particulars in regard to these leases and applications in which the action differs from the action in similar cases without regard to the persons interested, except so far as beforehand notice was given to Mr. Paulson concerning the cancellation of lease No. 650 (the Curreki mine) instead of to the first complainant. In regard to this, if I may be permitted to say so, the late Minister was perhaps unduly influenced by representations made in favour of Mr. Paulson, and I understand the late Minister's minute, dated 1st June, 1888, on printed paper (28), page 7, of the return ordered to be printed on the 21st December, 1888, to admit so much.

I have, &c.,
HARRIE WOOD.

T. De Courcy Browne, Esq., M.P., to The Under Secretary for Mines.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 21 January, 1889.

As your letter of the 18th January, asking for a *précis* of the Mountain Maid case, has no office number, please state if this *précis* is to be a record of the Department, as, if not, I decline to send it. Mr. Abigail has asked for a special inquiry, and I am willing to furnish my *précis* as part of the case, so that the record of the inquiry will be complete.

Sorry for troubling you; but as the whole blame of the case has been thrown by Mr. Abigail upon "his officers," I desire to act carefully in dealing with him.

Yours faithfully,
T. DE C. BROWNE

Inform that the *précis* was asked for officially, and will be a record of the Department.—H.W., 22/1/89. Informed, 23/1/89.

T. De Courcy Browne, Esq., M.P., to The Under Secretary for Mines.

Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 24 January, 1889.

In reply to your letter, dated 18th January, asking me to favour you with a copy of the *précis* relating to the lease known as the "Mountain Maid" read by me "in the course of debate in the Legislative Assembly on the 16th instant," I beg to herewith furnish the copy as requested.

I have, &c.,
T. F. DE COURCY BROWNE.

[*Enclosure.*]

Précis.

The "Mountain Maid" lease was formerly a 10-acre lease, G.L. 661, at Coolongolook, County Gloucester, portion 75, and held by Paulson and party.

A considerable quantity of work appears to have been done on the leased area.

It was reported for non-working by Paulson and by Perry and Jennings, and for this cause was ultimately gazetted forfeited on the 20th July, 1888, on the regular Gazette day, Friday.

On page 3 of the Parliamentry paper appears a minute on exhibit 7, in which the Minister orders that beforehand notice be sent to T. A. Paulson of the forfeiture of G.L. 661. This instruction was not obeyed, which is very suspicious, especially in view of *Minister's minute* on exhibit 38.

This minute has no reference to the lease referred to in the minute on exhibit 7.

On the 21st July, the forfeited lease was repegged by Perry at 1 a.m., and by Paulson at 8 a.m., Perry's application being No. 188, and Paulson's 187.

As Bulladelah is the nearest telegraph station to Coolongolook—19 miles distant,—it is curious how Perry should have been on the land at 1 a.m., one hour after the land could be lawfully reoccupied. He evidently had beforehand information as to when the lease would be gazetted, and was in the locality waiting for midnight to repeg—a leak evidently in the Department.

On the 24th July both Perry and Paulson lodged their lease applications. No. 187—Paulson—at noon, and Perry—188—at 2·45 p.m.

As the three days required by the Leasing Regulations (Nos. 3 and 48) had not elapsed—though seventy-two hours had—there was no alternative but to refuse the two applications. This was done.

The Minister's minute had reference to lease 650, the "Curreki." This minute bears date 18/1/88, whereas the holders of lease 661 the "Mountain Maid" were not called upon to show cause till the 21st May, 1888.

Beforehand notice was given to T. A. Paulson as to 650.

I cannot find that beforehand notice was given to either party. But complaint having been lodged by Perry and Jennings as well as by T. A. Paulson, there would have been no great irregularity in giving beforehand notice to Perry and Jennings, seeing that it had been represented that Paulson being one of the offending lessees was not entitled to beforehand notice.

Application 187 was by Paul Paulson and Alfred Paulson.

Application 188 was by John Perry and Wm. Jennings.

The

The refusal of 187 and 188 was confirmed by the Executive Council on 4th September, 1888, but not gazetted till the 20th September, a delay which was premeditated, and for a special purpose, as follows :—On the 10 August, 1888 a third application to lease the land of the late G.L. 661 was made in the names of Hassall and Party—No. 189. As there were already two lease applications on the land the third one—No. 189—had to be refused, as the land was not available.

The refusal of this—the third application—was confirmed by the Executive Council on the 19th September, and, extraordinary to state, was, with 187 and 188 (which had passed the Executive Council fifteen days previously), gazetted refused on the following day—a speedy action, very suspicious in itself.

This is in accordance with the usual practice in such cases.

There is nothing suspicious nor irregular in this, because if applications 187 and 188 had been gazetted refused while 189 was pending other applications would probably have been lodged which could not have been granted on account of the pendancy of 189, and therefore to prevent confusion and avoid unnecessary labour all such applications are gazetted at the same time.

The motive for holding over the gazetting of the refusal of 187 and 188 is now very clear, and the Minister must have been cognizant of the reason. The motive was that if 187 and 188 were gazetted without 189 that Perry's show to get the land was wiped out; but gazetting the three—187, 188, and 189—together all titles were wiped out, and Perry could be given an advantage in obtaining repossession by gazetting on an off day, by a special supplement. By page 14 of the papers [*Exhibit B*] this dodge was actually resorted to with a successful result, as Perry took possession of the land again on the afternoon of the 21st September.

There is nothing improper in this motive. I had recommended beforehand notice to Perry and Jennings, because they were the first to take possession after lease 661 had been cancelled. I certainly was not actuated by any feeling of friendship to either Perry or Jennings.

If application 189 had not been cleared away at the same time as 187 and 188, the beforehand notice would have been a farce.

There are numerous precedents for publishing such notices in a supplementary *Gazette*. Such supplements can be obtained from the Government Printer on the day of publication.

As I know full well that these special supplements are not issued separately to subscribers, but are included in the Tuesday's and Friday's regular Gazettes, I am sure that Perry, through J. W. Abigail, who is with him in the lease application of 21st September, got irregular information as to the *Gazette* notice of 20 September, and was on hand at Bulladelah probably to benefit by it.

This is the first time that James Abigail appears in connection with the transaction. I do not know when he came first to the Department with Perry, but I think it was just before the application 190 was lodged, and so far as I can remember Perry then informed me James Abigail had taken the place of Wm. Jennings, and gave as a reason that Jennings' private affairs prevented his proceeding further in the matter.

Perry and Abigail no doubt got the beforehand notice that was to have been given to Perry and Jennings.

This was due to the fact that the Minister had promised one night to lay the papers on the Table of the House on the next afternoon, and consequently the papers were prepared in a great hurry, and no time was allowed for revision.

The whole matter is so surrounded with suspicion, so strong as to leave hardly a doubt in my mind that J. W. Abigail was afforded or obtained information in the Department in a manner not available to the general public.

The slovenly manner in which the papers of the case have been presented, adds to the doubts surrounding the cases; Nos. 187 and 188 are mixed up in a censurable way with 182 and 190, requiring special knowledge of the routine of lease applications to unravel the story of the "Mountain Maid."

Perry and Abigail's application No. 190 was made on the 29th September with suspicious celerity, not characteristic of this branch. The application is bustled through by the Chief Mining Surveyor [*See* exhibit 10, page 15 of the papers], and a lease prepared inside of two months from the date of application, a quickness without a parallel. Now this special treatment of the application must have been the result of exceptional instructions, verbal possibly, as under the peculiar circumstances of this case, the Minister would hardly be indiscreet enough to minute his wishes on the papers.

Altogether this Mountain Maid case is a discreditable one, and the attempt to cast the blame on the officers of the Department is cowardly and contemptible. I hold them beyond suspicion, as in my thirteen years business with the Department I can solemnly state that the business of leases has been most loyally adhered to by the subordinates of the Department. I make no charges against Mr. Abigail, but the peculiarities of the case are such as to cover him with suspicion. If he is blameless, then he is unfortunate in having such a brother. DE C. B.

In submitting these papers which refer to the Mountain Maid and Curreki leases I invite the Minister's attention to the marginal notes on the *précis* submitted by Mr. De Courcy Browne, M.P.,—H.W., 4/2/89.

T. De Courcy Browne, Esq., M.P., to The Secretary for Mines.

Sir, 52, Castlereagh-street, 20 February, 1889.

In the hurry of copying my *précis* of the "Mountain Maid" gold lease case furnished you by request, I find there is one very important point omitted, and which I now supply.

On reference to paper No. 39 on page 9 of the Parliamentary Return you will find the minute of the Executive Council, recommending the cancellation of G.L. 661—*i.e.*, the Mountain Maid lease. The minute was approved on the 17th July, 1888, but not confirmed till the 23rd July, 1888, yet a *Gazette* notice is issued [*see Paper No.* 40] on the 20th July, cancelling the lease, or three days before the lease is cancelled by the Governor and Executive Council. This peculiar haste is repugnant to Reg. 46, relating to gold-mining leases, and requires an explicit explanation as to why the ordinary practice of the Department was ignored, and why the action of such a high tribunal as the Executive Council was anticipated by the Minister for Mines.

I have, &c.,

T. F. DE COURCY BROWNE.

Place with other papers.—J.M.C., 20/2/89.

Report

Report by The Under Secretary for Mines.

Report on the *précis* forwarded by Mr. De Courcy Browne, respecting the Mountain Maid Mine at Coolongolook.

FROM the fact that gold lease, 650 (the Curreki) and 661 (the Mountain Maid) were both held by Paulson and party, and Paulson's complaint referred to, both the papers have not been kept separate, and consequently persons outside the Department have been to some extent confused in regard to the action taken. Thus Mr. De Courcy Browne supposes the Minister's minute, exhibit 7, Parliamentary Papers, refers to lease 661, whereas it refers to lease 650, and he states the Minister's order was not obeyed, whereas in point of fact it was obeyed, and the beforehand notice was given to Mr. Paulson.

As regards lease 661 Mr. Paulson was the first to complain of non-work, and if he had not been a lessee he would probably have received beforehand notice in the usual course, but on the 31st May, 1888, Messrs. Jennings and Perry urged, that although Paulson was the first to complain he was in fact complaining of his own default and therefore was not entitled to beforehand notice, that they Jennings a nd Perry being the only *bonâ fide* complaints were entitled to such notice. Upon this the Minister (Mr. Abigail) wrote the following minute. "This should receive serious consideration before allowing a ny of the first applications any right in connection with this case." I cannot find that beforehand n otice was given to Perry and Jennings, but it is possible that it may have been. At any rate such a p roceeding would have been quite consistent with the Bill introduced by Mr. Abigail.

It appears that the papers were withdrawn from the Executive Council after the cancellation of gold lease 661 had been approved, but before the approval had been confirmed, and that the cancellation was gazetted before confirmation. This has been done in other cases where the matter has appeared to the Minister an urgent one. The urgency in this case was, I think, that Perry and Jennings represented they were at great expenses awaiting cancellation of the lease.

There is nothing suspicious about the keeping back of the *Gazette* notice respecting applications 187 and 188, till 189 was ready to be gazetted. This is the usual practice, so that all applications pending for the same parcel of land may be cleared away at the same time, thereby preventing confusion.

When recommending the refusal of applications 187 and 188, I recommended that beforehand notice be given to Perry and Jennings, and such notice would have been useless. 189 were cleared away. My reason for making that recommendation was that they, Perry and Jennings, were first in possession of the land after lease 661 had been cancelled. I certainly was not actuated by any feeling of friendship for either Perry or Jennings.

There are numerous precedents for publishing notice of refusal in a Supplement to the *Gazette*. Such Supplements are obtainable at the Government Printing Office on the day of publication, and it would be quite possible for the information to be telegraphed to Bulladelah in time for a person to reach Coolongolook by midnight.

I cannot from memory state when Mr. James Abigail first came to the Department in connection with this matter, but about the time application No. 190 was lodged his name first appeared in the papers.

There is no doubt that Perry and Abigail received the beforehand notice, that would have been given to Perry and Jennings in accordance with my recommendation on application No. 188.

It is no doubt true that the papers in this case were not prepared as carefully as they should have been, but it must be remembered that the time allowed for their preparation was very short, the order for their production having been given in the morning for the papers to be ready by the time the House met on that day; consequently, there was no time to make a proper examination before they were laid on the Table; consequently the papers omitted had to be included in a Supplementury Return.

H.W., 22/2/89.

Result of Inquiry.

Result of inquiry made by the Honorable the Minister of Mines, at the request of Francis Abigail, Esq., M.P., *re* the cancellation of gold leases, No. 650, known as the "Curreki Mine," and No. 661, known as the "Mountain Maid Claim," Curreki Mine, Block No. 650.

HAVING been requested by Mr. Francis Abigail, M.P., late Minister of Mines, to cause an inquiry to be made into the circumstances in connection with the issue of a gold-mining lease to Messrs. James Abigail and John Perry, I at once complied with the request, and instructed the Under Secretary of Mines to furnish me with a full report of the whole case. Having read that report, and having also fully considered all the other papers relating to the case, there seems to me to have been some confusion in consequence of the two cases known as the "Curreki" and "Mountain Maid" gold-mining claims being mixed up and owned by the same proprietary, viz., Messrs. Dickson, Dickson, Paulson, and party. From my own personal inquiries and study of the whole of the papers, I find the case to be as follows:—"On the 8th of November, 1887, Mr. H. Tagg complained that Dickson, Dickson, Paulson, and party had not complied with the labour conditions of their leases" [*see Exhibit No.* 1 *Parliamentary Papers*], and requested "that the lease should be cancelled, and that he (Tagg), being the first informant, should receive the usual "beforehand notice." On the 27th February following, more than three months having elapsed, Mr. Tagg again wrote referring to his previous complaint, and requesting a reply. [*See Exhibit No.* 12.] This letter is minuted by the Under Secretary of Mines, requesting the Warden to hasten his report, and inform Mr. Tagg that the matter was still under consideration. On the 13th March following, Mr. Tagg was informed by the Under Secretary of Mines that his complaint was still under consideration. From this point the papers do not disclose that any further communication was made to Mr. Tagg, nor did he receive any "beforehand notice" in respect to the cancellation of lease No. 650, which was confirmed by the Executive Council on the 17th April, 1888. [*See Exhibit No.* 16.] The next informant against Messrs. Dickson, Dickson, Paulson, and party, for non-compliance with the labour conditions respecting the Curreki Mine was a Mr. E. Easterbrook, who lodged a written complaint on the 11th November, 1887, three days later than that lodged by Mr. Tagg. [*See Exhibit, Parliamentary Papers, No.* 2.] This gentleman's communication appears to have been ignored by the Minister altogether, as no reference is made to it in any of the papers. The next person to lodge a complaint against the non-fulfilment of the labour conditions on this gold lease No. 650, the Curreki claim, was Mr. T. A. Paulson, one of the lessees, who asked "that the lease which had been issued to himself and others should be cancelled, and that he, being the informant, should receive the 'beforehand notice,' which would enable him to obtain

a new lease, issued to himself alone, and for his own personal benefit." This application, it will be noticed, was made nearly one month later than those of Mr. Tagg and Mr. Easterbrook, viz., the 5th December, 1887 [*See Exhibit No.* 3], and the minute shows the regular course was adopted on Paulson's complaint, viz., to inform Paulson "that the matter was being dealt with on prior complaints." On the 23rd December, 1887, Messrs. Dickson, Dickson, Paulson, and party were called upon to show why this lease No. 650 should not be cancelled. [*See Exhibits Nos.* 4 *and* 5.] On the same date, 23rd December, 1887, Mr. Warden Fawcett wrote to the Under Secretary for Mines, urging "that in the event of the lease being cancelled, Mr. Paulson, one of the then lessees of the claim, should have timely information given to him, to enable him to release the claim. [*See Exhibit No.* 6."] The Under Secretary replied, that "in the event of the lease being cancelled the beforehand notice should be given to the first complainant, Mr. Henry Tagg." On the 28th December, 1887, a Mr. W. Kirchner wrote to the Under Secretary for Mines, claiming to be one of the lessees of the claim, and requesting information. [*See Exhibit No.* 7.] The writer was informed, with the approval of the Minister, "that the lease would most likely be refused for non-compliance with the labour conditions." On the 31st December, 1887, the Under Secretary of Mines replied to Mr. T. A. Paulson's letter of the 3rd December, 1887, stating "that action was being taken on a prior complaint" (presumably that of Mr. Henry Tagg). [*See Exhibit No.* 8.] On the 18th January, 1888, notwithstanding that Mr. Warden Fawcett had been informed on the previous 23rd December, 1887, that "in the event of the lease being cancelled beforehand, notice should be given to Henry Tagg, the Minister (Mr. Abigail) minuted that "Mr. Paulson, one of the lessees complained against, should receive 'the beforehand notice.'" The fullest inquiries then following fully establish the fact "that the lessees of this claim had not complied with the requirements of the law in respect to the employment of labour." On the 21st March following, the Minister approved of the lease being cancelled, which was confirmed by the Executive Council on the 17th April, 1888. [*See Exhibit No.* 16.] On the 19th April, 1888, two days before the cancellation of the lease was to be gazetted [*see Exhibit No.* 17], the "beforehand notice" was sent to Mr. T. A. Paulson, who was thus enabled to regain possession of the claim. Taking into consideration all the foregoing circumstances, I am clearly of opinion that what has been done over the matter submitted to me for decision by Mr. Abigail was most improperly done, and that it was a maladministration of the Mining Act. There cannot be the slightest doubt that the only person entitled to the "beforehand notice" was the first complainant, Henry Tagg, and that T. A. Paulson was not entitled to the lease which has been issued to him. Whatever induced the Minister to ignore the *bonâ fide* complaint of Henry Tagg, which complaint had from first to last been fully recognized by the Under Secretary for Mines, and to accept that of Mr. T. A. Paulson, who was complaining against himself and party, I cannot imagine, nor do the papers in the Mines Department show.

J. M. CHANTER.

Result of Inquiry.

Result of Inquiry made by the Honorable the Minister of Mines, at the request of Francis Abigail, Esq., M.P., *re* the cancellation of Gold Leases No. 650, known as the "Curreki Mine," and No. 661, known as the "Mountain Maid Claim."

MOUNTAIN MAID CLAIM, BLOCK NO. 661.

ON the 5th of December, 1887, Mr. T. A. Paulson, one of the lessees of the above claim complained "that the labour conditions were not being complied with, and that his co-lessees by their action were preventing the work being carried on." He furthermore requested that the lease should be cancelled and that he should receive the beforehand notice to enable him to obtain a new lease of the claim, when he promised to faithfully comply with the labour conditions. He was informed that the matter was being dealt with on a prior complaint [*see Exhibit No.* 3], but I am of opinion that this prior complaint referred to another lease, viz., No. 650, and not No. 661, the "Mountain Maid." On the 23rd of April, 1888, Messrs. W. Jennings and John Perry lodged a complaint with the Minister for Mines against the lessees of gold lease No. 661, known as the "Mountain Maid" claim, alleging that the lessees had not complied with the labour conditions. [*See Exhibit No.* 18, *Parliamentary Papers.*] Upon receipt of this letter the Minister asked for a careful inquiry and report. The case was submitted to Mr. Warden Fawcett for report, who reported upon the 13th of May, 1888, stating "that the statements made by Messrs. Perry and Jennings were untrue, and he saw no necessity for an inquiry being held." Two days later the Minister wrote a Minute stating that Perry and Jennings had lodged a complaint for non-fulfilment of labour conditions upon a lease at Curreki, some time previously, and, as it adjoined the "Mountain Maid" claim, he asked "what had been done." This minute seems peculiar, for I find the Minister had himself, on the 3rd day of April, previously recommended His Excellency the Governor and the Executive Council to cancel the said lease. As a matter of fact he knew that it had been approved by His Excellency the Governor on the 10th day of the previous month, and confirmed by the Executive Council seven days later. Furthermore, that on the 19th day of March, 1888, he had approved of a "beforehand notice" being give to Mr. T. A. Paulson (who is the first complainant as regards the "Mountain Maid" lease No. 661.) A similar "beforehand notice" having enabled him on a previous occasion to reobtain possession of claim No. 650, known as the "Curreki Claim." Acting under instructions, the Under Secretary on the 15th of May, 1888, again requested Mr. Warden Fawcett to furnish a report as to the non-compliance with labour conditions on the "Mountain Maid" claim. Here some confusion occurred for some time, as the various communications which passed between the Under Secretary and Warden's Clerk show clearly that the latter had misunderstood his instructions and was forwarding reports that had reference to other leases, entirely distinct from the "Mountain Maid" lease. This error was not rectified until the 5th of July, 1888, when the Under Secretary again wrote to the Warden, informing him that his report was required upon the "Mountain Maid" lease No. 661. The Warden replied the following day, reporting that the labour conditions were not being complied with, whereon the Under Secretary recommended the cancellation of the lease which was approved by the Minister three days later, viz., the 9th of July, 1888. On the 20th of the same month a *Gazette* notice was issued cancelling the lease. Messrs. Jennings and Perry appear to have been very persistent, as from their letter to the Minister, dated the 23rd of April, 1888, up to date of cancellation of the lease, several communications passed between them and the Minister, and it is a very noticeable fact that nearly all these communications bear a minute of the Minister urging matters

forward—

forward—whereas the like attention does not appear to have been paid to those sent by the first informant, Mr. Paulson. That gentleman asserts in his letter to the Minister, dated the 7th of May, 1888, "that the Minister had promised that in the event of the lease being cancelled, he—Paulson—should receive the beforehand notice." A minute of the Minister, dated the 1st of June, 1888, apparently shows strong bias in favour of Jennings and Perry,—wherein the Minister states "he is not at all satisfied with the recommendation of the Warden, which recommendation was in Paulson's favour." It has already been shown in the Warden's report "that his recommendation in Paulson's favour applied to both leases (blocks Nos. 650 and 661.") The Minister entirely approved this recommendation when Tagg and Easterbrook had to be put on one side in favour of Paulson respecting lease No. 650—although, as regards Tagg, the responsible officer of the Department had recommended all through that he should receive the "beforehand notice." What induced the Minister to disregard the Warden's recommendation and favour the application of Jennings and Perry the papers do not disclose, and the reasons, if there were any, were apparently only known to the Minister (Mr. Abigail) himself. Jennings and Perry were not entitled to any special consideration, as their complaint of non-work was not made to the Minister for a period of nearly four months later than that lodged by Paulson, who asserts that the Minister promised him "the beforehand notice." If the reasons adduced by the Warden were considered sufficient to justify the Minister in ordering the beforehand notice to be given to Paulson, in respect of the Curreki lease No. 650, to which he was not entitled, Messrs. Tagg and Easterbrook having been prior informants, the same reasons should have had still greater weight in respect to the "Mountain Maid" claim (block No. 661) as in this case. Paulson was the only one entitled to receive this notice. The lease having been cancelled as hereinbefore mentioned, on the 20th of July, fresh applications were lodged, as follows:—No. 187, by Paul Paulson and Alfred Paulson, who took possession of the land on the 21st of July, 1888; No. 188, by John Perry and William Jennings, who also took possession of the land on the 21st of July, 1888; No. 189, by James Hassall, Thomas A. Jones, and T. A. Paulson, who took possession of the land on the 4th of August, 1888. Applications Nos. 187 and 188 were refused in consequence of having been lodged before the expiration of three days. Perry and Jennings (applicants No. 188) appear at that time to have obtained information from some quarter which enabled them to take possession of the land at 1 o'clock a.m., a few hours after the *Gazette* notice was issued in Sydney; whereas applicants for No. 187 did not appear to possess this information, for they did not take possession of the land until 8 o'clock a.m., or seven hours later. How this information was obtained the papers do not disclose, but a minute of the Minister, dated the 28th of August, 1888, approved of applicants No. 188, Perry and Jennings, receiving "beforehand notice," on the ground of "priority of possession." Applicants for No. 189, Hassall and others, who took possession on the 4th of August, 1888, were refused the lease also, on the ground "that the land was not available at date of taking possession." It does appear strange that, as Paulson and others and Perry and Jennings, who had lodged applications before the three days had expired, which was in consequence refused, should have the refusal delayed in order to make the application No. 189 also invalid. This was evidently done, for although these applications were dated 24th of July, 1888, the Minister did not recommend His Excellency the Governor and the Executive Council to refuse the applications until the 20th August, 1888, and the *Gazette* notice refusing the application was not issued until the 20th September, 1888, which stated that the whole of the applications, Nos. 187, 188, and 189, were refused. It is quite clear that Perry by some means obtained information of the Minister's intention to issue the *Gazette* notice notifying the refusal of applications Nos. 187, 188, and 189, on the 20th September, 1888, for at 2 o'clock in the afternoon on the following day, the 21st September, 1888, Perry is found on the land, which is near Bulladelah, in the Stroud District—a considerable distance from Sydney—repegging the claim. How this information was obtained the papers do not disclose. It must have been given by some person verbally, thereby carrying out the expressed wishes of the Minister, who, in his minute of the 20th August, 1888, approved of Mr. Perry receiving the "beforehand notice." Joined with Mr. Perry in this very application, which is numbered 190, is Mr. James Abigail, referred to in Mr. Francis Abigail's letter to me. Mr. James Abigail's name did not appear previously, and the reasons for Mr. Jennings withdrawing and his place being filled by Mr. James Abigail are not disclosed in any of the papers in the Department, and, consequently, they are not known to me.

Having now to give a decision on the whole matter, as requested by Mr. Francis Abigail in his letter of the 17th January last, I am constrained to say that, as the records of the Mines Department show, that "no official beforehand notice" to Perry was given, as he was not entitled to receive one, it is clear that the information must have been verbally given by someone having an interest in assisting Perry and James Abigail to obtain the lease. In my opinion, Perry and James Abigail were not entitled to the lease in question. Paulson was clearly entitled to it.

J. M. CHANTER.

EXHIBITS.

EXHIBIT 1.

Mr. H. Tagg to The Under Secretary for Mines.

Sir, Coolongolook, 8 November, 1887.

I have the honor to bring under your notice the fact that the gold-mining lease, No. 22, gold lease 80, 10 acres, in favour of Dickson, Dickson, Paulson, and party, and known as the Curreki Claim at Coolongolook, county of Gloucester, has been held for several years, and next to no work has been done on it.

They have had several extensions of time granted them on various pretexts, and the last extension of three months, and which will shortly expire, was for the erection of machinery, but no steps whatever have been taken to get any up or on the ground.

No efforts have been made during the long time they have held this ground to keep the water out, and no work whatever is being done at present on the claim.

I beg further to inform you that it was altogether owing to the holders of the above claim allowing their shafts to remain full of water which flooded me, and at last compelled me to abandon the adjoining claim No. 21, and held and worked by me.

I have the very highest opinion of the line of reef, and more especially the 10 acres, as it is on rich payable stone.

I believe it is the intention of the present leaseholders to allow the lease to be cancelled, and then to re-peg it out, thus shutting up and allowing this valuable property to lie idle.

Being the first to advise you to above effect, I beg to ask you to favour me with instructions how to proceed to be put in possession of the abovementioned ground.

Craving for the favour of a reply,—

I have, &c.,
HENRY TAGG.

EXHIBIT 2.

Mr. E. Easterbrook to The Under Secretary for Mines.

Sir, Cape Hawke, 11 November, 1887.

I have the honor to bring to your notice of Dickson and Paulson party not carrying out their labour conditions, No. 22, gold lease 80, Curreki Claim, Coolongolook, county of Gloucester. My object is to put my own shaft deeper, which is 70 feet deep. I cannot go deeper until they work their claim. I am certain it is a good line of reef. I have had three years' trial at it; but they swamp me out whenever I attempt to commence work.

I am, &c.,
EDWARD EASTERBROOK,
Working Miner.

EXHIBIT 3.

Mr. T. A. Paulson to The Under Secretary for Mines.

Sir, Coolongolook, 5 December, 1887.

I wish to apply for cancellation of gold lease 650, portion 22, situated at Coolongolook, county of Gloucester, parish of Tellaree, held by myself and Dickson; also lease No. 661, portion gold lease 75, situated at Coolongolook, county of Gloucester, parish of Tellaree, taken out by Paulson, T. Jones, and C. Jones. Out of the last twelve months the party has kept me and my two sons idle, with the exception of four months; and one gentleman in Sydney, who holds four shares, owes £80, and I cannot get a shilling from him. I hereby pray that you will cause these two abovementioned leases to be cancelled for nonpayment of rent, as I and my party are quite willing to pay rent, erect machinery, and work the two mines; and if such leases should be cancelled, I hope you will give me due notice, as all my labour and money for this last eight years lay in these two mines, and not on any occasion have I been the cause of the mines being suspended from labour, although I had to carry it through for the rest of the shareholders.

I have, &c.,
T. A. PAULSON.

May probably be informed that the matter is being dealt with on prior complaint.—E.F., 29/12/87. Inform.—G.E.H. (*pro* U.S.), 29/12/87.

EXHIBIT 4.

Notice to Messrs. A. F. Dickson and J. Dickson, jun., and T. A. Paulson.

Department of Mines, Sydney, 23 December, 1887.

YOU are hereby called upon to show cause, within thirty days, why gold lease No. 650 (H and M), delivered 12th December, 1884, under which you are lessees, should not be cancelled for non-observance of the conditions thereby imposed.

HARRIE WOOD,
Under Secretary for Mines.

I, ROBERT QUAYLE, of Bullahdelah, a first-class constable, do hereby certify that I have served upon the within-named Arthur F. Dickson, Joseph Dickson, jun., and T. A. Paulson the notice herein, by delivering to Joseph Dickson, jun. (personal), A. F. Dickson, by delivering it to his father at Bullahdelah, a true copy thereof, and T. A. Paulson by registered letter.

ROBERT QUAYLE,
Constable.

Bullahdelah, 4th January, 1888.

EXHIBIT 5.

Notice to Mr. A. H. Cooper.

Sir, Department of Mines, Sydney, 23 December, 1887.

You are hereby called upon to show cause, within thirty days, why gold lease, No. 650 (H. and M.), delivered 12th December, 1884, under which you are one of the lessees, should not be cancelled for non-observance of the conditions thereby imposed.

HARRIE WOOD,
Under Secretary for Mines.

EXHIBIT 6.

Mr. Warden Fawcett to The Under Secretary for Mines.

Sir, Bullahdelah, 23 December, 1887.

I take the liberty of saying that Mr. T. A. Paulson is a most respectable man, and I consider he has been victimised by his partners; he is willing to work, but kept idle by them. If the claims Curreki and Mountain Maid got into his hands good work would be made. As to Kerr's complaint about these claims, it comes with a bad grace from a man who will not work on his own. From something I have heard I think it probable that the complaint against Conway and Kerr's claim is to get rid of the drones. I hope if the leases of Curreki and Mountain Maid should be cancelled that Paulson may get timely information. With best wishes for the new year,—

I have, &c.,
CHARLES H. FAWCETT.

Inform Mr. Warden Fawcett that the complaint was made by Henry Tagg, and consequently beforehand notice must be sent to him in case the lease be cancelled.—H.W., 3/1/88. Warden informed by memo.

EXHIBIT

EXHIBIT 7.

Mr. W. Kirchner to The Under Secretary for Mines.

Sir, G.P.O., Box No. 960, Sydney, 28 December, 1887.

With reference to my conversation with you this morning, relating to the leases noted below, I have to advise you that although my name does not appear as one of the registered lessees of these mines, yet I really own a third share in them, both as appears by legal documents drawn up by Mr. T. Marshall, solicitor, which I can produce to you if necessary. As these mines have cost me a very large sum of money, I now beg to respectfully request that you will keep me informed of what is passing between your Department and the parties mentioned below, as at present I am kept quite in the dark as to what is going on, and can get no information from the parties who are up the country, although I am quite prepared to pay my share of the working expenses so as to keep the mine afloat.

I have, &c.,
W. KIRCHNER.

EXHIBIT 8.

The Under Secretary for Mines to Mr. T. A. Paulson.

Sir, Department of Mines, Sydney, 31 December, 1887.

Referring to your letter of the 5th instant, in which you apply for a cancellation of gold lease No. 650, in the names of Dickson and yourself, and also of lease No. 661, held by Paulson and P. Jones, I have the honor to inform you that action has been taken in the matter on a prior complaint.

I have, &c.,
HARRIE WOOD,
Under Secretary.

EXHIBIT 12.

Mr. H. Tagg to The Under Secretary for Mines.

Sir, Coolongolook, 27 February, 1888.

I beg to recall to your attention my memo. of or about the 9th November, 1887, laying before you the reasons why the gold-mining lease No. 21, known as the Curreki, at Coolongolook, county of Gloucester, should be cancelled, and begging at the same time that you would favour me with early information of the cancellation. I now have the honor to inform you that the time allowed the present holders of the ground as the extension of non-labour for the erection of machinery has expired, and that no work whatever has been done on the ground. Begging that you will favour me with advice as to how I am to proceed,—

I have, &c.,
HENRY TAGG.

Request Warden to expedite his report and inform the writer the matter is still under consideration.—H.W., 6/3/88.

EXHIBIT 16.

Minute for The Governor and Executive Council.

Recommending the cancellation of a certain gold-mining lease.

Department of Mines, Sydney, 3 April, 1888.

IT is recommended to His Excellency the Governor and the Executive Council that the gold-mining lease of Crown lands specified in the annexed schedule be cancelled, the lessees having failed to fulfil the labour conditions contained therein.

FRANCIS ABIGAIL.

The Executive Council advise that the course herein recommended be approved.—A. C. BUDGE, Clerk of the Council. Min. 88/14, 10/4/88. Approved.—CARRINGTON, 10/4/88. Confirmed, 17/4/88.

SCHEDULE ALLUDED TO.

Hunter and Macleay Mining District.

No. 650; name, A. F. Dickson and others; portion No. 22; locality, county Gloucester, parish Teleraree; 10 acres; Bullahdelah, 142.

EXHIBIT 17.

The Under Secretary for Mines to T. A. Paulson, Esq.

Sir, Department of Mines, Sydney, 19 April, 1888.

I am directed by the Secretary for Mines to inform you that the gold-mining lease noted in the margin, will be cancelled for non-fulfilment of the labour conditions contained therein. H. and M. 650.

If you desire to lease the land, you may, after the notification of cancellation, which will appear in the *Government Gazette* of 22nd April, 1888, take possession after 12 o'clock at night of that day, and apply, in accordance with the regulations.

I have, &c.,
G. E. HERRING
(For the Under Secretary for Mines).

Sydney: Charles Potter, Government Printer.—1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

MINING.

(MINERAL LEASES, COUNTY OF GOUGH, PARISH OF HIGHLAND HOME.)

Ordered by the Legislative Assembly to be printed, 27 *August*, 1889.

RETURN to an *Order* of the Honorable the Legislative Assembly of New South Wales, dated 22nd May, 1889, That there be laid upon the Table of this House,—

"Copies of mineral leases Nos. 1,815, 1,816, 1,817, also 3,237, of land in "the county of Gough, parish of Highland Home; also all applications for "the conversion of the same, or any of them, into mineral conditional "purchases, copies of all transfers, or applications for transfers, of the same, "and of all reports, plans, and papers relating to the same."

(*Mr. J. P. Abbott.*)

Mineral Conditional Purchase Applications.

Application for Conditional Purchase.

C. [Alienation Act, sections 13, 14, and 19.]

District of Tenterfield. No. 60 of 1884.

Application by James Henry Graney, now a minor, for the conditional purchase, without competition, of 60 acres unimproved Crown land.

Received by me, with a deposit of £30, this 31st day of July, 1884, at 10 o'clock,—

J. H. TOMPSON,
Agent for the Sale of Crown Lands at Tenterfield.

Sir, 31 July, 1884.

I am desirous of purchasing, without competition, under the Crown Lands Alienation Act of 1861, the portion of unimproved Crown land hereunder described, containing 60 acres; and I herewith tender the sum of £30, being a deposit at the rate of 10s. per acre on the area for which I apply.

I am, &c.,
JAMES H. GRANEY,
Emmaville.

To the Agent for the Sale of Crown Lands at Tenterfield.

Description.

County of Gough, parish of Highland Home, 60 acres, being the land held under mineral leases 1,815, 1,816, 1,817.

The Surveyor-General to The Under Secretary for Lands.

Mineral conditional purchase 84–60, Tenterfield, parish of Highland Home, county Gough.

1 May, 1885.

IT is submitted for the consideration of the Secretary for Lands that the Mines Department should be requested to say what portions in the county of Gough are or have been held under mineral leases 1,815, 1,816, and 1,817, and how the applications for these stood at date of this conditional purchase, viz., 31st July, 1884; also whether any part of the land applied for under the conditional purchase is embraced in any other applications; if so, the state of such mineral lease applications when approved of, in whose name, and whether still correct, and if otherwise, the date of cancellation. Appendix A, B

ROBT. D. FITZGERALD,
For the Surveyor-General.

603—A

[870 copies—Approximate cost of printing (labour and material), £42 6s. 8d.]

The

The Under Secretary for Mines.—F.H.W. (for the Under Secretary), B.C., 20/5/85. Noted a record.—E.W.P., 14/5/85.

M.L., portion 173.—M.L. 1,815; lessee, James H. Graney; delivered; rent paid, 29/10/84. M.L., portion 174.—1,816; lessee, James H. Graney; delivered; rent paid. M.L., portion 176.—1,817; lessee, James H. Graney; delivered; rent paid.

At the date of conditional purchase, 31/7/84, these leases stood in the names of W. W. Richardson and G. Hardie. The transfer to Graney was approved on 1st August, 1884. Leases are now in course of cancellation for non-observance of labour condition.—27/5/85.

The Chief Mining Surveyor.—T.C.B., 27/5/85. Chief Draftsman.—E.F.P., 2/6/85. Noted.—M.C., 6/6/85. Mineral leases 1,815, 1,816, 1,817 now cancelled.—2/6/85. The Under Secretary for Lands.—H.W., B.C., 9/6/85.

The Under Secretary for Lands to Mr. E. Prosser.

(C.P. No. 84-60; C.S. No. 85-4,943 Cor.)

Sir, Department of Lands, Sydney, 30 July, 1885.

Deposit paid. £30

I desire to inform you that the application made by you at Tenterfield on the 31st July, 1884, for the conditional purchase of 60 acres of land is void, as at date of application the area applied for was held under mineral leases 1,815, 1,816, and 1,817 by W. W. Richardson and G. Hardie.

2. Enclosed is a form which, on being filled up in accordance with the instructions thereon, and forwarded to the Treasury, Sydney, will enable you at once to obtain the refund of your deposit.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

[*Enclosure.*]

(C.P. No. 84-60; C.S. No. 85-4,943 Cor.)

Sir, Department of Lands, Sydney, 30 July, 1885.

I desire to inform you that the application of Evan Prosser, on the 31st July, 1884, for the conditional purchase of 60 acres of land is void, as at date of application the area applied for was held under mineral leases 1,815, 1,816, and 1,817 by W. W. Richardson and G. Hardie.

2. A form for refund of deposit has been forwarded for the signature of the applicant, the nature of which you will be so good as to explain to him, if required.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

The Land Agent at Tenterfield.

The Under Secretary for Lands to The Under Secretary for Finance and Trade.

Conditional Purchase.—Revenue Refunded.

(C.P. No. 84-60; C.S. No. 85-4,943 Cor.)

Sir, Department of Lands, Conditional Sales Division, Sydney, 30 July, 1885.

Tenterfield; Evan Prosser; date of selection 31st July, 1884; 60 acres; deposit, £30.

I have to inform you that the conditional purchase noted in the margin being void, as at date of application the area applied for was held under mineral leases 1,815, 1,816, and 1,817 by W. W. Richardson and G. Hardie, you will be good enough to refund to the selector the sum of £30, being the deposit money paid thereon.

2. I am to add that a receipt form for the disposal of the money has been forwarded to the applicant, with instructions to fill up same and transmit it to the Treasury.

I have, &c.,
CHARLES OLIVER,
Under Secretary.

Messrs. Shepherd and Crossman to The Under Secretary for Lands.

Evan Prosser's Conditional Purchase at Tenterfield.

Sydney, 7 August, 1885.

Sir,

We beg to acknowledge, with thanks, the receipt of your favour of the 5th instant informing us that the cancellation of this conditional purchase had been revoked, and that the purchase stands in E. Prosser's name as before.

We herewith return to you the refund voucher.

We have, &c.,
SHEPHERD AND CROSSMAN.

[*Enclosure.*]

[Special Payments Form No. 2.]

NEW SOUTH WALES.

Conditional Purchase.—Revenue refunded.

Dr. to Evan Prosser. Department of Lands, Sydney, 30 July, 1885.

	Amount to be refunded
	£ s. d.
For the following refund, viz.:—C.S. No. 85-4,943 Cor.; C.P. No. 84-60. Land Office at Tenterfield; date of selection, 31st day of July, 1884; deposit paid on 60 acres. Selection void, as at date of application the area applied for was held under mineral leases 1,815, 1,816, and 1,817 by W. W. Richardson and G. Hardie	.....
Deposit to be refunded on 60 acres.....£	30 0 0

Messrs. Shepherd and Crossman to The Under Secretary for Lands.

Sir, Sydney, 4 August, 1885.

In reply to your letter of the 30th July, informing us that conditional purchase 84-60, Tenterfield, conditionally purchased by J. H. Graney, was void, as the land at the date of the application was held under mineral leases 1,815, 1,816, and 1,817, by W. W. Richardson and G. Hardie, we shall esteem it a favour if you will have the same reinstated without delay, to avoid the possibility of the land being "jumped," as the land was purchased by Mr. Prosser on behalf of a company for a large sum, and several thousand pounds have already been expended on machinery and otherwise.

We find on application at the Mines Office that the mineral leases 1,815, 1,816, and 1,817 were transferred by W. W. Richardson and G. Hardie to J. H. Graney on the 16th June, 1884, and the application for conditional purchase was made by J. H. Graney at Tenterfield on the 31st July, 1884.

We have, &c.,

SHEPHERD AND CROSSMAN.

Charting Branch.—Ed.B., 22/1/86. Noted in Charting Branch. District Surveyor informed. Form F to Mr. L.-S. Holmes this day, directing survey of portions 173 and 174, Highland Home. Conditional Sales Branch to await survey.—Jn. J. Callachor, 17/2/86. Mr. Landers,—Has surveyor reported.—C.W.P., 5/7/86. No reply.—W.T.L., 9/7/86. Records Mr. Landers,—Any reply yet.—J.P.M., 15/11/86. Reply by C.S. 86-33,987 Dep.—W.T.L., 23/11/86.

Messrs. Shepherd and Crossman to The Secretary for Lands.

Sir, 177, Pitt-street, Sydney, 4 August, 1885.

In reference to the voidance of conditional purchase by J. H. Graney, 84-60, Tenterfield, applied for 31st July, 1884, we must urge upon you to immediately recall the revocation of this conditional purchase, and prevent the possibility of this valuable property (which has been purchased *bona fide* by a number of gentlemen who have expended large sums and actually erected valuable machinery on the faith of the communications received from the Lands Department) being jumped, as we have reason to suspect that there is a movement afoot in the matter.

Mr. Prosser purchased from the Butler's Tin-mining Company, in liquidation, by George Hardie, the official liquidator of the company, the Butler's tin-mine, and after application to Mr. Hardie's solicitor (Mr. W. J. Fergusson), for particulars of title, we made application at the Lands Office as to the validity of the conditional purchase, and were answered as follows :—"Conditional purchase 84-60, county of Gough, parish of Highland Home, stands good in the conditional purchase registers, and is now in the name of Butler's Tin-mining Company."

The purchase was completed so far back as the 31st of March, and thereupon extensive expenditure for the rapid development of the mine was at once proceeded with.

On the 13th July last Mr. Prosser received a notice from the Under Secretary for Lands stating that conditional purchase as therein set out, namely :—Tenterfield—Butler's Tin-mining Company ; 60 acres ; 31st July, 1884—was, on the 8th July, registered in the books of the Lands Department as transferred to him. Thereupon a company was formed of a number of gentlemen engaged in mining enterprises in this Colony, who purchased the property, and are now actually engaged in the permanent development thereof, as before mentioned. We may add that not the slightest notification of any alleged imperfections was received by us until yesterday, 3rd August, when we received from your Department a formal notice of voidance of this conditional purchase upon the technical ground that the land was at the date of the application for conditional purchase held under mineral leases by Messrs. W. W. Richardson and G. Hardie, who were the trustees of the Butler's Tin Company ; but, as a matter of fact, Messrs. Richardson and Hardie transferred these leases to J. H. Graney on the 16th June, 1884, and thereafter, on the 31st July, 1884, Graney made the conditional purchase now in question.

Subsequently Graney transferred the conditional purchase to the Butler's Tin-mining Company, who, by the liquidator, as before mentioned, transferred to Mr. Prosser.

Therefore we respectfully beg that the revocation will be recalled, otherwise persons may be induced to jump this valuable property, and so cause injury to the shareholders as regards the value of their shares, interfere with the further development of the property, and promote expensive litigation.

We have, &c.,

SHEPHERD AND CROSSMAN.

Graney's mineral conditional purchase, dated 31st July, 1884, at which date the land was held under mineral leases 1,815, 1,816, and 1,817, which stood in the names of W. W. Richardson and G. Hardie, who transferred them to Graney on the 16th June, 1884, according to their letter, but the transfer was not approved by the Secretary for Mines until the 1st August, 1884, being one day subsequently to the date of conditional purchase, and consequently the conditional purchase was declared void.

Application for revocation of cancellation submitted on the ground that the interests involved are very large, and that the selector should not suffer from the delay in dealing with the transfer of the mineral leases by the Department of Mines.—F.H.W., 5/8/85.

Submitted.—C.O., 5/8/85. I think that the voidance may be reversed, as there is no conflicting claim.—J.S.F., 5/8/85. Telegram to Land Agent Aleene, care of Shepherd and Crossman, agent and Treasury voidance conditional purchase 84-60 reversed 5/8/85. Mr. Cope ; then Charting Branch ; then as to return of voucher. Noted, 13/8/85. Charting Branch, 13/8/85.

The Under Secretary for Lands to The Under Secretary for Finance and Trade.

(C.P. 84–60 ; C.S. 85–5,214 Cor.)

Sir, Department of Lands, Sydney, 5 August, 1885.

I am directed to inform you that the voidance of the conditional purchase noted in the margin has been revoked, and the purchase stands now in applicant's name, as before.

Tenterfield ; 60 acres ; 31 July, 1884. J. H. Graney, now E. Prosser.

I have, &c.,

F. H. WILSON

(For the Under Secretary).

The

The Under Secretary for Lands to The Land Agent, Tenterfield.

(C.P. 84-60; C.S. 85-5,214 Cor.)

Sir, Department of Lands, Sydney, 5 August, 1885.

Tenterfield; 60 acres; 31 July, 1884. J. H. Graney, now E. Prosser.

I am directed to inform you that the voidance of the conditional purchase noted in the margin has been revoked, and the purchase stands now in applicant's name, as before.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

The Under Secretary for Lands to Mr. E. Prosser.

(C.P. 84-60; C.S. 85-5,214 Cor.)

Sir, Department of Lands, Sydney, 5 August, 1885.

Tenterfield; 60 acres; 31 July, 1884. J. H. Graney, now E. Prosser.

I am directed to inform you that the voidance of the conditional purchase noted in the margin has been revoked, and the purchase stands now in applicant's name, as before.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

Telegram from The Under Secretary for Lands to The Land Agent, Tenterfield.

5 August, 1885.

VOIDANCE conditional purchase, James Harry Graney, 84-60, 31st July, 1884, 60 acres, reversed.

The Surveyor-General to The Under Secretary for Lands.

Mineral Conditional Purchase 84-60, Tenterfield, parish of Highland Home, county Gough.

C.S. 85-5,214 Cor. herewith; 85-5,328 Cor.

IN this case mineral conditional purchase 84-60, Tenterfield, was declared void in accordance with Ministerial approval (dated 16/7/85), on papers 85-4,943 Sur. On 4th August, 1885, Messrs. Shepherd and Crossman, solicitors, wrote, strongly protesting against the voidance, which was revoked by approval (5/8/85) on C.S. 55-5,214 Cor.

The ground taken up by the solicitors was that the conditional purchase had been voided "on the technical ground that the land was, at the date of the application for the conditional purchase, held under mineral leases by Messrs. W. W. Richardson and G. Hardie (the conditional purchase being in the name of J. H. Graney), who, as a matter of fact, transferred these leases to J. H. Graney, on the 16th June, 1884," the conditional purchase being dated 31st July, 1884.

This point was held to be a good one, "as the selector should not suffer from the delay by the Department of Mines," and the voidance was revoked.

But the objection most fatal to the conditional purchase as described would seem to have been overlooked, viz., that the portions applied for (being 173, 174, and 176) "are not conterminous, portion 175 intervening between 174 and 176, forming areas the selection of which is contrary to law (*vide* C.S. 85-4,943 and tracing).

This would appear to be insuperable so far as the whole 60 acres are concerned, for the described area could not be measured in any unobjectionable form; but it may be pointed out that, now that the objection resulting from the priority of date of the conditional purchase to that of the transfer of the mineral leases is removed, there is apparently nothing to urge against the conditional purchase of the 40 acres embraced by portions 173 and 174.

It is therefore submitted whether the cancellation of the voidance of mineral conditional purchase 84-60, Tenterfield, should be reversed, and the conditional purchase again declared void, or whether the applicant should be allowed the 40 acres embraced by portions 173 and 174, taking refund on 20 acres, with the option of refund on the whole.

ROBT. D. FITZGERALD
25 August, 1885. (For Surveyor-General).

The latter suggestion is approved.—J.S.F., 7/9/85. Evan Prosser, care of Shepherd and Crossman, with refund order, Agent and Treasury, area conditional purchase 84-60 reduced, 17th November, 1885; Mr. Cope then. Noted, 25/11/85. Records, 25/11/85. *Vide* action on 85-5,227 Cor.—JNO. J.C., 17/2/86.

The Under Secretary for Lands to Mr. Evan Prosser.

(C.P. 84-60; C.S. 85-5,979 Sur.)

Sir, Department of Lands, Sydney, 17 November, 1885.

Selected by J. H. Graney.

With reference to your conditional purchase at Tenterfield, on the 31st July, 1884, I am directed to inform you that the area of the portion selected having been found to be only 40 acres, instead of 60 acres, as stated in your application, your are entitled to a refund of £10, being the amount of deposit on the 20 extra acres paid in excess.

Enclosed is a form which, on being filled up and forwarded to the Treasury, with the authority signed by you, will enable that Department at once to refund the amount.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

The

The Under Secretary for Lands to The Land Agent, Tenterfield.

(C.P. 84-60; C.S. 85-5,979 Sur.)

Sir, Department of Lands, Conditional Sales Branch, Sydney, 17 November, 1885.

With reference to the conditional purchase of the 31st July, 1884, I desire to inform you that the area thereof having been found, on measurement, to be only 40 acres, instead of 60 acres, as stated in his application, he has been informed that he is entitled to a refund of £10, the amount of deposit upon the 20 extra acres paid in excess, for which the necessary refund form has been forwarded. Selected by J. H. Graney, now E. Prosser

I have, &c.,
F. H. WILSON
(For the Under Secretary).

The Under Secretary for Lands to The Under Secretary for Finance and Trade.

Conditional Purchase—Revenue Refunded.

(C.P. No. 84-60; C.S. No. 85-5,979 Sur.)

Sir, Department of Lands, Conditional Sales Branch, Sydney, 17 November, 1885.

I am directed to inform you that the area of the conditional purchase noted in the margin having been reduced from 60 acres to 40 acres, you will be good enough to refund the amount of deposit, viz., £10, on the area paid for in excess. Tenterfield; J. H. Graney, now E. Prosser; 31st July, 1884; £10.

2. I am to add that a receipt form for the disposal of the money has been forwarded to the applicant, with instructions to fill up same and transmit it to the Treasury.

I have, &c.,
F. H. WILSON
(For Under Secretary).

Messrs. Shepherd and Crossman to The Secretary for Lands.

Sir, Sydney, 9 January, 1886.

We are instructed by our client, Mr. Evan Prosser, to accept the mineral conditional purchase of 40 acres, being lots 173 and 174, Tenterfield, offered in your letter of the 17th November last, with a refund of the deposit of £10 on the remaining 20 acres.

We have, &c.,
SHEPHERD AND CROSSMAN.

Charting Branch.—E.B., 26/1/86. *Vide* action on 85-5,227 Cor. enclosed.—JNO.J.C., 17/2/86.

Memorandum of Instructions.

(Papers No. 86-146 Cor.)

Surveyor-General's Office, Sydney, 17 February, 1886.

Subject.

Mr. Licensed-Surveyor Holmes is requested at his early convenience to measure, if unobjectionable according to regulations, the land embraced by portions 173 and 174, parish Highland Home, county Gough, held under mineral leases 1,815 and 1,816.

The land is granted in satisfaction of mineral conditional purchase 84-60, Tenterfield, James H. Graney, in accordance with Ministerial decision on C.S. 85-5,979 Sur. The original application runs 60 acres, being the land held under mineral leases 1,815, 1,816, and 1,817, and it was decided to allow that held under 1,815 and 1,816, viz., portions 173 and 174, which the applicant has agreed to accept.

All old marks and numbers not necessary in survey to be obliterated.

Tracing herewith.

JNO. J. CALLACHOR
(For Surveyor-General).

Mr. Licensed-Surveyor Holmes (*per* Mr. D.-S. Finley).

Reply.

Returned with my letter to the District Surveyor, dated 26th September, 1886, No. 11.

H. C. HOLMES,
Licensed Surveyor.

District Survey Office Instruction No. 86-25 forwarded to Mr. Licensed-Surveyor Holmes.

T. E.
(For the District Surveyor).
22 February, 1886.

Mr. Licensed-Surveyor H. C. Holmes to The Surveyor-General.

(No. 86-11.) Conditional Purchase, Tenterfield.

Sir, Yarraford, 26 September, 1886.

I have the honor to transmit herewith the plan* of one portion of land containing 40½ acres, numbered 9, in the parish of Highland Home, in the county of Gough, conditionally purchased by James Graney under the 19th section of the Crown Lands Alienation Act, measured by me on 4th and 5th August, 1886, in accordance with instructions No. 86-25, dated 22nd February, 1886, issued by the District Surveyor. *Appendix C.

The applicant was not present at the survey.

I did not observe that any expenditure had been made on the above-mentioned portion in connection with mining, as is required by the 19th section of the Crown Lands Alienation Act of 1861. There were marks of prospecting, but I think they were made prior to the date of mineral conditional purchase.

I have, &c.,
HENRY C. HOLMES,
Licensed Surveyor.

One

One tracing retained for use in the District Survey Office.—E.H.B., 30/9/86. Forwarded to the Surveyor-General, 21st October, 1886.—F. G. FINLEY, District Surveyor. O.C.P. 84–60 with 85–3,399 Sur.—C.C., 25/11/86. Plan G. 4,147–1,761.—F.E.F., 11/1/87. Form "F," instruction, plan and two tracings herewith, examined and charted.—F. E. FRY, 20/1/87. Survey approved and dealt with in Charting Branch.—J. F. GOGGIN, 24/1/87. Tracing for Conditional Purchase Inspector herewith.—R. SHELTON, 24/1/86. Description prepared.—R.U., 4/3/87. Cat. No. noted, 3/5/87.

Description.

Mineral Conditional Purchase 84–60, Tenterfield.

40 acres 2 roods, county of Gough, parish of Highland Home, portion 9. Commencing on the north-eastern side of a road 1 chain wide, at a point bearing north 20 degrees east, and distant 1 chain from the northern corner of portion 175 of 20 acres; and bounded thence on the south-west by that road bearing south 70 degrees east 30 chains 36 links; on the south-east by a line bearing north 20 degrees east 13 chains 37 links; on the north-east by the south-western boundary of portion 172 of 20 acres bearing north 70 degrees west 30 chains 36 links; and on the north-west by a line bearing south 20 degrees west 13 chains 37 links, to the point of commencement.

Examined.—R.U., 4th March, 1887.

Mr. V. Coghlan to The Under Secretary for Lands.

Tenterfield, M.C.P. 84-60, 60 acres, now 40 acres; E. Prosser.

Sir, 19, Macquarie-place, Sydney, 7 December, 1886.

I have the honor to enclose a declaration as to the value of the improvements on the mineral conditional purchase noted in the margin, and on behalf of the selector I would respectfully request its verification with the least possible delay, as my client desires to convert the land into freehold as early as practicable.

I have, &c.,
VINCENT COGHLAN
(Agent for E. PROSSER).

Survey Branch, for urgent action in connection with the enclosed plan.—W.H.C., 14/12/86. For charting urgently.—R. SHELTON, 30/12/86. Mr. Fry,—Catalogue this case and forward to District Office in view of recent circular.—J. J. FINN, 10/1/87. Mr. Fry,—Let action be completed at once, as the adjoining original belongs to Mines, so cannot be sent to District Survey Office, and the case is a simple one.—R. SHELTON, 17/1/87.

The area allowed in satisfaction of mineral conditional purchase 84–60 (Tenterfield), enclosed for 60 acres, viz., 40 acres, is found by survey to be 40 acres 2 roods, it is therefore recommended that the question as to the extra area of 2 roods be considered on payment of balance.—J. F. GOGGIN (for Surveyor-General), 24/1/87.

For approval.—F.H.W. (*pro* S.F.), 26/3/87. Approved.—T.G., 29/3/87.

Alienee and agent informed conditional purchase 84–60, area increased to pay 5s., 3/5/89. In three months. Noted, 3/5/87. Ch. Branch, 4/5/87. No further action in Charting Branch; *vide* 86–33,987 Dep. enclosed.—J.W.N. (*pro* J.T.K.), 19/5/87.

[*Enclosure.*]

F.

Declaration of Conditional Purchaser for Mining Purposes.

I, EVAN PROSSER, of Darling Point, Sydney, do solemnly and sincerely declare that I am the lawful owner, by conditional purchase, of the land hereunder described, and that an expenditure equal to £2 per acre for the area of the land has been made on mining operations other than gold-mining on the land, and since the selection on 31st July, 1884. And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled "An Act for the more effectual abolition of oaths and affirmations taken and made in various departments of the Government of New South Wales, and to substitute declarations in lieu thereof, and for the suppression of voluntary and extra-judicial oaths and affidavits."

Description.

County of Gough, parish of Highland Home, 40 acres, being part of conditional mining purchase No. 60 of 1884, in the district of Tenterfield.

Taken and declared at Sydney, this 7th day of December, 1886, before me,—
A. E. HEMSLEY,
Commissioner for Affidavits.

E. PROSSER.

Examined and entered in Conditional Purchase Register.—C.C., 14/12/86. H.R., 14/12/86.

The Under Secretary for Lands to The Land Agent, Tenterfield.

(C.S. No. 87-7,710 Cor.; C.P. No. 84–60).

Transferred to E. Prosser.

Sir, Department of Lands, Conditional Sales Division, Sydney, 3 May, 1887.

I am directed to inform you that the area of the portion conditionally purchased by J. H. Graney on the 31st July, 1884, having been found on measurement to be 40½ acres, instead of 40 acres, as previously intimated, he has been requested to pay over to you at once the sum of 5s., being the amount of deposit due on the 2 extra roods.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

The

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The Under Secretary for Lands to Mr. E. Prosser.

(C.S. No. 87-7,710 Cor. ; C.P. 84-60.)

Sir, Department of Lands, Conditional Sales Branch, Sydney, 3 May, 1887.

I am directed to inform you that the area of the portion conditionally purchased by J. H. Graney at Tenterfield on the 31st July, 1884, has been found on measurement to be 40½ acres, instead of 40 acres, as stated in previous intimation, and to request that you will therefore be good enough to pay over at once to the Land Agent at that place the sum of 5s., being the amount of deposit due on the two extra roods. Transferred to E. Prosser.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

The Under Secretary for Lands to The Chairman, Local Land Board, Armidale.

(C.S. 86-7,710 Cor.)

District of Tenterfield ; name of applicant, James H. Graney, now E. Prosser; area, 40½ acres; date, 31st July, 1884.

Section 19 of the Alienation Act of 1861. (25 Vic. No. 1.)

DECLARATION upon the above-described mineral conditional purchase requires verification. All available papers in connection with it are therefore referred to the Chairman of the Local Land Board, Armidale, with a view to the necessary instructions being issued to the Inspector of Conditional Purchases at an early date.

If the report, when furnished by the Inspector, shows that the improvements are not sufficient to satisfy the requirements of the law, or that they have not been effected *bona fide* for mining operations, as contemplated by the 19th section of the Alienation Act of 1861, an investigation by the Local Land Board may be instituted, subject to the provisions of the 20th section of the Crown Lands Act of 1884.—W.H.C., 27/5/87.

The above recommendation approved by the Minister for Lands ; *vide* 87-18,500 Dep.
F. H. W.
(For the Under Secretary),
4/6/87

Noted, 6/6/87. Records, 10/6/87. Local Land Board Office, Armidale. Instruction to Inspector, No. 87-243. Tracing to Inspector Wisdom, 29/6/87.

Declaration of Conditional Purchaser for Mining Purposes.

I, EVAN PROSSER, of Sydney, do solemnly and sincerely declare that I am the lawful owner, by conditional purchase, of the land hereunder described, and that an expenditure equal to £2 per acre for the area of the land has been made on mining operations other than gold-mining on the land, and since the selection on 31st July, 1884. And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled " An Act for the more effectual abolition of oaths and affirmations taken and made in various departments of the Government of New South Wales, and to substitute declarations in lieu thereof, and for the suppression of voluntary and extra-judicial oaths and affidavits."

Description.

County of Gough, parish of Highland Home, 40 acres 2 roods, being (part of) conditional mining purchase No. 84-60 of 1884, in the district of Tenterfield.

Taken and declared, at ———, this 13th day of December, 1887, before me,— EVAN PROSSER.
G. W. W. WADDELL, J.P.

Examined and entered.—T.S., 20/1/88. Instalment £4 1s. credited at Treasury, 18/12/87.

Mr. W. H. Capper to The Assistant Under Secretary.

I, in company with Mr. Pope and Mr. Coghlan, waited upon the Under Secretary for Mines, as desired by you, in connection with the enclosed case.

Without, however, going into the details of the case, I desired him to state, for your information, and before a reply was sent to his communication of the 5th instant, whether the particulars given in memo. of 27th May, 1885, upon 85-3,399 Sur., were absolutely correct.

The Under Secretary for Mines, after perusing certain documents handed to him by a clerk—I presume they were leases—stated that the information was not perfectly correct, and would indicate the discrepancy in pencil. This was done, as will be seen from the addition to the memo. by the letters M.L. in pencil.

W.H.C., 14/3/88.

In view of the facts now disclosed by the papers, it is evident that the mineral conditional purchase represents the land shown on tracing* "A," appended, as M.L. 173, M.L. 174, and M.L. 176, and not portions 173, 174, and 176 ; and therefore that the memorandum written by an officer of the Mines Department on 27th May, 1885, on papers 85-3,399 C.S. Survey, is incorrect. * Appendix D.

Submitted that, in terms of 50 Vic. 21, section 6, the Minister is satisfied that the lessees, or person other than applicant, had at date of conditional purchase (or have now) ceased to hold any interest in the mineral lease, the conversion of which into a mineral conditional purchase was applied for by conditional purchase 84-60. Further submitted, that the steps necessary to restore the purchase to the area originally claimed be taken, and that the Mines Department be informed that the correct position of the mineral conditional purchase is that indicated on the tracing "A" as M.L. 174 (20 acres), M.L. 173 (20 acres), and M.L. 176 (20 acres), parish of Highland Home, county of Gough.—S.F., 14/4/88.

Memo.:

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Memo. by Chief Mining Surveyor.

26 March, 1888.

It having been represented that mineral conditional purchase 84-60, parish of Highland Home, county of Gough (J. Graney, 40 acres), is incorrectly located on the official map of the Department of Lands, I recommend that the Under Secretary for Lands be asked to state whether the accompanying tracing, taken from the parish map, shows the correct position of the mineral conditional purchase in question.
The Under Secretary for Mines. E.F.P.

Approved.—H.W., 29/3/88.

Messrs. Brett and Coghlan to The Under Secretary for Lands.

Sir, 19, Macquarie-place, Sydney, 27 March, 1888.

Tenterfield; C.P. 84-60; E. Prosser; 86-7,710 Cor.; L.L.B., Armidale, 15/6/87.

We have the honor to ask that you will cause the papers in the case noted in the margin to be returned to Sydney with all possible despatch, as dispute as to possession of the land (upon which a sum of about £8,000 has been expended) has arisen, and cannot be settled without a reference to the papers asked for.

We have, &c.,
BRETT AND COGHLAN.

86-7,710 Cor., Land Board, Armidale, 15/6/87. Ask the Chairman to return the papers by to-day's post.—S.F., 27/3/88.

Telegram from The Under Secretary for Lands to The Chairman, Local Land Board, Armidale.

Sydney, 27 March, 1888.

PLEASE return by to-day's post papers 7,710 of 1886 correspondence, E. Prosser's conditional purchase 60 of 1884, Tenterfield, to you 10th June last.

STEPHEN FREEMAN
(For the Under Secretary).

Mr. Inspector Wisdom to The Chairman, Local Land Board, Armidale.

Report respecting the selection of J. Grancy, made at Tenterfield on 31st July, 1884.

Sir, Glen Innes.

C.P. 84-60; section 19, portion 9.

I have the honor to report that I visited and inspected the above-described conditional purchase on the 28th March, 1888, and that I found the selector then resident upon selection.

The land, which consists of forest ridges, and comprises 40½ acres, is occupied and used by ———— ————and the selector, who follows the avocation of ————, had at the time of my visit made the improvements hereunder particularly described, the value of which I estimate at the sums respectively stated, viz.:—Shafts and excavations, £200.

From the appearance of the land, and the circumstances stated in the following remarks, I am of opinion that the selector has been continuously resident upon the selection.

Remarks:—

Every indication of *bona fide* mining.

I have, &c.,
J. B. WISDOM,
Inspector of Conditional Purchases.

The papers in this case having been returned to the Department on 27th March, 1888, this report is forwarded to place with them.—S. BLYTHE, Chairman, Armidale, 21/4/88. Place with papers upon return from Mines Department.—F.B.S., 15/5/88.

The Under Secretary for Mines to The Under Secretary for Lands.

Sir, Department of Mines, Sydney, 5 April, 1888.

It having been represented that mineral conditional purchase 84-60 of 40 acres of land in the parish of Highland Home, county of Gough, is incorrectly located on the official map of the Lands Department, I have the honor to request that you will be good enough to state if the accompanying tracing shows the correct position of the conditional purchase in question.

I have, &c.,
HARRIE WOOD,
Under Secretary.

Messrs. Brett and Coghlan to The Under Secretary for Lands.

Sir, 19, Macquarie-place, Sydney, 6 April, 1888.

Tenterfield; M.C.P. 84-60. E. Prosser.

With reference to the conditional purchase noted in the margin, we beg to submit for your attention the following facts, and beg that in view of the great importance of the interests involved, as well as to prevent litigation, that you may be pleased to cause the earliest possible attention to be given to it:—

On the 31st July, 1884, the land now under correspondence was applied for by Mr. J. H. Graney (a surveyor), who, in applying for same, described it as formerly being mineral leases 1,815, 1,816, and 1,817, and as containing an area of 60 acres. This land was subsequently purchased and transferred by our client, Mr. E. Prosser, and money in mining operations and machinery was expended on the ground to the value of about £8,000. Some time ago, and since the selection, however, the land applied for and operated on by our client was granted under mineral lease to one Bailey, who has served notice upon our clients to remove their machinery. This our clients have not done up to this, nor can they consider they are compelled to do,—

1st.

1st. Because we contend that the original selector applied for the land formerly held under mineral leases 1,815, 1,816, and 1,817, which is identical with the land now in his possession, and on which the large sum of money stated has been expended.

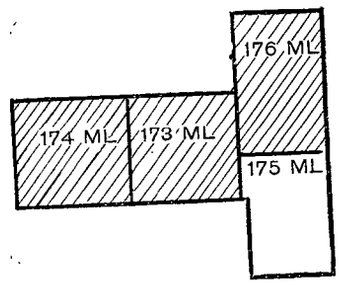
2nd. Because they submit that the duplication of Nos. 173, 174, and 176 led to the error, and that the land applied for by the original selector is not that shown on the parish map as granted him, but is nearly 2½ miles distant in a north-east direction.

3rd. That as a proof, if any further is required, of the land selected, it will be seen that the land allotted could not have been intended to have been asked for by anyone having the most remote idea of how land could be taken up under one application, as our client's transfer, or from his professional knowledge, must undoubtedly have had more than ordinary acquaintance with.

4th. To show that the land applied for was not that granted, and, as explained in the previous paragraph (3), we beg to enclose two rough sketches, 1 being the land applied for, and that marked 2 as granted. It will be seen from these that the plan marked 1 must have been the land applied for, as that shown in 2 would not have been asked for under one application by the most ignorant selector in the country, much less by a surveyor, who would at once know that having made an application for three portions of land, one of which did not adjoin the other two, he was bound not to get the latter, which, as a matter of fact, if 2 was intended as the application, your Department have already voided the portion No. 176 on sketch 2. In conclusion, we submit the whole error has been led up to by the duplication of the numbers 173, 174, and 176, and we trust, under all the circumstances of the case, you will make our client's original application for an area of 60 acres good, and issue to him, with the least possible delay, a certificate of conformity.

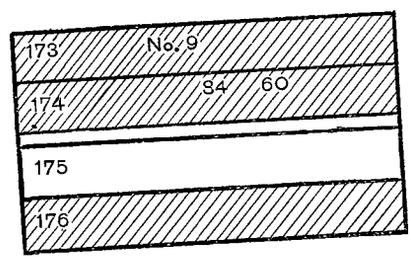
We have, &c.,
BRETT AND COGHLAN,
Agents for E. PROSSER.

[*Enclosure.*]



No. 1.

THE above shows the land applied for by Graney by red hatched lines, and which has had a large sum of money expende on it, and is now in the possession of E. Prosser; attention is called to the similarity of numbers, and to the fact that portions Nos. 173, 174, and 176 do in this case adjoin, whereas in sketch No. 2 they do not.



No. 2.

The above rough sketch shows by hatched lines the land which the Department have recognized as that applied for by J. H. Graney, and it is pointed out how unlikely it is that a surveyor would apply for 60 acres under one application in the manner shown by hatched lines on the portions 173, 174, and 176.

The Chief Mining Surveyor to The Under Secretary for Mines.

Sir, Mines Department, Sydney, 14 April, 1888.

At your request, I have this morning seen Mr. Freeman, Assistant Under Secretary for Lands, in reference to the error which has apparently been made in locating Mr. Graney's mineral conditional purchase (84–60), in the parish of Highland House, and which error may result in the granting of two titles to the same land.

I pointed out to Mr. Freeman that it appeared strange that as Mr. Graney's application for mineral conditional purchase was for 60 acres he had made no inquiry or protest when the mineral conditional purchase was granted as for 40½ acres only, and had any such inquiry been made it must have resulted in the discovery of the error.

I urged upon Mr. Freeman that while there was even a possibility that Graney's present claim was not made in good faith, or until we were in a position to understand the circumstance above referred to, it might be as well to be as reticent as possible, rather than to give information which might prejudice the Government.

In reply, Mr. Freeman stated that he could not agree with your view of the case, as stated by me, and that as an injustice had evidently been done to the mineral conditional purchaser (through an error

in

in information supplied to "Lands" by this Department) he was of opinion that there should be no concealment or withholding of information whatever, and that the error should be rectified as soon as possible by placing the mineral conditional purchaser in possession of blocks mineral lease 173, mineral lease 174, and mineral lease 176.

I have, &c.,
EDWARD PITTMAN,
Chief Mining Surveyor.

Very urgent. As this is a matter possibly involving serious consequences, I shall be glad if the Under Secretary for Lands will be good enough to move the Minister for Lands not to deal with this case till Mr. Abigail returns and has had an opportunity to see the papers.—H.W., B.C., 16/4/88.

As Graney had transferred his interest in the mineral conditional purchase to the person before any intimation was made from this Department that the purchase was in any way questioned, it would not seem that that person can be blamed for not disputing what now proves to have been erroneous action on the part of the administration, and, so far as I can see, there is no occasion for delay in recognizing the title of the mineral conditional purchase holders, the case being apparently clear and beyond a doubt. As, however, the Under Secretary for Mines points out that the Minister for Mines is absent, the matter may perhaps be held over until he returns and has an opportunity of perusing the papers.—S.F., 18/4/88.

Yes.—C.O., 19/4/88. The Minister for Mines having now returned, these papers are forwarded for his perusal, as desired.—S.F. (for U.S.), B.C., 23/4/88. The Under Secretary for Mines.

Memorandum by the Under Secretary for Mines.

On the 31st July, 1884, James H. Graney applied for a conditional purchase, under the 19th section of the Crown Lands Alienation Act 1861, of 60 acres of land, in the parish of Highland Home, county of Gough, held under leases 1,815, 1,816, and 1,817.

On the 1st May, 1885, the Lands Department sent a memo. to the Mines Department asking what portions in the county of Gough are or have been held under mineral leases 1,815, 1,816, and 1,817, and how the applications for these stood on the 31st July, 1884, &c. This memo. was dealt with by the Registrar of the Mining Department, who stated in reply that portion 173 mineral lease 1,815, portion 174 mineral lease 1,816, and portion 176 mineral lease 1,817, lessee, James H. Graney. Delivered rent paid 29th October, 1884. At the date of conditional purchase, viz., 31st July, 1884, these leases stood in the names of W. W. Richardson and G. Hardie. The transfer to Graney was approved on 1st August, 1884. Leases are now in course of cancellation for non-observance of labour conditions; this reply is dated 27th May, 1885, and the Registrar then referred the paper to the Chief Mining Surveyor without saying for what purpose it was so referred. The Chief Mining Surveyor marked it to the Chief Draftsman, who returned it marked noted 6th June, 1885. In the Registrar's room the following was then added:—"Mineral leases 1,815, 1,816, and 1,817 now cancelled, 2nd June, 1885." The paper was then, on the 9th June, 1885, returned to the Lands Department.

On the 16th July, 1885, the application to conditionally purchase was declared void because the portions 173, 174, and 176 were not conterminous, and at the date of the conditional purchase the leases stood in the names of W. W. Richardson and G. Hardie, and were in course of cancellation.

On the 4th August, 1885, Messrs. Shepherd and Crossman asked to have the voidance recalled, and in this letter they stated Graney had transferred the conditional purchase to the Butler's Tin-mining Company, who, by the liquidator, transferred to Mr. Prosser, and that the transfer of the leases to J. H. Graney was made on the 16th June, 1884. Thereupon the Minister for Lands, on the 5th August, 1885, decided that the voidance be reversed, and the alienees were so informed.

On the 7th September, 1885, the Minister for Lands again decided that as portion 176 was separated from 173 and 174 the applicant should be allowed the 40 acres embraced by portions 173 and 174, taking refund on 20 acres, with the option of a refund on the whole. Mr. Prosser was so informed on 17th November, 1885.

On the 9th January, 1886, Messrs. Shepherd and Crossman wrote stating they were instructed by Mr. Evan Prosser to accept the mineral conditional purchase of 40 acres, being lots 173 and 174, Tenterfield, offered in the letter from the Lands Department of the 17th November, 1885, with a refund of the deposit of £10 on the remaining 20 acres. Thereupon instructions were issued to survey portions 173 and 174, parish of Highland Home, and the two portions were measured as one portion, No. 9, containing 40½ acres, on the 4th and 5th August, 1886.

On the 7th December, 1886, Mr. Prosser made declaration as to expenditure upon the 40 acres, and on the 13th December, 1887, another declaration was made as to the required expenditure on 40 acres 2 roods, being part of conditional mineral purchase 84-60 of 1884. The declaration was sent on the 4th June, 1887, and forwarded to the Local Land Board for verification.

On the 10th December, 1887, Messrs. Brett and Coghlan wrote to the Mining Department, stating that they understood a Mr. Bailey had applied to lease the 40 acres comprised in conditional purchase 84-60, E. Prosser, to which the following reply was sent on the 15th December, 1887:—

Gentlemen, Department of Mines, Sydney, 15 December, 1887.

Referring to your letter of the 10th instant, in which you protest against the application of Mr. David Bailey for a mineral lease of 40 acres of land, in the parish of Highland Home, being granted, as you understand the land so applied for embraces the mineral conditional purchase No. 84-60, Tenterfield, by E. Prosser, I have the honor to inform you that the portions of land which have been leased do not embrace a conditional purchase. Two other portions bearing the same numbers, without the letters M.L., are embraced in the purchase before mentioned.

I have, &c.,
HARRIE WOOD,
Under Secretary.

Messrs. Brett and Coghlan, 19, Macquarie-place.

This was the first intimation received by the Mining Department, and as no further communication was received from Mr. Prosser it was supposed the explanation was satisfactory, and it was not till the 27th March, 1888, when Messrs. Brett and Coghlan asked the Under Secretary for Lands to cause the papers to be returned to Sydney, as there was a dispute concerning the land, that any suspicion of an error was raised. The papers were returned accordingly, and on the 6th April, 1888, Mr. Prosser for the first time questioned the action taken upon his mineral conditional purchase application 84-60, and in this letter clearly points out how the error occurred, as though he was in the possession of all the facts.

There

There can be no doubt that a mistake was made in the portion numbers in this Department, and if the conditional purchaser had obtained the quantity of land applied for, viz., 60 acres, it is conceivable that he would not have detected the error; but when he was told that the 60 acres had to be cut down to 40 acres, because one of the portions was separated from the other two by reason of an intervening portion, while he must have known that the three portions held under leases 1,815, 1,816, and 1,817 adjoined, it is inconceivable that he would concur in the reduction of the area and accept the smaller area without question. He, however, not only did this, but all through the voiding and reversing of the voidance of conditional purchase he never once raised any question, nor hinted at any error, but quietly accepted the 40 acres, and received back his deposit upon the other 20 acres. And further, when, after survey, it was found that portions 173 and 174 together comprised 40½ acres, instead of 40 acres, he at once acquiesced and made an amended declaration. It is also worthy of notice that though in August, 1885, Mr. Prosser's solicitors state that several thousand pounds have been expended upon the land in machinery and otherwise, the surveyor in his report, dated 26th September, 1886, states that he did not observe that any expenditure had been made on the land in connection with mining, as required by the 19th section of the Crown Lands Alienation Act of 1861. Now, the adverse title was not made by Bailey till the 18th July, 1887, when he applied to lease portions M.L. 173 and M.L. 174, and the lease was not granted till 8th November, 1887, so that up to this last-named date the error could easily have been corrected, and had any question been raised before the lease issued to Mr. Bailey it would not have been issued, and the error would no doubt have been rectified. I, therefore, venture to submit that the conditional purchaser, by his acquiescence, extending over a period of nearly two years, has contributed largely to any wrong that may have been done to him—that he has in fact slept upon his rights while an adverse title has been created, and that he is not now entitled to the consideration which he might fairly have claimed had he exercised or asserted his rights earlier. And I would submit that he should be allowed to stand upon the title he has accepted till he has cleared away the adverse title of Mr. Bailey. In this way the whole case will be brought before the proper tribunal, and the decision of the Court will be obtained upon a full consideration of the relative merits of the parties, and if any claim for compensation should be set up on either side against the Crown it may be made to rest upon rights established and recognized by the Court.

H.W., 27/4/88.

Approved.—F.A., 4/5/88. The Under Secretary for Lands.—G.E.H. (for the Under Secretary), B.C., 4/5/88.

Beyond a doubt the land applied for originally is that now claimed by Graney's successor. In the face of this, and of the fact that the error in location of the conditional purchase was entirely brought about by the mistaken action of the Government Department, it would seem to be both inequitable and contrary to law to attempt to dispute the conditional purchase title. Submitted, therefore, that the minute of 14th April, 1888, on office memorandum covering paper 88–14,248 Dept., be approved.—S.F., 9/5/88.

Approved.—F.G., 9/5/88. Under Secretary for Mines informed, 9/5/88. Brett and Coghlan informed, 14/5/88.

The Under Secretary for Lands to The Under Secretary for Mines.

Sir, Department of Lands, Sydney, 9 May, 1888.

Referring to your blank-cover communication of the 4th instant, respecting the mineral conditional purchase noted in the margin, I am directed by the Secretary for Lands to inform you that the correct position of the mineral conditional purchase in question is that as applied for under mineral lease 174 (20 acres), mineral lease 173 (20 acres), and mineral lease 176 (20 acres), parish of Highland Home, county of Gough.

Tenterfield, M.C.P. 84-60, 31 July, 1884; 60 acres; J. H. Graney.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

Papers 88-7,255 forwarded to Lands Department 5th instant.—G.E.H., 10/5/88. The Lands Department may be asked why this letter is sent, and is it intended to disregard the request made by me.—F.A., 10/5/88. The Under Secretary for Lands.—H.W., B.C., 10/5/88. Submitted.—S.F., 16/5/88.

The request of the Mines was, in effect, that, instead of sending on the conditional purchaser's claim, in accordance with the ascertained facts of the case, I should let the matter stand over until a Court of law should have considered the individual claims or titles. This is entirely opposed to the practice of the Department, and, in my opinion, a weak and embarrassing mode of action. Independent of this, there is no surety that the case will ever go into a Court, and, if it did, the rights of either claimant will not be weakened by the action now decided upon by me. The letter of the 9th instant should certainly have conveyed my decision more fully.—T.G., 16/5/88.

The original of this document, with minutes thereon up to to-day's date, has now been forwarded to the Under Secretary for Mines.—W.H.C., 16/5/88. End of March.—W.H.C., 21/5/88.

The Under Secretary for Lands to Messrs. Brett and Coghlan.

Gentlemen, Department of Lands, Sydney, 14 May, 1888.

Referring to the mineral conditional purchase quoted in the margin hereof, I am directed to inform you that the Secretary for Lands, having had the matter of location of the purchase under consideration, has determined that the lands represented thereby are portions mineral lease 173, mineral lease 174, and mineral lease 176, of 20 acres each, parish of Highland Home, county of Gough, and not portions 173 and 174.

Tenterfield, M.C.P. 84-60; J. H. Graney, now E. Prosser

I am further to add, in terms of section 6 of the Act 50 Victoria No. 21, that Mr. Secretary Garrett is satisfied that the lessees of mineral leases 1,815, 1,816, and 1,817, other than James H. Graney, ceased to hold any interest in such leases at the time Mr. Graney applied for the conversion thereof into this mineral conditional purchase. As on a previous occasion, owing to misapprehensions, the conditional purchaser was informed that the area of the holding had been reduced to 40½ acres, and refund was accordingly

accordingly made, it will now be necessary for the present holder to repay forthwith to the Treasury or local Land Agent the sum of £9 15s., as deposit upon the 19½ acres added, at 10s. per acre, together with instalments of 2s. per acre, which fell due on the 21st September last, also that which fell due during the first quarter of the current year. I have, &c.,

(For the Under Secretary).

Messrs. Brett and Coghlan to The Under Secretary for Lands.

Sir, 19, Macquarie-place, Sydney, 26 May, 1888.

Tenterfield, M.C.P. 84-60, E. Prosser, 60 acres.

We have the honor to enclose the declaration of Mr. E. Prosser as to the expenditure in mining operations on the conditional purchase noted in the margin.

As it is of importance that a certificate of conformity should be speedily issued for this selection, may we ask you, under the circumstances, to cause an early inspection to be made.

We are, &c.,
BRETT AND COGHLAN.

Mr. Capper.—S.F., 26/5/88.

[*Enclosure.*]

Declaration of Conditional Purchaser for Mining Purposes.

I, EVAN PROSSER, of Sydney, do solemnly and sincerely declare that I am the lawful owner, by conditional purchase, of the land hereunder described, and that an expenditure equal to £2 per acre for the area of the land has been made on mining operations other than gold-mining on the land, and since the selection on 31st July, 1884; and I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled "An Act for the more effectual abolition of oaths and affirmations taken and made in various departments of the Government of New South Wales, and to substitute declarations in lieu thereof, and for the suppression of voluntary and extra-judicial oaths and affidavits."

Description.

County of Gough, parish of Highland Home, 60 acres, being part of conditional mining purchase No. 60 of 1884, in the district of Tenterfield.

Taken and declared, at Sydney, this 23rd day of May, 1888, before me,—
J. G GRIFFIN, J.P.

E. PROSSER.

Examined and entered.—C.C., 29/5/88.

Messrs. Brett and Coghlan to The Under Secretary for Lands.

Sir, 19, Macquarie-place, Sydney, 13 June, 1888.

Tenterfield, C.P. 84-60, E. Prosser, 60 acres.

We have the honor to ask for the speedy issue of a certificate of conformity for the conditional purchase noted in the margin. Our object in asking for urgent action is to enable us to prevent a man named Bailey, to whom a lease over the ground was granted in error by the Department of Mines, from continuing working and removing mineral from the property, which we respectfully submit is shown beyond dispute by the papers to belong to our client. As the expenditure required by law is shown by the documents in your Department to have been made, perhaps, under the circumstances, you may be able to see your way to make the case special.

We have, &c,
BRETT AND COGHLAN.

Submittted as to request for certificate.—S.F., 26/6/88. Certificates may issue if conditions required by law have been satisfactorily performed. Inform Mines.—T.G., 26/6/88.

The Secretary for Lands to The Secretary for Mines.

Dear Sir, Department of Lands, Sydney, 26 June, 1888.

With reference to Graney's (now Prosser's) mineral conditional purchase, Tenterfield, subject to satisfactory proof of the fulfilment of the conditions required by law, I have directed the certificates the party is entitled to to be issued.

Yours, &c.,
THOMAS GARRETT.

This is in opposition to the recommendation of the Minister for Mines, and will, no doubt, lead to a claim for compensation.—H.W., 27/6/88. Under the circumstances, it must be met when it arises.—F.A., 28/6/88.

Office Memorandum.

88-3,021 Cor.

J. Graney's (now E. Prosser's) Mineral Conditional Purchase, 84-60, Tenterfield.

AFTER informing Mines Department, as directed by the Minister, 26/6/88, the case may be forwarded to Miscellaneous Charting Branch to note, and then to the Chairman for inspection of the mineral conditional purchase as now located. Mr. Wisdom's report herewith, being on portion 9 of 40½ acres, erroneously supposed to be the land applied for by mineral conditional purchase 84-60.

88-16,889 Dep.

F.B.S., 27/6/88.
W.H.C., 27/6/88.

The Assistant Under Secretary. Submitted.—S.F., 27/6/88. Approved.—T.G., 29/6/88. The Under Secretary for Mines informed, 4/7/88. Misc. Chart Branch.—J.P.M., 5/7/88. Mr. Skinner, —The necessary alterations have been effected in Charting Branch, and District Surveyor informed.—R.M., 25/7/88. C. S. Branch.

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The Under Secretary for Lands to The Under Secretary for Mines.

Sir, Department of Lands, Sydney, 4 July, 1888.

Referring to the mineral conditional purchase noted below, I have the honor to inform you that the Secretary for Lands has decided that the certificates may issue if the conditions required by law have been satisfactorily carried out.

I have, &c.,
STEPHEN FREEMAN
(For the Under Secretary).

Description.

Tenterfield; M.C.P. 84–60; 31st July, 1884; 60 acres; parish Highland Home, county Gough; J. H. Graney, now E. Prosser.

As I have already stated, I venture to think that, as the conditional purchaser contributed to the wrong of which he complains, he should be left to his remedy, without assistance from the Crown to make good his title. The trouble in the Milburn Creek case arose through an attempt to improve the position of one of the parties.—H.W., 5/7/88. Submitted.

Approved.—F.A., 12/7/88. Resubmitted for any further action necessary.—E.R., 12/10/88.

I am not aware of any further action that can be taken by this Department. It has been pointed out that the action proposed to be taken by the Lands Department appears likely to lead to consequences similar to those in the Milburn Creek compensation case, and reasons have been adduced why the action proposed should not be taken.—H.W., 19/10/88. Submitted.

I hope this case may be reconsidered by the Lands Minister, as I fear serious consequences if it be carried out as indicated by the Department of Lands. We can do no more than point this out.—F.A., 20/10/88. The Under Secretary for Lands, B.C., 20/10/88.—G.E.H. (for U.S.)

The Under Secretary for Mines to The Under Secretary for Lands.

Sir, Department of Mines, Sydney, 13 July, 1888.

With reference to your letter of the 4th instant, stating that the Secretary for Lands has decided that the certificate may issue in respect to the mineral conditional purchase noted below, if the conditions required by law have been satisfactorily carried out, I have the honor, by direction of the Secretary for Mines, to point out that, as the conditional purchaser contributed to the wrong of which he complains, it is thought that he should be left to his remedy, without assistance from the Crown to make good his title, more especially as the trouble in the Milburn Creek case arose through an attempt to improve the position of one of the parties.

I have, &c.,
HARRIE WOOD,
Under Secretary.

Description.

Tenterfield; M.C.P. 84–60; 31st July, 1884; 60 acres; parish Highland Home, county Gough; J. H. Graney, now E. Prosser.

Messrs. Brett and Coghlan to The Under Secretary for Lands.

Sir, 19, Macquarie-place, Sydney, 26 July, 1888.

With reference to the conditional purchase noted in the margin, we have the honor to request that you will cause urgent action to be taken with the view of having it speedily inspected and reported on, in order that our client may be able to obtain a certificate of his having complied with the conditions required by law. We are in receipt of a letter from him to-day, in which the following passage occurs:—

Tenterfield; M.C.P. 84–60; E. Prosser; 88-3,021 Cor.; Charting Branch, 6/7/88.

"We are anxiously waiting for the official letter from the Lands Department giving us a title to Butler's mine, which you promised to get. It has been a very heavy loss to us this mistake of the Mines Department, as we had to stop negotiations with English capitalists."

Under these circumstances we trust you may see your way to make this request of ours special.

We have, &c.,
BRETT AND COGHLAN,
Agents for E. PROSSER.

Messrs. Brett and Coghlan to The Under Secretary for Lands.

Sir, 19, Macquarie-place, Sydney, 11 September, 1888.

With reference to the conditional purchase noted in the margin, we have the honor to ask that you will be pleased to cause our request for the urgent issue of a certificate of conformity to receive early attention, as it is of the greatest importance to our client to obtain this document.

Tenterfield, M.C.P. 84-60, E. Prosser. Cor. 88-3,811.

We have, &c.,
BRETT AND COGHLAN,
Agents for E. PROSSER.

Papers 88-3,811 Cor. urgently required. Will Banks please obtain.—W.H.C., 12/9/88. Banks to search.—S.F., 13/9/88. I have made a search for 88-3,811 Cor., and cannot find them.—F.B., 15/9/88. Returned to Records for a further search.—W.H.C., 15/9/88. It has been ascertained from the writers that the papers are with Sir Henry Parkes.—J.P.M., 13/12/88. Mr. Capper. The papers have since been returned. Please quote papers and the date upon which they were sent to the Land Board.—W.H.C., 15/1/89. 88-3,811 Cor., B.C., Land Board, Armidale, 9/1/89.—E.J.P. (*pro* J.P.M.), 19/1/89. End of February. Then as to the return of the previous papers in the case.—W.H.C., 19/2/89. Not yet returned.—E.J.P. (*pro* J.P.M.), 1/3/89. End of March.—W.H.C., 8/3/89.

Memo.

Memo.

Tenterfield; M.C.P. 84-60; 60 acres; 31st July, 1884; Jas. H. Graney.

THE enclosed papers, referring to mineral conditional purchase 84-60, particularized in the margin, are now forwarded to the Chairman of the Armidale Land Board for action, as approved by Mr. Secretary Garrett on 29th June last (cover 88-3,021c).

The Chairman, Local Land Board, Armidale.

F.H.W. (for the Under Secretary).

B.C., 9/1/89., Department of Lands, Sydney. Special.—A.W.C.

Messrs. Brett and Coghlan to The Under Secretary for Lands.

Sir, 19, Macquarie-place, Sydney, 11 January, 1889.

Tenterfield; M.C.P. 84-60; E. Prosser; 60 acres. Cor. 88-3,811, Land Board, Armidale.

With reference to the conditional purchase noted in the margin,—as we have already had the honor to point out, a man named Bailey, who obtained a lease from the Department of Mines (through an oversight) of this land, is on the ground and working and removing minerals from it; and as the case, owing to various causes, has lain in abeyance, we beg respectfully to ask that if you can see your way to do so you will cause an inspection of the improvements to be made at the earliest possible moment.

We have, &c.,

BRETT AND COGHLAN,
Agents for E. PROSSER.

The papers in the case in question were forwarded to the Chairman of the Armidale Board for early inspection. The agents may be so informed, and this letter also forwarded to the Chairman, to be placed with the previous papers, and with a view to the necessary local action being expedited.—W.H.C., 11/1/89.

Inform, as suggested.—W.H., 11/1/89. Brett and Coghlan.—T.D., 12/1/89. The Chairman, Local Land Board, Armidale.—F.H.W. (for the Under Secretary), B.C., 12/1/89. Let me see the papers in this case.—F.G.F. Mr. Makin.

The Under Secretary for Lands to Messrs. Brett and Coghlan.

Gentlemen, Department of Lands, Sydney, 12 January, 1889.

Tenterfield; M.C.P., 84-60; E. Prosssr.

Referring to your letter of 11th instant, I have the honor to inform you that the papers relating to the conditional purchase noted in the margin have been referred to the Local Land Board at Armidale, to whom your communication has been forwarded, with a view to necessary local action being expedited.

I have, &c.,

F. H. WILSON
(For the Under Secretary).

Mr. District-Surveyor Finley to Mr. Surveyor Chapman.

Sir, District Survey Office, Armidale, 20 February, 1889.

I have the honor to request that you will at once proceed to carry out a resurvey of the mineral leases shown by blue tint on the accompanying tracing, and number the same in one portion as No. 8.

This survey will be in satisfaction of mineral conditional purchase No. 84-60 of 60 acres, James H. Graney, now Evan Prosser.

The usual plan and report will be necessary.

This case has been standing over for a number of years, and the survey is most urgently required.

You will therefore be good enough to consider this a special case, and proceed to complete the work at once.

I have, &c.,

F. G. FINLEY,
District Surveyor.

Returned to Mr. District-Surveyor Finley with my plan and letter dated 11th March, 89-24.—A. W. CHAPMAN, Surveyor.

NOTE.—Mr. Licensed-Surveyor H. C. Holmes previously measured portion 9 of 40 acres in satisfaction of the mineral conditional purchase, but it is now found that the mineral conditional purchase was erroneously located by the Department.

Mr. Inspector Wisdom to The Chairman, Local Land Board, Armidale.

Report respecting the selection of J. H. Graney, now E. Prosser, made at Tenterfield on the 31st July, 1884. (C.P. 84-60; section 19; portions 173, 174, 176.)

Sir, Glen Innes, 7 March, 1889.

I have the honor to report that I visited and inspected the above-described conditional purchase on the 25th February, 1889, and that I found the selector then resident upon selection.

The land, which consists of forest ridges and comprises 60 acres, is occupied and used by ——— ———, and the selector, who follows the avocation of ———, had, at the time of my visit, made the improvements hereunder particularly described, the value of which I estimate at the sums respectively stated, viz.:—

	£	s.	d.
Huts	30	0	0
Shafts, drives, and excavations	1,000	0	0
	£1,030	0	0

From the appearance of the land and the circumstances stated in the following remarks, I am of opinion that the selector has been continuously resident upon the selection.

Remarks:—

Bonâ fide mining operations.

I have, &c.,

J. B. WISDOM,
Inspector of Conditional Purchases.

In

In this case the requirements of the law have been fully carried out, and the case may now be considered complete.—F. G. FINLEY, Acting Chairman, 13/3/89. Declaration on mineral conditional purchase 84–60 is now submitted for approval, the necessary expenditure in mining operations having been made.—W.H.C., 19/3/89. Then Mines papers may be returned to that Department.—F.B.S. The Under Secretary. For approval.—S.F., 19/3/89. Approved.—J.N.B., 20/3/89. Final certificate on mineral conditional purchase 84-60 sent to Evan Prosser, care of Brett and Coghlan, 27/3/89. Records to remove papers. 88–15,605 Dep. and enclosures removed therefrom.—E.J.P. (*per* J.P.M.), 7/4/89.

Mr. Surveyor Chapman to Mr. District-Surveyor Finley.

(No. 89–24.)

Sir,

Glen Innes, 11 March, 1889.

In accordance with your instructions dated 20th February, 89–12, I have the honor to forward herewith a plan* of portion numbered 8, containing 60 acres, in the parish of Highland Home, county of Gough. *Appendix E.

By my instructions the land surveyed appears to be in satisfaction of mineral conditional purchase 84–60, James H. Graney, now Evan Prosser; but, on the ground, I was informed that the land was held by Kennedy Hill in virtue of a mineral lease. Kennedy Hill was in occupation of the land at the date of my survey, and had eight men employed working the mine.

I have shown on my plan the positions of extensive works and mining, and from what I could gather on the ground, the engine-shed, ten-stamper tailing-boxes, and complete machinery for crushing, also tramway and huts, were erected by Bensusan. Kennedy Hill, who was working the mine, had increased the length of the adit 20 feet, and was still working at it. He had also sunk a shaft 40 feet, and had sunk 40 feet of the shaft shown 160 feet deep. The remaining shafts were sunk by Bensusan.

The area of the mineral leases 173, 174, and 176 I found to be half an acre deficient in area, and I altered the eastern boundary of portion 8 to make the area 60 acres. The numbers and boundaries of mineral leases 173, 174, and 176, which do not form part of portion 8, I obliterated.

I have, &c.,

A. W. CHAPMAN.

D.S.O. 89–12, plan and tracing herewith. Mr. Biden,—This case should be dealt with at once.—T. ELWIN, 19/3/89. Examined and charted.—E. H. BIDEN, 1/4/89.

Forwarded to the Under Secretary for Lands. The survey includes the three mineral leases, Nos. 173, 174, and 176, now held under mineral conditional purchase 84–60, by James H. Graney. (*Vide* papers C.S. 89–11,910 herewith.) I have had the survey effected in view of the fact that the mineral lease measurements were not made for alienation, and the portion required renumbering as of the parish. The papers in the case (C.S. 89–11,910) are attached.—F. G. FINLEY, District Surveyor, 17/5/89.

Charting Branch, 23/5/89.

The Under Secretary for Lands to Mr. E. Prosser.

Sir,

Department of Lands, Sydney, 27 March, 1889.

The declaration made by you, at Sydney, on the 23rd May, 1888, with reference to the conditional purchase described at foot hereof, having been furnished, and it having been reported that an instalment of the balance of purchase money has been duly paid, I am now directed by the Minister for Lands to notify to you that he is satisfied, after due inquiry, that the conditions as to mining expenditure prescribed by the 19th clause of the Crown Lands Alienation Act of 1861 have been completed in respect of the said conditional purchase.

The deed of grant may be obtained at any time hereafter by payment of the balance of the purchase money, with the interest, if any, then due; but should such payment be deferred, an instalment at the rate of two shillings per acre must be paid between the 1st January and 31st March in each year until the balance, inclusive of interest as prescribed by law, shall have been duly paid, otherwise the selection will be forfeited.

I have, &c.,

STEPHEN FREEMAN,
Under Secretary.

Conditional purchase No. 84–60, section 19; district, Tenterfield; date, 31st July, 1884; county, Gough; parish, Highland Home; No. of portion, 9; area, 60 acres; original applicant, James Harry Graney; present holder, Evan Prosser.

Mineral Leases Nos. 1,815, 1,816, 1,817, and 3,237, Parish of Highland Home, County of Gough.

Application.

Application No 615, at Vegetable Creek, for a Mineral Lease.

1. By whom application was received.—G. H. Gower, Warden's Clerk.
2. At what place.—Vegetable Creek.
3. Date and hour when received.—14th January, 1882, at 12 o'clock.
4. Receipt for 1st year's rent.—Date, 14th January, 1882.
5. To whom receipt was issued.—Thomas Butler, John Smith, Andrew Smith.
6. Date when notice to survey was sent to Surveyor.—12th July, 1882.
7. Date when report and plan were received from the Surveyor.—21st December, 1882.
8. Names of objectors, and dates on which they lodged their objections.—None.
9. Is the time proposed for commencing work reasonable? Yes.
10. Is the number of men proposed to be employed reasonable? Yes.

G. MARTIN,
Warden.

Notice of Application and Deposit.

Mineral Lease Regulations.—Schedule 6.

Sir, Vegetable Creek, 14 January, 1882.

We have the honor to inform you than we have this day deposited with Mr. Warden's Clerk Gower, at Vegetable Creek, the sum of £5, being the first year's rent in advance of 20 acres of land at parish Highland Home, county Gough, for the purpose of mining for tin-ore, and the sum of £4, being the fees for the survey of the said land. The number of our application is 615.

We have, &c.,
THOMAS BUTLER.
JOHN SMITH.
ANDY SMITH.
his
THOMAS x BUTLER.
mark.

The Under Secretary for Mines, Sydney.

Form of Application.

Mineral Lease Regulations.—Schedule 2.

To the Honorable the Secretary for Mines, Sydney,— Vegetable Creek, 14 January, 1882.

Sir,

We hereby make application for a mineral lease of that piece or parcel of land situated in parish Highland Home, county Gough, containing 20 acres, of which we took possession on the 9th day of January, at the hour of 8 o'clock in the forenoon, for the purpose of mining thereon and therein for tin-ore for a period of twenty years, by posts, notices, and L trenches at each angle thereof. The datum point is distant about 3 miles in an easterly direction from Alexr. Steame's gully crossing-place, Gulf Road.

Notice of our having made this application will be given in accordance with the regulations in that behalf. We also hand herewith a receipt for £5, being the first year's rent in advance of the said land, and the sum of £4 to cover the cost of the survey.

We hereby acknowledge that this application is made upon the distinct understanding and condition that if we shall abandon or fail to proceed with it, or if it is refused, the Secretary for Mines for the time being may deduct from the sum of £9 deposited as aforesaid any cost to which, in his opinion, the Crown may have been put in or about or in respect of this application; and this application shall thereupon become and be void, and the possession aforesaid shall cease and determine. And if the lease shall be granted we shall and will commence mining operations upon or in connection with the demised land within one month from and after the granting thereof, and shall and will employ upon such land not less that two men during the first year of the term thereby created, and not less than four men during the remainder of such term. And shall and will at any time when called upon, in terms of the regulations relating to mineral leases, to do so, execute and take delivery of such lease, or failing therein for a period of fourteen days, after being so called upon, we shall and will forfeit the said sum of £9, and all right, title, or interest in and to the said land and the possession thereof, and the said lease shall be forthwith cancelled.

We have, &c.
THOS. BUTLER.
JOHN SMITH.
ANDY SMITH.
his
THOMAS x BUTLER.
mark.

This application was received by me this 14th day of January, 1882, at the hour of 12 o'clock noon, and is numbered 615.

GEORGE H. GOWER.

Form

17

Form of Notice to make Survey.

Sir, Mining Registrar's Office, Vegetable Creek, 1882.

An application for a mining tenement, particulars as per margin, having been lodged in this office, I request you will be good enough to survey, in accordance with the regulations relating to mineral leases, the area so applied for, and furnish me at your earliest convenience with a plan and report.

Your attention is particularly directed to regulations relating to mineral leases, &c.

I have, &c.,

WM. E. HENRY,

Warden's Clerk.

No. of application, 615, parish Highland Home, county Gough, 20 acres; names and addresses of applicants, Thomas Butler, John Smith, and A. Smith.

H. B. Sullivan, Mining Surveyor, Vegetable Creek.

Description.

Parish Highland Home, county Gough. The datum point is distant about 3 miles in an easterly direction from A. Steame's gully crossing-place, Gully Road.

Mr. Mining-Surveyor Sullivan to The Chief Mining Surveyor.

Tin Lease Reef.

Sir, Tent Hill, 20 December, 1882.

See lease diagram.

I have the honor to transmit herewith the plan of one portion of land, containing 20 acres, numbered mineral lease 173, in the parish of Highland Heme, county of Gough, and applied for by Butler and Co. under the Mining Act of 1874.

The applicants were working this land at time of survey, and had put down a shaft 25 feet, the reef being very rich in tin.

I have, &c.,

H. B. SULLIVAN.

Mining District, New England; applicant's locality, parish of Highland Home, county of Gough.
Application No. 82–615, at Vegetable Creek.

Description:—

Twenty acres, county of Gough, parish of Highland Home; portion mineral lease, 173. Commencing at a point bearing north 29 degrees west 4 chains 50 links from the south-west corner of portion mineral lease 175; and bounded thence on the north-east by part of the south-west boundary of that portion and a line bearing north 29 degrees west 14 chains 15 links; on the north-west by a line bearing south 61 degrees west 14 chains 14 links; on the south-west by a line bearing south 29 degrees east 14 chains 15 links; and on the south-east by a line bearing north 61 degrees east 14 chains 14 links, to the point of commencement.

Examined.—W.S.C.

Indenture.

Application No. 1,815.

THIS indenture, made the eighth day of November, in the year of our Lord one thousand eight hundred and eighty-three, between Her Most Gracious Majesty Queen Victoria, of the one part, and Thomas Butler, John Smith, and Andrew Smith (hereinafter called the lessees) of the other part, witnesseth:—That in consideration of the sum of five pounds paid by the said lessees on the fourteenth day of January, 1882, and of the rents hereinafter reserved, and of the covenants and provisoes hereinafter contained, Her Majesty doth by these presents grant and demise unto the lessees, their executors, administrators, and transferees, all that piece or parcel of land containing by admeasurement twenty acres, and more particularly described and delineated in the Schedule hereto, or in the plan heréunto annexed, and numbered M.L. 173, all those mines, veins, seams, or deposits of [the mineral or metal proposed to be worked] in, on, and under the said lands (hereinafter called the said mine), together with all and singular the shafts, levels, drifts, works, ways, fixtures, erections, liberties, easements, advantages, and appurtenances which are now or at any time during the term hereby granted may be held, occupied, or enjoyed therewith, for the purpose of mining upon and under the said land for tin, and also with full power for the said lessees, their executors, administrators, and transferees, and his and their agents and workmen (including contractors, tributors, and so forth), to dig, sink, drive, make, and use excavations, pits, shafts, levels, tunnels, watercourses, and other works necessary for winning and raising the tin in, on, or under the said land, and to take and appropriate the same during the term hereby granted, and to make and construct on the said land, races, drains, dams, reservoirs, roads, and tramways, and also to erect on the said land all buildings, engines, furnaces, pumps, machinery, and appliances necessary for the purpose of winning and obtaining the tin in, on, or under the said land, and for effectually carrying on the works of the said mine, and also to erect on the said land such offices, cottages, and dwelling-houses, for the use of the agents, workmen, and persons employed in the said mine and works, as the said lessees, their executors, administrators, and transferees shall think proper: To hold the said land, mine, and premises, with the appurtenances (subject nevertheless to the reservation or exception of that portion of the surface of the said land shown on the plan aforesaid, bounded by the lines coloured red, and to such rights and interests as may be lawfully subsisting therein at the date of these presents), unto the said lessees, their executors, administrators, and transferees, from the date hereof, for the term of nineteen years and sixty-three days next ensuing, for the purpose of mining therein or thereon, for working or winning the said tin, and for no other purpose,—yielding and paying therefor unto Her Majesty, her heirs and successors, yearly and every year during the said term, the yearly rent of five pounds in advance, the first year's rent having been paid as aforesaid on the fourteenth day of January, 1882, the next payment being the rent of the said land for two months and two days, at the rate of fivepence per acre per month, from

the

the thirtieth day of October to the thirty-first day of December, 1884, shall be made to the Colonial Treasurer in Sydney, on or before the thirtieth day of November, 1883, and thereafter on or before the thirtieth day of November in each and every year, the yearly rent aforesaid (being the rent of the land hereby demised for the year commencing the first day of January next after each such payment) shall be paid to the Colonial Treasurer aforesaid, clear of all rates, taxes, and assessments to which the said land, mine, and premises are now, or at any time during the said term may be, subject or liable: Provided always, and it is hereby agreed, that if the said yearly rent shall be in arrear for thirty days after the same shall have become payable, whether such rent shall have been legally demanded or not, any officer appointed or authorized thereto by the Secretary for Mines may, by himself or his agent, enter upon the said land, and seize and distrain all minerals, metals, and ores actually got and raised from the said mine, and all machinery, apparatus, tools, waggons, carts, carriages, engines, plant, and all other goods, chattels, and effects whatsoever in, upon, and about the said land and premises, and every distress thus made may take away, sell, and dispose of as in cases of distress for rent reserved in common leases; and out of the moneys arising thereby retain so much as shall be sufficient to satisfy the said arrears, and which shall at the time of such sale be unpaid, and all expenses incurred by him or them in or in respect of such seizure, distraint, removal, and sale; and if there be any surplus such officer shall pay the same to the said lessees, their executors, administrators, or transferees; and the acceptance or receipt of rent by or on behalf of Her Majesty, after breach of any covenant hereinafter contained, shall not be or be deemed a waiver of the right of Her Majesty, or of the Secretary for Mines, or other officer on behalf of Her Majesty, to enforce observance of such covenant. And if the said lessees, their executors, administrators, or transferees, shall mine for or win from the said land, mine, and premises, any gold, or any earth, rock, stone, quartz, clay, sand, gravel, or soil containing gold, or any mineral or metal with which gold is associated or combined, without the express sanction first had and obtained of the Secretary for Mines for the time being, the Governor, with the advice of the Executive Council, may declare these presents void, and thereupon all the right, title, and interest of the lessees, their executors, administrators, and transferees under these presents shall cease and determine both at law and in equity. And the said lessees do hereby, for themselves, their heirs, executors, administrators, and transferees, covenant with Her Majesty, her heirs and successors, in manner following, that is to say:—

1. That the said lessees, their executors, administrators, and transferees, shall and will during the said term pay unto Her Majesty, her heirs and successors, the rent hereby reserved, at the times and places hereinbefore appointed for payment thereof, clear of all deductions.

2. And shall and will, after the expiration of one month from the date of delivery hereof, upon and during all lawful working days, except when prevented by inevitable accident or during the execution of repairs, make, construct, and work the said land, mine, and premises in the best and most effectual manner, and to the best advantage, without interruption; and shall and will diligently explore and search for tin in, on, and under the said land, mine, and premises.

3. And shall and will, after the expiration of the said month, employ in the construction of the works, or in mining operations on or under the said land, during the first year of the said term, and during the usual hours of labour, two able and competent workmen and miners at the least; and during the remainder of the said term, and during the usual hours of labour, shall and will employ as aforesaid not less than four such workmen and miners, unless prevented by inevitable accident, or during the execution of repairs, so that within the first three years of the term hereby created there shall be expended upon the said land, mine, and premises such a sum of money as shall be equal to five pounds sterling upon each and every acre hereby demised: Provided that the lessee, or if there be more than one lessee, each lessee who shall work as aforesaid, shall count as and be deemed for the purposes of these presents to be a workman or miner employed as aforesaid.

4. And shall and will during the said term effectually drain the said mine, and pump all water likely to cause injury thereto, or which would prevent or interfere with the working thereof; and if the said mine shall be affected, or be liable to be affected, by the same flow or body of water as any other mine or mines contiguous thereto, shall and will, if and whenever requested so to do, contribute, with the lessee or lessees or owner or owners of such other mines, a reasonable proportion of the machinery and labour necessary to free and keep such mine or mines free from water to a workable extent; or if the said mine shall be kept free from water to a workable extent either wholly or partially by means of the machinery and labour of a contiguous mine or mines, or by reason of any works constructed or money expended by the lessee or lessees, owner or owners, of such contiguous mine or mines,—then shall and will pay to such lessee or lessees, owner or owners, as aforesaid, a reasonable proportion of the cost of such machinery, labour, or works, or a reasonable proportion of the money so expended; and the Secretary for Mines for the time being may, if and whenever he shall think fit, depute some efficient person, who shall have access to and inspection of all such mines, to determine when the said mine is so freed or kept wholly or partially free from water, and what are the reasonable proportions of such expenses aforesaid, and to whom and when the same are to be paid—such decision to be final and conclusive on all parties.

5. And shall and will make such provision for the disposal of the detritus, dirt, waste, or refuse of the said mine that the same shall not be an inconvenience, nuisance, or obstruction to any roadway, river, creek, or private or Crown lands, or shall not in any manner occasion any public or private damage or inconvenience.

6. And shall and will erect, and keep erected, during the said term, a post, painted white, at each angle of the said land, and at such points along the boundary-lines as shall be necessary, so as plainly and accurately to define the boundary-lines and angles of the said land; and each such post shall be fixed firmly in the ground, and shall project above the surface thereof not less than three feet.

7. And shall and will, as often as required so to do during the term, make and deliver to the Secretary for Mines for the time being, or any officer appointed or instructed to collect, obtain, or receive the same, all such true and proper plans and sections, returns, and statistics of the workings and operations of the said mine, made up to the last day of the preceding month (the truth and accuracy of which shall be verified by the statutory declaration of the lessee for the time being, or the manager or other officer having

having the charge, control, and direction of the works of the said mine), as the Secretary for Mines shall from time to time direct. And shall and will, whenever required by the Secretary for Mines so to do, deliver to any officer appointed or instructed as aforesaid samples of the minerals, metals, and ores, or any of them, found in or upon such mine and land.

8. And shall and will during the said term make proper and reasonable compensation to the occupier or occupiers, lessee or lessees from the Crown, of any adjoining land in respect of any damage which may be sustained by him or them, by reason of the working of the said mine, or the carrying on of the works thereof or connected therewith, such compensation to be determined by the Secretary for Mines, or by some person authorized by him so to do.

9. And shall and will permit any mining surveyor, or other person duly authorized in that behalf, with all proper or necessary assistants, at all reasonable times, during the said term, quietly to enter into and upon the said land, mine, and premises, to survey and examine the state and condition thereof, and for the purposes aforesaid, to descend all pits and shafts, and to enter into and use all adits, levels, galleries, drives, and excavations, and to use all roads, ways, engines, ropes, machinery, gear, appliances, materials, labour, and other things in or on the said land and mine, which shall be by him deemed necessary, without making any compensation for the same, so nevertheless that in so doing no unnecessary interference is caused with the carrying on of the said mining works.

10. And further, shall and will at all times during the said term keep and preserve the said mine and premises from all avoidable injury or damage, and also the levels, drifts, shafts, watercourses, roads, ways, works, erections, and fixtures therein and thereon in good repair and condition, except such of the matters and things last aforesaid as shall from time to time be considered by a mining surveyor or other proper officer authorized by the Secretary for Mines to inspect and report upon such matters and things to be unnecessary for the proper working of the said mine or any contiguous mine, and in such state and condition shall and will at the end or sooner determination of the said term deliver peaceable possession thereof, and of all and singular the premises hereby demised to Her Majesty, her heirs and successors, or to the Warden or other officer authorized to receive possession thereof. Nevertheless the Secretary for Mines may, if he think fit, permit the lessees, their executors, administrators, and transferees, within six months after possession shall have been received as aforesaid, to enter upon the said land, and to remove therefrom such machinery, plant, and apparatus as shall have been erected and fixed upon such land, and such earth, rock, ore, mineral, or metal as shall have been won from and raised to the surface of such mine.

11. And shall not nor will use or occupy, or permit to be used or occupied, the said land, or any part thereof, for other than mining purposes, or for pasturage, or as sites for dwellings, or garden ground for the persons employed in, on, or about the said mine.

12. And shall not nor will mine in or upon the said mine, land, and premises, for any mineral, metal, or ore other than tin without the express sanction of the Secretary for Mines.

13. And shall not nor will transfer, underlet, or part with possession of the said land, mine, and premises, or any part thereof, or mortgage, charge, or encumber the same, without the license first had and obtained of the Secretary for Mines for the time being: Provided always that no such license shall be necessary in cases where, by operation of law or otherwise, a sale of the said land, mine, and premises, or any part or parts thereof, is made by any person or persons entitled to sell the same for the benefit of the creditors or a creditor of the lessees or their transferees, or in cases where the lessees or their transferees desire to let the said mine and premises, or any part thereof, to be worked on tribute.

14. And shall not nor will close up or obstruct any adit or adits to or from any contiguous mine or mines whereby fresh air is admitted or ventilation promoted.

15. And shall not nor will plead acceptance of rent by or on behalf of Her Majesty as a waiver of the right of Her Majesty, or of the Secretary for Mines, or other officer on behalf of Her Majesty, to enforce observance of the covenants herein contained, or of the right of the Governor, with the advice of the Executive Council, to declare these presents void for breach of any such covenant: Provided always and it is hereby agreed and declared in manner following:—

16. That it shall be lawful for Her Majesty, her heirs, successors, and assigns, to make and use in, on, or under the said land, any levels, drifts, leads, shafts, watercourses, adits, roads, ways, and passages for freeing and keeping free any other lands or mines from water, or for conveying water to any other lands or mines for mining purposes, or for supplying any other mines with fresh air, or for effectually working any other mines, or for any public purpose whatsoever, causing as little damage, obstruction, or interference as possible to or with the said mine and the works thereof. And if, at any time during the term hereby created, any part or parts of the land hereby demised, or any part or parts of the surface thereof, shall be required for the purpose of any township, village, railway, road, canal, watercourse, reservoir, or for any other public purpose, it shall be lawful for the Governor for the time being, with the advice of the Executive Council, on giving three months' notice of his intention so to do, to cause to be set out the part or parts of the said land, or of the surface thereof, which shall be so required; and as soon as the same shall be so set out, such part or parts of the said land, or of the surface thereof, shall cease to be included in the land hereby demised, and the lessees, their executors, administrators, or transferees shall not be entitled to any abatement of rent or any compensation whatever in respect thereof.

17. And if the lessees, their executors, administrators, or transferees shall prove to the satisfaction of the Secretary for Mines for the time being that the said mine is unworkable from any cause whatsoever, or that the lessees, their executors, administrators, or transferees is or are unable, by reason of sickness or other sufficient cause, to work in such land or mine, or that the supply of water is insufficient to allow the working of the said land, mine, and premises to be profitably carried on, the said Secretary for Mines may grant permission to suspend work therein or thereon for any period not exceeding six months, without the lessees, their executors, administrators, or transferees incurring in respect thereto any forfeiture or penalty for breach of any covenant herein contained.

18. And, lastly, that if the lessees, their executors, administrators, or transferees shall at any time during the said term fail to use such land *bona fide* for the purpose for which it has been demised, or if and whenever the said rent shall be in arrear for thirty days after the time appointed for payment thereof, whether

whether the same shall have been legally demanded or not, or if and whenever there shall be a breach of or non-compliance with the covenants and provisoes herein contained by the lessees, their executors, administrators, or transferees, and the lessees, their executors, administrators, or transferees shall not have obtained from the Secretary for Mines for the time being permission to suspend work as aforesaid, in case the breach shall have been for non-compliance with the covenants for the employment of workmen or miners, or for the working of the mine, the Governor, with the advice of the Executive Council, who alone and finally shall judge and determine the matter upon the evidence or reports submitted by the Secretary for Mines for the time being, may declare these presents void; and upon publication in the *Government Gazette* of notice of such declaration, all the right, title, and interest of the lessees, their executors, administrators, and transferees under these presents shall cease and determine both at law and in equity; and the production of a copy of the *Government Gazette* containing a notice, purporting to be signed by the Secretary for Mines, declaring the lease void shall be conclusive evidence in all Courts whatsoever in the Colony of New South Wales of a breach of or non-compliance with the covenants and provisoes herein contained sufficient to authorize and sustain such declaration having been lawfully made, and that the interest created hereunder has been lawfully determined; and thereupon it shall be lawful for Her Majesty, her heirs and successors, or her or their agents or officers, or for any bailiff or other person duly authorized thereto, or for any holder of a mineral license, who has the permission of the Secretary for Mines for the time being, without any previous demand whatsoever, to enter forthwith into and upon the said land and premises hereby granted, and the same to repossess and enjoy as fully and effectually to all intents and purposes as if these premises had not been made, and the said lessees, their executors, administrators, and transferees, to expel and remove, without any legal process, and as effectually as the Sheriff might do in case judgment in ejectment had been obtained and a writ of *habere facias possessionem* had been issued on such judgment; and in case of such entry and any legal proceeding taken in respect thereof, the defendant or defendants in any such proceeding may plead leave and license in bar thereof; and these presents shall be conclusive evidence of such leave and license by the lessees, their executors, administrators, and transferees, or other the person or persons, plaintiff or plaintiffs in such proceedings, for such entry or other matters complained of in such proceedings.

In witness whereof, His Excellency the Right Honorable Charles Robert, Baron Carrington, a Member of Her Majesty's Most Honorable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies, hath, on behalf of Her Majesty the Queen, caused the Seal of the said Colony to be affixed to this grant, and also set his hand, at Government House, Sydney, in the said Colony, the day and year first above written, and the lessees have also set their hands and seals the twelfth day of November, 1883.

AUGUSTUS LOFTUS.
J. P. ABBOTT.

Signed, sealed, and delivered by the within-named Thomas Butler (by his attorney, W. J. Fergusson), John Smith (by his attorney, W. J. Fergusson), Andrew Smith (by his attorney, W. J. Fergusson), in the presence of—

T. C. Binny, Registrar.

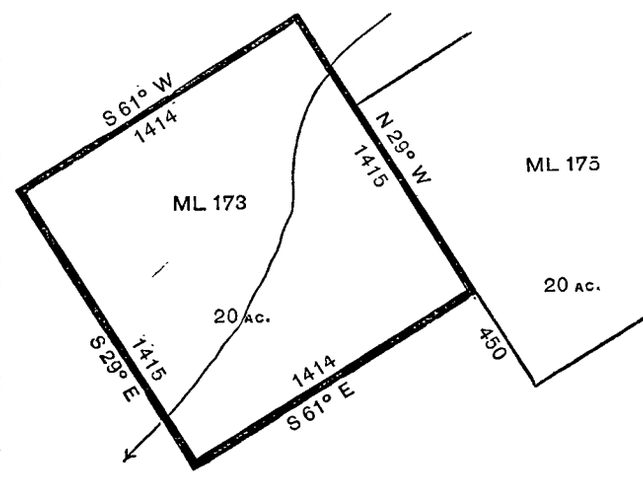
THOMAS BUTLER (By his attorney, W. J. Fergusson).
JOHN SMITH (By his attorney, W. J. Fergusson).
ANDREW SMITH (By his attorney, W. J. Fergusson).

Plan.

Paris of Highland Home, county of Gough, 20 acres, portion M.L. 173. Commencing at a point bearing north 29 degrees west 4 chains 50 links from the south-west corner of portion M.L. 175; and bounded thence on the north-east by part of the south-west boundary of that portion and a line bearing north 29 degrees west 14 chains 15 links; on the north-west by a line bearing south 61 degrees west 14 chains 14 links; on the south-west by a line bearing south 29 degrees east 14 chains 15 links; and on the south-east by a line bearing north 61 degrees.

Registered in the Department of Mines, at Sydney, this thirteenth day of November, A.D. 1883, at the hour of 10 o'clock in the forenoon, and numbered in the Register 1,815.

T. C. BINNY,
Registrar.



Scale, 8 chains to an inch.

Form

21

Form of Power of Attorney.

Mineral Lease Regulations—Schedule 12.

KNOW ALL MEN BY THESE PRESENTS,

That we, Thomas Butler, John Smith, and Andrew Smith, of Vegetable Creek, do hereby make, nominate, constitute, and appoint, and in our place or stead put William John Fergusson, of Sydney, to be our true and lawful attorney for us, and in our names, and as our act and deed, to sign, seal, and take delivery of the mineral lease for which we, on the 14th day of January, 1882, made application (No. 615 at Vegetable Creek), under the provisions of the Mining Act, 1874, and the regulations made thereunder, and which has been or shall be granted and issued by the Governor, and for us and in our names to enter into all such covenants and agreements as we shall be required to enter into in and by the said lease, and generally for us and in our names to do, execute, and perform all such other acts, deeds, and things as may be necessary or may be required to be done, executed, or performed in and about the application for and execution of such lease; and we do hereby ratify and confirm all and whatsoever the said William John Fergusson shall lawfully do or cause to be done in or about the premises by virtue of this power.

In witness whereof, we have hereunto set our hands and seals this 21st day of August, 1883.

THOMAS BUTLER.
his
ANDREW x SMITH.
mark.
his
JOHN x SMITH.
mark.

Signed, sealed, and delivered by the abovenamed Thomas Butler, John Smith, and Andrew Smith, in the presence of ——.

Transfer of Mineral Lease.

Mineral Lease Regulations.—Schedule 13.

WE, Thomas Butler, John Smith, and Andrew Smith, being registered as the lessees of all that mineral lot demised by a certain mineral lease granted by Her Majesty the Queen to Thomas Butler, John Smith, and Andrew Smith, and dated the 8th day of November, 1883, and numbered in the register 1,815, in consideration of the sum of £8 paid to us by the transferees, the receipt of which sum we hereby acknowledge, do hereby transfer to the said William Wright Richardson and George Hardie, all our right, title, and interest in and to the mineral lot demised as aforesaid. And we do hereby accept transfer of the right, title, and interest of the said Thomas Butler, John Smith, and Andrew Smith in and to the demised land aforesaid, subject to the provisions of the Mining Act, 1874, and the regulations made thereunder; and we hereby agree to be bound by all and singular the terms, conditions, covenants, provisoes, restrictions, and reservations contained in the said lease.

In witness whereof, we have hereunto subscribed our respective names, this 24th day of November, 1883:—

Witness to signature.	Transferror.	Transferee.
James H. Graney.	Thomas Butler.	——
James H. Graney.	his John × Smith. mark.	——
James H. Graney.	his Andy × Smith. mark.	——
G. S. Buzacott.	——	W. W. Richardson.
G. S. Buzacott.	——	George Hardie.

I, Joseph Palmer Abbott, hereby sanction and authorize the transfer of the interest of T. Butler, J. Smith, and A. Smith in the abovenamed lease to W. W. Richardson and G. Hardie.

Dated, at Sydney, this 12th Day of December, 1883. J. P. ABBOTT.

I have this 12th day of December, 1883, at the hour of 10 o'clock in the forenoon, registered the abovenamed transferee as the holder of the mineral lease No. 1,815.

T. C. BINNY,
Registrar.

Transfer of Mineral Lease.

Mineral Lease Regulations—Schedule 13.

WE, William Wright Richardson and George Hardie, of 131 Pitt-street, Sydney, being registered as the lessees of all those mineral lots demised by three certain mineral leases granted by Her Majesty the Queen to Thomas Butler, John Smith, and Andrew Smith, James Butler and Thomas M'Guiness, Thomas M'Guiness, Thomas Francis, Thomas Butler, and John Carey, all of Emmaville, and dated the 12th day of November, 1883, and numbered in the register 1,815, 1,816, and 1,817, in consideration of the sum of 5s. paid to us by the transferee, the receipt of which sum we hereby acknowledge, do hereby transfer to the said James Henry Graney, of Emmaville, all their right, title, and interest in and to the mineral lot demised

demised as aforesaid. And I do hereby accept transfer of the right, title, and interest of the said William Wright Richardson and George Hardie in and to the demised land aforesaid, subject to the provisions of the Mining Act, 1874, and the regulations made thereunder; and I hereby agree to be bound by all and singular the terms, conditions, covenants, provisoes, restrictions, and reservations contained in the said lease.

In witness whereof, we have hereunto subscribed our respective names, this 16th day of June, 1884 :—

Witness to signature.	Transferror.	Transferee.
G. S. Buzacott. G. S. Buzacott. To the signature of transferee, Alfred Francis.	W. W. Richardson. George Hardie.	—— James H. Graney.

I, Joseph Palmer Abbott, hereby sanction and authorize the transfer of the interest of W. W. Richardson and G. Hardie in the abovenamed lease to James H. Graney.

Dated at Sydney, this 1st day of August, 1884. J. P. ABBOTT.

I have this 1st day of August, 1884, at the hour of 3 o'clock in the afternoon, registered the above-named transferee as the holder of the mineral leases No. 1,815-7.

T. C. BINNY,
Registrar.

Notice of Application and Deposit.

Mineral Lease Regulations.—Schedule 6.

Sir, Vegetable Creek, 24 March, 1882.

We have the honor to inform you that we have this day deposited with the Warden's Clerk at Vegetable Creek the sum of £5, being the first year's rent in advance of 20 acres of land at parish of Highland Home, county Gough, for the purpose of mining for tin ore, and the sum of £4, being the fees for survey of the said land. The number of our application is 655.

We have, &c.,
JAMES BUTLER.
THOMAS M'GUINESS.

The Under Secretary for Mines, Sydney.

Form of Application.

Mineral Lease Regulations.—Schedule 2.

To the Honorable the Secretary for Mines, Sydney,— Vegetable Creek, 24 March, 1882.

Sir,

We hereby make application for a mineral lease of that piece or parcel of land situated parish of Highland Home, county Gough, containing 20 acres, of which we took possession on the 16th day of March, at the hour of 10 o'clock in the forenoon, for the purpose of mining thereon and therein for tin ore for a period of twenty years, by posts, notices, and L trenches at each angle thereof. The datum point is adjoining west of Butler's lode.

Notice of our having made this application will be given in accordance with the regulations in that behalf. We also hand herewith a receipt for the sum of £5, being the first year's rent in advance of the said land, and the sum of £4 to cover the cost of survey.

We hereby acknowledge that this application is made upon the distinct understanding and condition that if we shall abandon or fail to proceed with it, or if it is refused, the Secretary for Mines for the time being may deduct from the sum of £9 deposited as aforesaid any cost to which in his opinion the Crown may have been put in or about or in respect of this application; and this application shall thereupon become and be void, and the possession aforesaid shall cease and determine. And if the lease shall be granted, we shall and will commence mining operations upon or in connection with the demised land within one month from and after the granting thereof, and shall and will employ upon such land not less than two men during the first year of the term thereby created, and not less than four men during the remainder of such term. And shall and will, at any time when called upon in terms of the regulations relating to mineral leases to do so, execute and take delivery of such lease, or failing therein for a period of fourteen days after being so called upon, we shall and will forfeit the said sum of £9, and all right, title, or interest in and to the said land and the possession thereof, and the said lease shall be forthwith cancelled.

We have, &c.,
JAMES BUTLER,
THOMAS M'GUINESS,
Vegetable Creek.

This application was received by me this 24th day of March, 1882, at the hour of 12 o'clock noon, and is numbered 655.

G. H. GOWER,
Warden's Clerk.

Notice

Notice to make Survey.

Sir, Vegetable Creek, 7 July, 1882.

An application for a mineral lease, particulars as per margin, having been lodged in this office, I request you will be good enough to survey, in accordance with the regulations relating to mineral leases, the area so applied for, and furnish me at your earliest convenience with a plan and report.

Your attention is particularly directed to regulations for mineral leases numbered respectively 2, 3, 12, 13, and 14, or to the regulations relating to gold-mining leases numbered respectively 1, 2, 3, 4, 5, 14, and 15.

No. of application, 655; locality, parish of Highland Home, county of Gough; area, 20 acres; names and addresses of applicants, P. M'Guiness and James Butler.

I have, &c.,
W. E. HENRY,
Warden's Clerk.

H. B. Sullivan, Mining Surveyor, Vegetable Creek.

Description.

Parish of Highland Home, county of Gough; the datum point is adjoining the west of Butler's lode.

Mr. Mining-Surveyor Sullivan to The Chief Mining Surveyor.

Sir, Tent Hill, 20 December, 1882.

I have the honor to transmit herewith the plan of one portion of land containing 20 acres, numbered M.L. 174, in the parish of Highland Home, county of Gough, and applied for by M'Guiness and Co. under the Mining Act of 1874.

See lease diagram.

I have, &c.,
H. B. SULLIVAN.

Mining District, New England; applicants' locality, parish Highland Home, county Gough; application, No. 82–655, at Vegetable Creek.

Description.

20 acres, county of Gough, parish of Highland Home, portion M.L. 174. Commencing at the south-west corner of portion No. 173; and bounded thence on the north-east by the south-west boundary of that portion bearing north 29 degrees west 14 chains and 15 links; on the north-west by a line bearing south 61 degrees west 14 chains and 14 links; on the south-west by a line bearing south 29 degrees east 14 chains and 15 links; and on the south-east by a line bearing north 61 degrees east 14 chains and 14 links, to the point of commencement.

Examined.—W.S.C.

Indenture.

Application No. 1,816.

THIS indenture, made the eighth day of November, in the year of our Lord one thousand eight hundred and eighty-three, between Her Most Gracious Majesty Queen Victoria, of the one part, and James Butler and Thomas M'Guiness, of Vegetable Creek, in the Colony of New South Wales (hereinafter called the lessees), of the other part, witnesseth:—That in consideration of the sum of five pounds, paid by the said lessees on the twenty-fourth day of March, 1882, and of the rents hereinafter reserved, and of the covenants and provisoes hereinafter contained, Her Majesty doth by these presents grant and demise unto the lessees, their executors, administrators, and transferees, all that piece or parcel of land, containing by admeasurement twenty acres, and more particularly described and delineated in the Schedule hereto, or in the plan hereunto annexed, and numbered M.L. 174, and all those mines, veins, seams, or deposits of [the mineral or metal proposed to be worked] in, on, and under the said land (hereinafter called the said mine), together with all and singular the shafts, levels, drifts, works, ways, fixtures, erections, liberties, easements, advantages, and appurtenances which are now or at any time during the term hereby granted may be held, occupied, or enjoyed therewith, for the purpose of mining upon and under the said land for tin, and also with full power for the said lessees, their executors, administrators, and transferees, and his and their agents and workmen (including contractors, tributors, and so forth), to dig, sink, drive, make, and use excavations, pits, shafts, levels, tunnels, watercourses, and other works necessary for winning and raising the tin in, on, or under the said land, and to take and appropriate the same during the term hereby granted, and to make and construct on the said land, races, drains, dams, reservoirs, roads, and tramways, and also to erect on the said land all buildings, engines, furnaces, pumps, machinery, and appliances necessary for the purpose of winning and obtaining the tin in, on, or under the said land, and for effectually carrying on the works of the said mine, and also to erect on the said land such offices, cottages, and dwelling-houses, for the use of the agents, workmen, and persons employed in the said mine and works, as the said lessees, their executors, administrators, and transferees shall think proper: To hold the said land, mine, and premises, with the appurtenances (subject nevertheless to the reservation or exception of that portion of the surface of the said land shown on the plan aforesaid, bounded by the lines coloured red, and to such rights and interests as may be lawfully subsisting therein at the date of these presents), unto the said lessees, their executors, administrators, and transferees, from the date hereof, for the term of nineteen years and sixty-three days next ensuing, for the purpose of mining therein or thereon, for working or winning the said tin, and for no other purpose,—Yielding and paying therefor unto Her Majesty, her heirs and successors, yearly and every year during the said term, the yearly rent of five pounds in advance, the first year's rent having been paid as aforesaid on the twenty-fourth day of March, 1882, the next payment being the rent of the said land for two months and two days, at the rate of fivepence per acre per month, from the thirtieth day of ————, to the thirty-first day of December, 1884, shall be made to the Colonial Treasurer in Sydney, on or before the thirtieth day of November, 1883, and thereafter on or before the thirtieth day of November in each and every year, the yearly rent aforesaid (being the rent of the land hereby demised for the year commencing the first day of January next after each such payment) shall be paid to the Colonial Treasurer aforesaid, clear of all rates, taxes, and assessments to which the said land, mine, and premises are now, or at any time during the said term may be, subject or liable: Provided always, and it is hereby agreed that if the said yearly rent shall be in arrear for thirty days after the same shall have become payable, whether such rent shall have been legally demanded or not, any officer appointed or authorized thereto by the Secretary for Mines may, by himself or his agent, enter upon the said land, and seize and distrain all minerals, metals, and

and ores actually got and raised from the said mine, and all machinery, apparatus, tools, waggons, carts, carriages, engines, plant, and all other goods, chattels, and effects whatsoever in, upon, and about the said land and premises, and every distress thus made may take away, sell, and dispose of as in cases of distress for rent reserved in common leases; and out of the moneys arising thereby retain so much as shall be sufficient to satisfy the said arrears, and which shall at the time of such sale be unpaid, and all expenses incurred by him or them in or in respect of such seizure, distraint, removal, and sale; and if there be any surplus such officer shall pay the same to the said lessees, their executors, administrators, or transferees; and the acceptance or receipt of rent by or on behalf of Her Majesty, after breach of any covenant hereinafter contained, shall not be or be deemed a waiver of the right of Her Majesty, or of the Secretary for Mines, or other officer on behalf of Her Majesty, to enforce observance of such covenant. And if the said lessees, their executors, administrators, or transferees, shall mine for or win from the said land, mine, and premises, any gold, or any earth, rock, stone, quartz, clay, sand, gravel, or soil containing gold, or any mineral or metal with which gold is associated or combined, without the express sanction first had and obtained of the Secretary for Mines for the time being, the Governor, with the advice of the Executive Council, may declare these presents void, and thereupon all the right, title, and interest of the lessees, their executors, administrators, and transferees under these presents shall cease and determine both at law and in equity. And the said lessees do hereby, for themselves, their heirs, executors, administrators, and transferees, covenant with Her Majesty, her heirs and successors, in manner following, that is to say:—

1. That the said lessees, their executors, administrators, and transferees, shall and will during the the said term pay unto Her Majesty, her heirs and successors, the rent hereby reserved, at the times and places hereinbefore appointed for payment thereof, clear of all deductions.

2. And shall and will after the expiration of one month from the date of delivery hereof, upon and during all lawful working days, except when prevented by inevitable accident or during the execution of repairs, make, construct, and work the said land, mine, and premises in the best and most effectual manner, and to the best advantage, without interruption; and shall and will diligently explore and search for tin in, on, and under the said land, mine, and premises.

3. And shall and will after the expiration of the said one month employ in the construction of the works, or in mining operations on or under the said land, during the first year of the said term, and during the usual hours of labour, two able and competent workmen and miners at the least; and during the remainder of the said term, and during the usual hours of labour, shall and will employ as aforesaid not less than four such workmen and miners, unless prevented by inevitable accident, or during the execution of repairs, so that within the first three years of the term hereby created there shall be expended upon the said land, mine, and premises, such a sum of money as shall be equal to five pounds sterling upon each and every acre hereby demised: Provided that the lessee, or if there be more than one lessee, each lessee who shall work as aforesaid, shall count as and be deemed for the purposes of these presents to be a workman or miner employed as aforesaid.

4. And shall and will during the said term effectually drain the said mine, and pump all water likely to cause injury thereto, or which would prevent or interfere with the working thereof; and if the said mine shall be affected, or be liable to be affected, by the same flow or body of water as any other mine or mines contiguous thereto, shall and will, if and whenever requested so to do, contribute with the lessee or lessees or owner or owners of such other mines a reasonable proportion of the machinery and labour necessary to free and keep such mine or mines free from water to a workable extent; or if the said mine shall be kept free from water to a workable extent, either wholly or partially by means of the machinery and labour of a contiguous mine or mines, or by reason of any works constructed or money expended by the lessee or lessees, owner or owners of such contiguous mine or mines—then shall and will pay to such lessee or lessees, owner or owners, as aforesaid, a reasonable proportion of the cost of such machinery, labour, or works, or a reasonable proportion of the money so expended; and the Secretary for Mines for the time being may, if and whenever he shall think fit, depute some efficient person who shall have access to and inspection of all such mines, to determine when the said mine is so freed or kept wholly or partially free from water, and what are the reasonable proportions of such expenses aforesaid, and to whom and when the same are to paid—such decision to be final and conclusive on all parties.

5. And shall and will make such provision for the disposal of the detritus, dirt, waste, or refuse of the said mine that the same shall not be an inconvenience, nuisance, or obstruction to any roadway, river, creek, or private or Crown lands, or shall not in any manner occasion any public or private damage or inconvenience.

6. And shall and will erect, and keep erected, during the said term, a post, painted white, at each angle of the said land, and at such points along the boundary-lines as shall be necessary, so as plainly and accurately to define the boundary-lines and angles of the said land; and each such post shall be fixed firmly in the ground, and shall project above the surface thereof not less than three feet.

7. And shall and will, as often as required so to do during the term, make and deliver to the Secretary for Mines for the time being, or any officer appointed or instructed to collect, obtain, or receive the same, all such true and proper plans and sections, returns, and statistics of the workings and operations of the said mine, made up to the last day of the preceding month (the truth and accuracy of which shall be verified by the statutory declaration of the lessee for the time being, or the manager or other officer having the charge, control, and direction of the works of the said mine), as the Secretary for Mines shall from time to time direct. And shall and will, whenever required by the Secretary for Mines so to do, deliver to any officer appointed or instructed as aforesaid samples of the minerals, metals, and ores, or any of them, found in or upon such mine and land.

8. And shall and will during the said term make proper and reasonable compensation to the occupier or occupiers, lessee or lessees from the Crown, of any adjoining land in respect of any damage which may be sustained by him or them by reason of the working of the said mine, or the carrying on of the works thereof or connected therewith, such compensation to be determined by the Secretary for Mines, or by some person authorized by him so to do.

9. And shall and will permit any mining surveyor, or other person duly authorized in that behalf, with all proper or necessary assistants, at all reasonable times, during the said term, quietly to enter into and upon the said land, mine, and premises, to survey and examine the state and condition thereof, and for the purposes aforesaid to descend all pits and shafts, and to enter into and use all adits, levels, galleries,

galleries, drives, and excavations, and to use all roads, ways, engines, ropes, machinery, gear, appliances, materials, labour, and other things in or on the said land and mine which shall be by him deemed necessary, without making any compensation for the same, so nevertheless that in so doing no unnecessary interference is caused with the carrying on of the said mining works.

10. And further, shall and will at all times during the said term keep and preserve the said mine and premises from all avoidable injury or damage, and also the levels, drifts, shafts, watercourses, roads, ways, works, erections, and fixtures therein and thereon in good repair and condition, except such of the matters and things last aforesaid as shall from time to time be considered by a mining surveyor or other proper officer authorized by the Secretary for Mines to inspect and report upon such matters and things to be unnecessary for the proper working of the said mine or any contiguous mine, and in such state and condition shall and will at the end or sooner determination of the said term deliver peaceable possession thereof, and of all and singular the premises hereby demised to Her Majesty, her heirs and successors, or to the Warden or other officer authorized to receive possession thereof. Nevertheless the Secretary for Mines may, if he think fit, permit the lessees, their executors, administrators, and transferees, within six months after possession shall have been received as aforesaid, to enter upon the said land, and to remove therefrom such machinery, plant, and apparatus as shall have been erected and fixed upon such land, and such earth, rock, ore, mineral, or metal as shall have been won from and raised to the surface of such mine.

11. And shall not nor will use or occupy, or permit to be used or occupied, the said land, or any part thereof, for other than mining purposes, or for pasturage, or as sites for dwellings, or garden ground, for the persons employed in, on, or about the said mine.

12. And shall not nor will mine in or upon the said mine, land, and premises for any mineral, metal, or ore other than tin without the express sanction of the Secretary for Mines.

13. And shall not nor will transfer, underlet, or part with possession of the said land, mine, and premises, or any part thereof, or mortgage, charge, or encumber the same, without the license first had and obtained of the Secretary for Mines for the time being: Provided always that no such license shall be necessary in cases where, by operation of law or otherwise, a sale of the said land, mine, and premises, or any part or parts thereof, is made by any person or persons entitled to sell the same for the benefit of the creditors or a creditor of the lessees or their transferees, or in cases where the lessees or their transferees desire to let the said mine and premises, or any part thereof, to be worked on tribute.

14. And shall not nor will close up or obstruct any adit or adits to or from any contiguous mine or mines whereby fresh air is admitted or ventilation promoted.

15. And shall not nor will plead acceptance of rent by or on behalf of Her Majesty as a waiver of the right of Her Majesty, or of the Secretary for Mines, or other officer on behalf of Her Majesty, to enforce observance of the covenants herein contained, or of the right of the Governor, with the advice of the Executive Council, to declare these presents void for breach of any such covenant: Provided always and it is hereby agreed and declared in manner following:—

16. That it shall be lawful for Her Majesty, her heirs, successors, and assigns to make and use in, on, or under the said land, any levels, drifts, leads, shafts, watercourses, adits, roads, ways, and passages for freeing and keeping free any other lands or mines from water, or for conveying water to any other lands or mines for mining purposes, or for supplying any other mines with fresh air, or for effectually working any other mines, or for any public purpose whatsoever, causing as little damage, obstruction, or interference as possible to or with the said mine and the works thereof. And if, at any time during the term hereby created, any part or parts of the land hereby demised, or any part or parts of the surface thereof, shall be required for the purpose of any township, village, railway, road, canal, watercourse, reservoir, or for any other public purpose, it shall be lawful for the Governor for the time being, with the advice of the Executive Council, on giving three months' notice of his intention so to do, to cause to be set out the part or parts of the said land, or of the surface thereof, which shall be so required; and as soon as the same shall be so set out such part or parts of the said land, or of the surface thereof, shall cease to be included in the land hereby demised, and the lessees, their executors, administrators, or transferees shall not be entitled to any abatement of rent, or any compensation whatever in respect thereof.

17. And if the lessees, their executors, administrators, or transferees shall prove to the satisfaction of the Secretary for Mines for the time being that the said mine is unworkable from any cause whatsoever, or that the lessees, their executors, administrators, or transferees is or are unable, by reason of sickness or other sufficient cause, to work in such land or mine, or that the supply of water is insufficient to allow the working of the said land, mine, and premises to be profitably carried on, the said Secretary for Mines may grant permission to suspend work therein or thereon, for any period not exceeding six months, without the lessees, their executors, administrators, or transferees incurring in respect thereto any forfeiture or penalty for breach of any covenant herein contained.

18. And, lastly, that if the lessees, their executors, administrators, or transferees shall at any time during the said term fail to use such land *bona fide* for the purpose for which it has been demised, or if and whenever the said rent shall be in arrear for thirty days after the time appointed for payment thereof, whether the same shall have been legally demanded or not, or if and whenever there shall be a breach of or non-compliance with the covenants and provisoes herein contained by the lessees, their executors, administrators, or transferees, and the lessees, their executors, administrators, or transferees shall not have obtained from the Secretary for Mines for the time being permission to suspend work as aforesaid, in case the breach shall have been for non-compliance with the covenants for the employment of workmen or miners, or for the working of the mine, the Governor, with the advice of the Executive Council, who alone and finally shall judge and determine the matter upon the evidence or reports submitted by the Secretary for Mines for the time being, may declare these presents void; and upon publication in the *Government Gazette* of notice of such declaration, all the right, title, and interest of the lessees, their executors, administrators, and transferees under these presents shall cease and determine both at law and in equity; and the production of a copy of the *Government Gazette* containing a notice, purporting to be signed by the Secretary for Mines, declaring the lease void, shall be conclusive evidence in all Courts whatsoever in the Colony of New South Wales of a breach of or non-compliance with the covenants and provisoes herein contained sufficient to authorize and sustain such declaration having been lawfully made, and that the interest created hereunder has been lawfully determined; and thereupon it shall be lawful for Her Majesty, her heirs and successors, or her or their agents or officers, or for any

bailiff or other person duly authorized thereto, or for any holder of a mineral lease, who has the permission of the Secretary for Mines for the time being, without any previous demand whatsoever, to enter forthwith into and upon the said land and premises hereby granted, and the same to repossess and enjoy as fully and effectually to all intents and purposes as if these premises had not been made, and the said lessees, their executors, administrators, and transferees, to expel and remove, without any legal process, and as effectually as the Sheriff might do in case judgment in ejectment had been obtained and a writ of *habere facias possessionem* had been issued on such judgment; and in case of such entry and any legal proceeding taken in respect thereof, the defendant or defendants in any such proceeding may plead leave and license in bar thereof; and these presents shall be conclusive evidence of such leave and license by the lessees, their executors, administrators, and transferees, or other the person or persons, plaintiff or plaintiffs, in such proceedings, for such entry or other matters complained of in such proceedings.

In witness whereof, His Excellency the Right Honorable CHARLES ROBERT, BARON CARRINGTON, a Member of Her Majesty's Most Honorable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies, hath, on behalf of Her Majesty the Queen, caused the Seal of the said Colony to be affixed to this grant, and also set his hand, at Government House, Sydney, in the said Colony, the day and year first above written, and the lessees have also set their hands and seals the twelfth day of November, 1883.

AUGUSTUS LOFTUS.
J. P. ABBOTT.

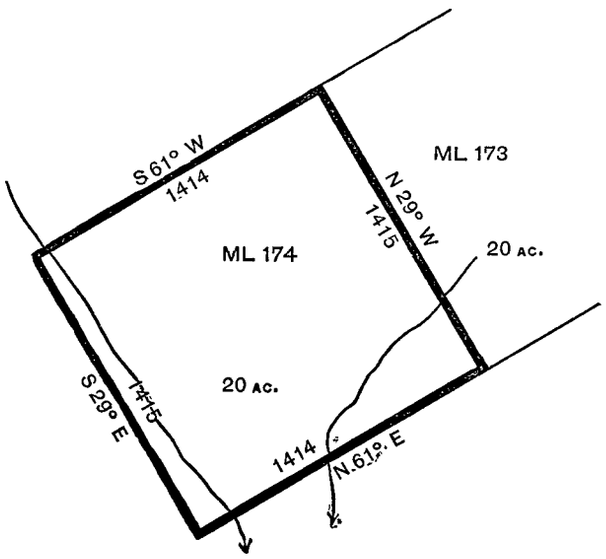
Signed, sealed, and delivered by the within-named James Butler (by his attorney, W. J. Fergusson), and Thomas M'Guiness (by his attorney, W. J. Fergusson), in the presence of,—

JAMES BUTLER
(By his attorney, W. J. FERGUSSON).
THOMAS M'GUINESS
(By his attorney, W. J. FERGUSSON).

T. C. BINNY, Registrar.

Plan.

Parish of Highland Home, county of Gough, 20 acres, portion M.L. 174. Commencing at the south-west corner of portion No. 173; and bounded thence on the north-east by the south-west boundary of that portion bearing north 29 degrees west 14 chains 15 links; on the north-west by a line bearing south 61 degrees west 14 chains 14 links; on the south-west by a line bearing south 29 degrees east 14 chains 15 links; and on the south-east by a line bearing north 61 degrees east 14 chains 14 links, to the point of commencement.



Scale, 8 chains to an inch.

Form of Power of Attorney.

Mineral Lease Regulations—Schedule 12.

KNOW ALL MEN BY THESE PRESENTS,—

That we, Thomas M'Guiness and James Butler, do hereby make, nominate, constitute, and appoint, and in our place or stead put William John Fergusson, of Sydney, to be our true and lawful attorney for us, and in our names, and as our act and deed, to sign, seal, and take delivery of the mineral lease for which we, on the 24th day of March, 1882, made application (No. 655 at Vegetable Creek), under the provisions of the Mining Act, 1874, and the regulations made thereunder, and which has been or shall be granted and issued by the Governor, and for us and in our names to enter into all such covenants and agreements as we shall be required to enter into in and by the said lease, and generally for us, and in our names, to do, execute, and perform all such other acts, deeds, and things as may be necessary or may be required to be done, executed, or performed in and about the application for and execution of such leaes; and we do hereby ratify and confirm all and whatsoever the said William John Fergusson shall lawfully do or cause to be done in or about the premises by virtue of this power.

In witness whereof, we have hereunto set our hands and seals this 21st day of August, 1883.

JAMES BUTLER.
THOMAS M'GUINESS.

Signed, sealed, and delivered by the abovenamed Thomas M'Guiness and James Butler, in the presence of,—

JAMES H. GRANEY.

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Transfer of Mineral Lease.

Mineral Lease Regulations—Schedule 13.

WE, Thomas M'Guiness and James Butler, being registered as the lessees of all that mineral lot demised by a certain mineral lease granted by Her Majesty the Queen to Thomas M'Guiness and James Butler, and dated the 8th day of November, 1883, and numbered in the Register 1,816, in consideration of the sum of £800 paid to us by the transferees, the receipt of which sum we hereby acknowledge, do hereby transfer to William Wright Richardson and George Hardie all our right, title, and interest in and to the mineral lot demised as aforesaid. And we do hereby accept transfer of the right, title, and interest of the said Thomas M'Guiness and James Butler in and to the demised land aforesaid, subject to the provisions of the Mining Act, 1874, and the regulations made thereunder; and we hereby agree to be bound by all and singular the terms, conditions, covenants, provisoes, restrictions, and reservations contained in the said lease.

In witness whereof we have hereunto subscribed our respective names, this 24th day of November, 1883.

Witness to signature.	Transferror.	Transferee.
James H. Graney.	Thomas M'Guiness.	——
James H. Graney.	James Butler.	——
G. S. Buzacott.	——	W. W. Richardson.
G. S. Buzacott.	——	George Hardie.

I, Joseph Palmer Abbott, hereby sanction and authorize the transfer of the interest of James Butler and Thomas M'Guiness in the abovenamed lease to W. W. Richardson and G. Hardie.
Dated at Sydney, this 11th day of December, 1883.

J. P. ABBOTT.

I have this 11th day of December, 1883, at the hour of 10 o'clock in the forenoon, registered the abovenamed transferees as the holders of the mineral lease No. 1,816.

T. C. BINNY,
Registrar.

Application.

Application No. 844 at Emmaville for a Mineral Lease.

1. By whom application was received? Warden's Clerk.
2. At what place? Emmaville.
3. Date and hour when received? 17th November, 1882, 10 a.m.
4. Receipt for 1st year's rent, No. 802; date? 17th November, 1882.
5. To whom receipt was issued? Thomas M'Guiness.
6. Date when notice to survey was sent to surveyor? 17th November, 1882.
12. Is the time proposed for commencing work reasonable? Yes.
13. Is the number of men proposed to be employed reasonable? Yes.

G. MARTIN,
Warden.

Notice of Application and Deposit.

Mineral Lease Regulations—Schedule 6.

Sir, Emmaville, 17 November, 1882.

We have the honor to inform you that we have this day deposited with Warden's Clerk at Emmaville the sum of £5, being the first year's rent in advance of 20 acres of land at parish of Highland Home, county of Gough, for the purpose of mining for tin ore, and the sum of £4, being the fees for survey of the said land. The number of our application is 844.

We have, &c.,
THOMAS M'GUINESS & CO.

Form of Application.

Mineral Lease Regulations—Schedule 2.

To the Honorable the Secretary for Mines, Sydney,— Emmaville, 17 November, 1882.

Sir,

We hereby make application for a mineral lease of that piece or parcel of land, situated parish of Highland Home, county Gough, at the head of Alexander Stanes Creek, containing 20 acres, of which we took possession on the 9th day of November, at the hour of 11 o'clock in the forenoon, for the purpose of mining thereon and therein for tin ore in lode for a period of twenty years, by posts, notices, and L trenches at each angle thereof. The datum point is the north-west corner of newly-surveyed block 175, and the land is bounded from thence by lines east, north, west, and south.

Notice of our intention to make this application has been given in accordance with the regulations in that behalf, and there were no persons in occupation of the land applied for. We also hand herewith £5, being the first year's rent in advance of the said land, and the sum of £4 to cover the cost of survey. We hereby acknowledge that this application is made upon the distinct understanding and condition that if we shall abandon or fail to proceed with it, or if it is refused, the Secretary for Mines for the time being may deduct from the sum of £9 deposited as aforesaid any cost to which in his opinion the Crown may have

have been put in or about or in respect of this application; and this application shall thereupon become and be void, and the possession aforesaid shall cease and determine. And if the lease shall be granted we shall and will commence mining operations upon or in connection with the demised land within six months from and after the granting thereof, and shall and will employ upon such land not less than two men during the first year of the term thereby created, and not less than four men during the remainder of such term. And shall and will at any time when called upon in terms of the regulations relating to mineral leases to do so, execute and take delivery of such lease, or failing therein for a period of fourteen days after being so called upon, we shall and will forfeit the said sum of £9, and all right, title, or interest in and to the said land and the possession thereof, and the said lease shall be forthwith cancelled.

We have, &c.,
THOMAS M'GUINESS,
THOMAS FRANCIS,
THOMAS BUTLER, and
JOHN CAREY.

This application was received by me this 17th day of November, 1882, at the hour of 10 o'clock in the forenoon, and is numbered 844.

W. E. HENRY,
Warden's Clerk.

Form of Notice to make Survey.

Mining Board Regulations—Schedule 4.
(*See Regulation* 151.)

Sir,

Emmaville, 17 November, 1882.

No. of application, 844; parish Highland Home, county Gough; area, 20 acres; T. M'Guiness, T. Francis, and Thomas Butler.

An application for a mineral lease, particulars as per margin, having been lodged in this office, I request you will be good enough to survey, in accordance with the regulations relating to mineral leases, the area so applied for, and furnish me at your earliest convenience with a plan and report.

Your attention is particularly directed to the regulations for mineral leases numbered respectively 2, 3, 12, 13, and 14, or to the regulations relating to gold leases numbered respectively 1, 2, 3, 4, 5, 14 and 15.

I have, &c.,
WM. E. HENRY,
Warden's Clerk.

H. B. Sullivan, Mining Surveyor, Tent Hill.

Mr. Mining-Surveyor H. B. Sullivan to The Chief Mining Surveyor.

Tin Lease Reef.

Sir,

Tent Hill, 20 December, 1882.

See lease diagram.

I have the honor to transmit herewith the plan of one portion of land containing 20 acres, numbered M.L. 176, in the parish of Highland Home, county of Gough, and applied for by M'Guiness & Co., under the Mining Act of 1874.

I have, &c.,
H. B. SULLIVAN.

Mining District, New England; applicant's locality, parish Highland Home, county Gough; application No. 82-844, at Emmaville.

Description.

20 acres, county of Gough, parish of Highland Home, portion M.L. 176. Commencing at the north-east corner of portion No. M.L. 175; and bounded thence on the north-east by a line bearing north 29 degrees west 14 chains and 15 links; on the north-west by a line bearing south 61 degrees west 14 chains and 14 links; on the south-west by a line and part of the north-east boundary of portion M.L. 173, bearing south 29 degrees east 14 chains and 15 links; and on the south-east by the north-west boundary of portion M.L. 175, bearing north 61 degrees east 14 chains and 14 links, to the point of commencement.

Examined.—W.S.C.

Indenture.

Application No. 1,817.

THIS indenture, made the eighth day of November, in the year of our Lord one thousand eight hundred and eighty-three, between Her Most Gracious Majesty Queen Victoria, of the one part, and Thomas M'Guiness, Thomas Francis, Thomas Butler, and John Carey, all of Emmaville, in the Colony of New South Wales (hereinafter called the lessees), of the other part, witnesseth:—That in consideration of the sum of five pounds paid by the said lessees on the seventeenth day of November, 1882, and of the rents hereinafter reserved, and of the covenants and provisoes hereinafter contained, Her Majesty doth by these presents grant and demise unto the lessees, their executors, administrators, and transferees, all that piece or parcel of land, containing by admeasurement twenty acres, and more particularly described and delineated in the schedule hereto, or in the plan hereunto annexed, and numbered M.L. 176, and all those mines, veins, seams, or deposits of [the mineral or metal proposed to be worked] in, on, and under the said land (hereinafter called the said mine), together with all and singular the shafts, levels, drifts, works, ways, fixtures, erections, liberties, easements, advantages, and appurtenances which are now or at any time during the term hereby granted may be held, occupied, or enjoyed therewith, for the purpose of mining upon and under the said land for tin, and also with full power for the said lessees, their executors, administrators, and transferees, and his and their agents and workmen (including contractors, tributors, and so forth), to dig, sink, drive, make, and use excavations, pits, shafts, levels, tunnels, water-courses, and other works necessary for winning and raising the tin in, on, or under the said land, and to take and appropriate the same during the term hereby granted, and to make and construct on the said land,

land, races, drains, dams, reservoirs, roads, and tramways, and also to erect on the said land all buildings, engines, furnaces, pumps, machinery, and appliances necessary for the purpose of winning and obtaining the tin in, on, or under the said land, and for effectually carrying on the works of the said mine, and also to erect on the said land such offices, cottages, and dwelling-houses, for the use of the agents, workmen, and persons employed in the said mine and works, as the said lessees, their executors, administrators, and transferees shall think proper: To hold the said land, mine, and premises, with the appurtenances (subject nevertheless to the reservation or exception of that portion of the surface of the said land shown on the plan aforesaid, bounded by the lines coloured red, and to such rights and interests as may be lawfully subsisting therein at the date of these presents), unto the said lessees, their executors, administrators, and transferees, from the date hereof, for the term of nineteen years and sixty-three days next ensuing, for the purpose of mining therein or thereon, for working or winning the said tin, and for no other purpose,—yielding and paying therefor unto Her Majesty, her heirs and successors, yearly and every year during the said term, the yearly rent of five pounds in advance, the first year's rent having been paid as aforesaid on the seventeenth day of November, 1882, the next payment being the rent of the said land for two months and two days, at the rate of fivepence per acre per month, from the thirtieth day of October to the 31st day of December, 1884, shall be made to the Colonial Treasurer in Sydney, on or before the thirtieth day of November, 1883, and thereafter on or before the thirtieth day of November in each and every year, the yearly rent aforesaid (being the rent of the land hereby demised for the year commencing the first day of January next after each such payment) shall be paid to the Colonial Treasurer aforesaid, clear of all rates, taxes, and assessments to which the said land, mine, and premises are now, or at any time during the said term may be, subject or liable: Provided always, and it is hereby agreed that if the said yearly rent shall be in arrear for thirty days after the same shall have become payable, whether such rent shall have been legally demanded or not, any officer appointed or authorized thereto by the Secretary for Mines may, by himself or his agent, enter upon the said land, and seize and distrain all minerals, metals, and ores actually got and raised from the said mine, and all machinery, apparatus, tools, waggons, carts, carriages, engines, plant, and all other goods, chattels, and effects whatsoever in, upon, and about the said land and premises, and every distress thus made may take away, sell, and dispose of as in cases of distress for rent reserved in common leases; and out of the moneys arising thereby retain so much as shall be sufficient to satisfy the said arrears, and which shall at the time of such sale be unpaid, and all expenses incurred by him or them in or in respect of such seizure, distraint, removal, and sale; and if there be any surplus such officer shall pay the same to the said lessees, their executors, administrators, or transferees; and the acceptance or receipt of rent by or on behalf of Her Majesty, after breach of any covenant hereinafter contained, shall not be or be deemed a waiver of the right of Her Majesty, or of the Secretary for Mines, or other officer on behalf of Her Majesty, to enforce observance of such covenant. And if the said lessees, their executors, administrators, or transferees, shall mine for or win from the said land, mine, and premises, any gold, or any earth, rock, stone, quartz, clay, sand, gravel, or soil containing gold, or any mineral or metal with which gold is associated or combined, without the express sanction first had and obtained of the Secretary for Mines for the time being, the Governor, with the advice of the Executive Council, may declare these presents void, and thereupon all the right, title, and interest of the lessees, their executors, administrators, and transferees under these presents shall cease and determine both at law and in equity. And the said lessees do hereby, for themselves, their heirs, executors, administrators, and transferees, covenant with Her Majesty, her heirs and successors, in manner following, that is to say:—

1. That the said lessees, their executors, administrators, and transferees, shall and will during the said term pay unto Her Majesty, her heirs and successors, the rent hereby reserved, at the times and places hereinbefore appointed for payment thereof, clear of all deductions.

2. And shall and will, after the expiration of six months from the date of delivery hereof, upon and during all lawful working days, except when prevented by inevitable accident or during the execution of repairs, make, construct, and work the said land, mine, and premises in the best and most effectual manner, and to the best advantage, without interruption; and shall and will diligently explore and search for tin in, on, and under the said land, mine, and premises.

3. And shall and will, after the expiration of the said six months, employ in the construction of the works, or in mining operations on or under the said land, during the first year of the said term, and during the usual hours of labour, two able and competent workmen and miners at the least; and during the remainder of the said term, and during the usual hours of labour, shall and will employ as aforesaid not less than four such workmen and miners, unless prevented by inevitable accident, or during the execution of repairs, so that within the first three years of the term hereby created there shall be expended upon the said land, mine, and premises, such a sum of money as shall be equal to five pounds sterling upon each and every acre hereby demised: Provided that the lessee, or if there be more than one lessee, each lessee who shall work as aforesaid, shall count as and be deemed for the purposes of these presents to be a workman or miner employed as aforesaid.

4. And shall and will during the said term effectually drain the said mine, and pump all water likely to cause injury thereto, or which would prevent or interfere with the working thereof; and if the said mine shall be affected, or be liable to be affected, by the same flow or body of water as any other mine or mines contiguous thereto, shall and will, if and whenever requested so to do, contribute with the lessee or lessees or owner or owners of such other mines, a reasonable proportion of the machinery and labour necessary to free and keep such mine or mines free from water to a workable extent; or if the said mine shall be kept free from water to a workable extent either wholly or partially by means of the machinery and labour of a contiguous mine or mines, or by reason of any works constructed or money expended by the lessee or lessees, owner or owners, of such contiguous mine or mines,—then shall and will pay to such lessee or lessees, owner or owners, as aforesaid, a reasonable proportion of the cost of such machinery, labour, or works, or a reasonable proportion of the money so expended; and the Secretary for Mines for the time being may, if and whenever he shall think fit, depute some efficient person who shall have access to and inspection of all such mines, to determine when the said mine is so freed or kept wholly or partially free from water, and what are the reasonable proportions of such expenses aforesaid, and to whom and when the same are to be paid,—such decision to be final and conclusive on all parties.

5. And shall and will make such provision for the disposal of the detritus, dirt, waste, or refuse of the said mine that the same shall not be an inconvenience, nuisance, or obstruction to any roadway, river, creek, or private or Crown lands, or shall not in any manner occasion any public or private damage or inconvenience.

6. And shall and will erect, and keep erected, during the said term, a post, painted white, at each angle of the said land, and at such points along the boundary-lines as shall be necessary, so as plainly and accurately to define the boundary-lines and angles of the said land; and each such post shall be fixed firmly in the ground, and shall project above the surface thereof not less than three feet.

7. And shall and will, as often as required so to do during the term, make and deliver to the Secretary for Mines for the time being, or any officer appointed or instructed to collect, obtain, or receive the same, all such true and proper plans and sections, returns, and statistics of the workings and operations of the said mine, made up to the last day of the preceding month (the truth and accuracy of which shall be verified by the statutory declaration of the lessee for the time being, or the manager or other officer having the charge, control, and direction of the works of the said mine), as the Secretary for Mines shall from time to time direct. And shall and will, whenever required by the Secretary for Mines so to do, deliver to any officer appointed or instructed as aforesaid samples of the minerals, metals, and ores, or any of them, found in or upon such mine and land.

8. And shall and will during the said term make proper and reasonable compensation to the occupier or occupiers, lessee or lessees from the Crown, of any adjoining land in respect of any damage which may be sustained by him or them by reason of the working of the said mine, or the carrying on of the works thereof or connected therewith, such compensation to be determined by the Secretary for Mines, or by some person authorized by him so to do.

9. And shall and will permit any mining surveyor, or other person duly authorized in that behalf, with all proper or necessary assistants, at all reasonable times, during the said term, quietly to enter into and upon the said land, mine, and premises, to survey and examine the state and condition thereof, and for the purposes aforesaid, to descend all pits and shafts, and to enter into and use all adits, levels, galleries, drives, and excavations, and to use all roads, ways, engines, ropes, machinery, gear, appliances, materials, labour, and other things in or on the said land and mine which shall be by him deemed necessary, without making any compensation for the same, so nevertheless that in so doing no unnecessary interference is caused with the carrying on of the said mining works.

10. And further, shall and will at all times during the said term keep and preserve the said mine and premises from all avoidable injury or damage, and also the levels, drifts, shafts, watercourses, roads, ways, works, erections, and fixtures therein and thereon in good repair and condition, except such of the matters and things last aforesaid as shall from time to time be considered by a mining surveyor or other proper officer authorized by the Secretary for Mines to inspect and report upon such matters and things to be unnecessary for the proper working of the said mine or any contiguous mine, and in such state and condition shall and will at the end or sooner determination of the said term deliver peaceable possession thereof, and of all and singular the premises hereby demised to Her Majesty, her heirs and successor, or to the Warden or other officer authorized to receive possession thereof. Nevertheless the Secretary for Mines may, if he think fit, permit the lessees, their executors, administrators, and transferees, within six months after possession shall have been received as aforesaid, to enter upon the said land, and to remove therefrom such machinery, plant, and apparatus as shall have been erected and fixed upon such land, and such earth, rock, ore, mineral, or metal as shall have been won from and raised to the surface of such mine.

11. And shall not nor will use or occupy, or permit to be used or occupied, the said land, or any part thereof, for other than mining purposes, or for pasturage, or as sites for dwellings, or garden ground for the persons employed in, on, or about the said mine.

12. And shall not nor will mine in or upon the said mine, land, and premises, for any mineral, metal, or ore other than tin, without the express sanction of the Secretary for Mines.

13. And shall not nor will transfer, underlet, or part with possession of the said land, mine, and premises, or any part thereof, or mortgage, charge, or encumber the same, without the license first had and obtained of the Secretary for Mines for the time being: Provided always that no such license shall be necessary in cases where, by operation of law or otherwise, a sale of the said land, mine, and premises, or any part or parts thereof, is made by any person or persons entitled to sell the same for the benefit of the creditors or a creditor of the lessees or their transferees, or in cases where the lessees or their transferees desire to let the said mine and premises, or any part thereof, to be worked on tribute.

14. And shall not nor will close up or obstruct any adit or adits to or from any contiguous mine or mines whereby fresh air is admitted or ventilation promoted.

15. And shall not nor will plead acceptance of rent by or on behalf of Her Majesty as a waiver of the right of Her Majesty, or of the Secretary for Mines, or other officer on behalf of Her Majesty, to enforce observance of the covenants herein contained, or of the right of the Governor, with the advice of the Executive Council, to declare these presents void for breach of any such covenant: Provided always and it is hereby agreed and declared in manner following:—

16. That it shall be lawful for Her Majesty, her heirs, successors, and assigns, to make and use in, on, or under the said land, any levels, drifts, leads, shafts, watercourses, adits, roads, ways, and passages for freeing and keeping free any other lands or mines from water, or for conveying water to any other lands or mines for mining purposes, or for supplying any other mines with fresh air, or for effectually working any other mines, or for any public purpose whatsoever, causing as little damage, obstruction, or interference as possible to or with the said mine and the works thereof. And if, at any time during the term hereby created, any part or parts of the land hereby demised, or any part or parts of the surface thereof, shall be required for the purpose of any township, village, railway, road, canal, watercourse, reservoir, or for any other public purpose, it shall be lawful for the Governor for the time being, with the advice of the Executive Council, on giving three months' notice of his intention so to do, to cause to be set out the part or parts of the said land, or of the surface thereof, which shall be so required; and as soon as the same shall be so set out, such part or parts of the said land, or of the surface thereof, shall cease to be included in the land hereby demised, and the lessees, their executors, administrators, or transferees shall not be entitled to any abatement of rent, or any compensation whatever in respect thereof.

17. And if the lessees, their executors, administrators, or transferees shall prove to the satisfaction of the Secretary for Mines for the time being that the said mine is unworkable from any cause whatsoever, or that the lessees, their executors, administrators, or transferees is or are unable, by reason of sickness or other sufficient cause, to work in such land or mine, or that the supply of water is insufficient to allow the working of the said land, mine, and premises to be profitably carried on, the said Secretary for Mines may grant permission to suspend work therein or thereon, for any period not exceeding six months, without the lessees, their executors, administrators, or transferees incurring in respect thereto any forfeiture or penalty for breach of any covenant herein contained.

18. And, lastly, that if the lessees, their executors, administrators, or transferees shall at any time during the said term fail to use such land *bona fide* for the purpose for which it has been demised, or if and whenever the said rent shall be in arrear for thirty days after the time appointed for payment thereof, whether the same shall have been legally demanded or not, or if and whenever there shall be a breach of or non-compliance with the covenants and provisoes herein contained by the lessees, their executors, administrators, or transferees, and the lessees, their executors, administrators, or transferees shall not have obtained from the Secretary for Mines for the time being permission to suspend work as aforesaid, in case the breach shall have been for non-compliance with the covenants for the employment of workmen or miners, or for the working of the mine, the Governor, with the advice of the Executive Council, who alone and finally shall judge and determine the matter upon the evidence or reports submitted by the Secretary for Mines for the time being, may declare these presents void; and upon publication in the *Government Gazette* of notice of such declaration, all the right, title, and interest of the lessees, their executors, administrators, and transferees under these presents shall cease and determine both at law and in equity; and the production of a copy of the *Government Gazette* containing a notice, purporting to be signed by the Secretary for Mines, declaring the lease void shall be conclusive evidence in all Courts whatsoever in the Colony of New South Wales of a breach of or non-compliance with the covenants and provisoes herein contained sufficient to authorize and sustain such declaration having been lawfully made, and that the interest created hereunder has been lawfully determined; and thereupon it shall be lawful for Her Majesty, her heirs and successors, or her or their agents or officers, or for any bailiff or other person duly authorized thereto, or for any holder of a mineral license, who has the permission of the Secretary for Mines for the time being, without any previous demand whatsoever, to enter forthwith into and upon the said land and premises hereby granted, and the same to repossess and enjoy as fully and effectually to all intents and purposes as if these premises had not been made, and the said lessees, their executors, administrators, and transferees, to expel and remove, without any legal process, and as effectually as the Sheriff might do in case judgment in ejectment had been obtained and a writ of *habere facias possessionem* had been issued on such judgment; and in case of such entry and any legal proceeding taken in respect thereof, the defendant or defendants in any such proceeding may plead leave and license in bar thereof; and these presents shall be conclusive evidence of such leave and license by the lessees, their executors, administrators, and transferees, or other the person or persons, plaintiff or plaintiffs in such proceedings, for such entry or other matters complained of in such proceedings.

In witness whereof, His Excellency the Right Honorable Charles Robert, Baron Carrington, a Member of Her Majesty's Most Honorable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies, hath, on behalf of Her Majesty the Queen, caused the Seal of the said Colony to be affixed to this grant, and also set his hand, at Government House, Sydney, in the said Colony, the day and year first above written, and the lessees have also set their hands and seals, the twelfth day of November, 1883.

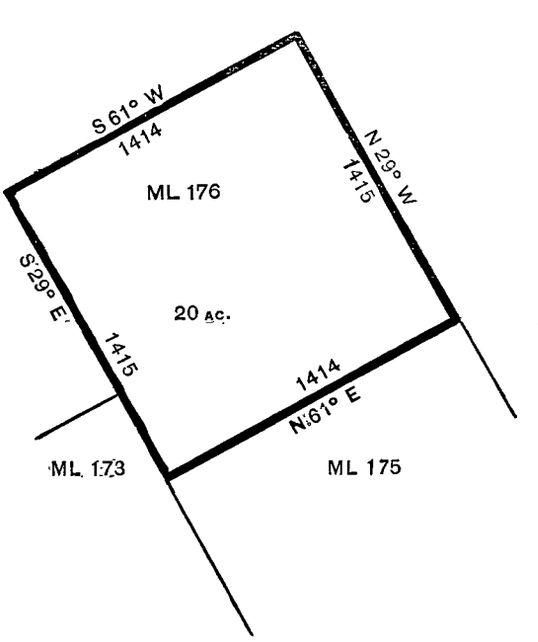
AUGUSTUS LOFTUS.
J. P. ABBOTT.

Signed, sealed, and delivered by the within-named Thomas M'Guiness (by his Attorney, W. J. Fergusson), Thomas Francis (by his Attorney, W. J. Fergusson), Thomas Butler (by his Attorney, W. J. Fergusson), and John Carey (by his Attorney, W. J. Fergusson), in the presence of,—
T. C. Binny, Registrar.

THOMAS M'GUINESS
(By his Attorney, W. J. Fergusson).
THOMAS FRANCIS
(By his Attorney, W. J. Fergusson).
THOMAS BUTLER
(By his Attorney, W. J. Fergusson).
JOHN CAREY
(By his Attorney, W. J. Fergusson).

Plan.

Parish of Highland Home, county of Gough, 20 acres, portion M.L. 176. Commencing at the north-east corner of portion No. M.L. 175, and bounded thence on the north-east by a line bearing north 29 degrees west 14 chains 15 links; on the north-west by a line bearing south 61 degrees west 14 chains 14 links; on the south-west by a line and part of the north-east boundary of portion M.L. 173, bearing south 29 degrees east 14 chains 15 links; and on the south-east by the north-west boundary of portion M.L. 175, bearing north 61 degrees east 14 chains 14 links to the point of commencement.



Scale, 8 chains to an inch.

Registered in the Department of Mines, at Sydney, this thirteenth day of November, A.D. 1883, at the hour of ten o'clock in the forenoon, and numbered in the Register 1,817.

T. C. BINNY,
Registrar.

Form

Form of Power of Attorney.

Mineral Lease Regulations—Schedule 12.

KNOW ALL MEN BY THESE PRESENTS,—

That we, Thomas Butler, Thomas M'Guiness, Thomas Francis, and John Carey, do hereby make, nominate, constitute, and appoint, and in our place or stead put William John Fergusson, of Sydney, to be our true and lawful attorney for us, and in our names, and as our act and deed, to sign, seal, and take delivery of the mineral lease for which we, on the 17th day of November, 1882, made application (No. 844, at Vegetable Creek), under the provisions of the Mining Act, 1874, and the regulations made thereunder, and which has been or shall be granted and issued by the Governor, and for us and in our names to enter into all such covenants and agreements as we shall be required to enter into in and by the said lease, and generally for us and in our names to do, execute, and perform all such other acts, deeds, and things as may be necessary or may be required to be done, executed, or performed in and about the application for and execution of such lease; and we do hereby ratify and confirm all and whatsoever the said William John Fergusson shall lawfully do or cause to be done in or about the premises, by virtue of this power.

In witness whereof, we have hereunto set our hands and seals, this 21st day of August, 1883.

THOMAS BUTLER.
THOMAS M'GUINESS.
THOMAS FRANCIS.
JOHN CAREY.

Signed, sealed, and delivered by the abovenamed Thomas Butler, Thomas M'Guiness, Thomas Francis, and John Carey, in the presence of,—

JAMES H. GRANEY.

Transfer of Mineral Lease.

Mineral Lease Regulations—Schedule 13.

WE, Thomas Butler, Thomas M'Guiness, Thomas Francis, and John Carey, being registered as the lessees of all that mineral lot demised by a certain mineral lease granted by Her Majesty the Queen to Thomas Butler, Thomas M'Guiness, Thomas Francis, and John Carey, and dated the 8th day of November, 1883, and numbered in the Register 1,817, in consideration of the sum of £800 paid to us by the transferees, the receipt of which sum we hereby acknowledge, do hereby transfer to the said William Wright Richardson and George Hardie all our right, title, and interest in and to the mineral lot demised as aforesaid. And we do hereby accept transfer of the right, title, and interest of the said Thomas Butler, Thomas M'Guiness, Thomas Francis, and John Carey in and to the demised land aforesaid, subject to the provisions of the Mining Act, 1874, and the regulations made thereunder; and we hereby agree to be bound by all and singular the terms, conditions, covenants, provisoes, restrictions, and reservations contained in the said lease.

In witness whereof, we have hereunto subscribed our respective names, this 24th day of November, 1883.

Witness to Signature.	Transferror.	Transferee.
James H. Graney.	Thomas Butler.	
James H. Graney.	Thomas M'Guiness.	
James H. Graney.	Thomas Francis.	
James H. Graney.	John Carey.	
G. S. Buzacott.	——	W. W. Richardson.
G. S. Buzacott.	——	George Hardie.

I, Joseph Palmer Abbott, hereby sanction and authorize the transfer of the interest of Thomas Butler, T. M'Guiness, T. Francis, and J. Carey, in the abovenamed lease to

Dated at Sydney, this 11th day of December, 1883.

J. P. ABBOTT.

I have this 11th day of December, 1883, at the hour of 10 o'clock in the forenoon, registered the abovenamed transferee as the holder of the mineral lease No. 1,817.

T. C. BINNY,
Registrar.

Minute for The Executive Council.

Recommending the approval of certain applications for Mineral Leases.

Department of Mines, Sydney, 18 October, 1883.

THE applications for mineral leases of Crown lands specified in the annexed schedule are submitted for the approval of His Excellency the Governor and the Executive Council in terms of the Mining Act of 1874.

J. P. ABBOTT.

The Executive Council advise that the course recommended be approved.—ALEX. C. BUDGE, Clerk of the Council. Min. 83–44, 23/10/83. Approved.—A.L., 23/10/83. Confirmed, 30/10/83.

SCHEDULE ALLUDED TO.

NEW ENGLAND MINING DISTRICT.

No.	Name.	Locality.	Area.	Period.
Vegetable Creek—			Acres.	Years.
615	T. Butler and others.....	County Gough, parish Highland Home.....	20	20
655	J. Butler and another	do do do	20	.....
Emmaville—				
844	T. M'Guiness and others	do do do	20	.....

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Gazette Notice.

Department of Mines, Sydney, 6 November, 1883.

Notice to Applicants for Mineral Leases.

NOTICE is hereby given that the undermentioned applications for mineral leases of Crown lands have been approved by His Excellency the Governor and the Executive Council.

JOSEPH P. ABBOTT.

New England Mining District.

Application No.	Lease No.	Name.	Locality.	Area.	Date of commencement of Rental.	Date of Application.
				a. r. p.		
Veg. Creek 615 ...	.....	T. Butler and others...	County of Gough, parish of Highland Home.	20 0 0	30 Oct., 1883	14 Jan., 1882
„ 655 ...	.....	J. Butler and another	do do ...	20 0 0	30 „ „	24 Mar., „
Emmaville 844 ...	.....	T. M'Guiness and others.	do do ...	20 0 0	30 „ „	17 Nov., „

Memos.

Department of Mines—New England Mining District.

APPLICATION Nos. 615, 655, Vegetable Creek, 844, Emmaville, for mineral leases, submitted herewith for the consideration of the Honorable the Minister for Mines.

The plans and descriptions have been checked.

No objections appear to have been made.

The number of men proposed to be employed appears reasonable.

The time for commencing work appears to be reasonable.

Applications Nos. 615, 655, Vegetable Creek, 844, Emmaville, New England Mining District, approved of.

Minute of the Executive Council, 18/10/83.

J. P. ABBOTT.

Application.

Application No. 1,476, at Emmaville Reserve, for a Mineral Lease.

1. By whom application was received? The Warden's Clerk.
2. At what place? Emmaville.
3. Date and hour when received? 19th July, 1887, 3·30 p.m.
4. Receipt for first year's rent? Date—19th July, 1887.

12. Is the time proposed for commencing work reasonable? Yes.
13. Is the number of men proposed to be employed reasonable? Yes.

G. MARTIN,
Warden.

Applicant has complied with conditions as to time of lodging application.

Notice of Application and Deposit.

Mineral Lease Regulations—Schedule 6.

Sir,

Emmaville, 19 July, 1887.

I have the honor to inform you that I have this day deposited with the Warden's Clerk at Emmaville the sum of £5, being the first year's rent in advance of 40 acres of land at county Gough, parish Highland Home, portions M.L. 173 and M.L. 174, for the purpose of mining for tin. The number of my application is 1,476.

I have, &c.,

The Under Secretary for Mines, Sydney.

DAVID BAILEY.

Form of Application.

Mineral Lease Regulations—Schedule 2.

To the Honorable the Secretary for Mines, Sydney,—

Emmaville, 19 July, 1887.

Sir,

I hereby make application for a mineral lease of that piece or parcel of land situated county Gough, parish Highland Home, portions M.L. 173 and M.L. 174, containing 40 acres, of which I took possession on the 18th day of July, for the purpose of mining thereon and therein for tin, for a period of twenty years, by posting notices and cutting L trenches at each angle thereof. The datum point is at the south-east corner of portion 173. I do not require any of the surface.

Notice of my having made this application will be given in accordance with the regulations in that behalf. There was no person in occupation of the land. I also hand herewith the sum of £5, being the first year's rent in advance of the said land.

I hereby acknowledge that this application is made upon the distinct understanding and condition that if I shall abandon or fail to proceed with it, or if it is refused, the Secretary for Mines for the time being may deduct from the sum of £5 deposited as aforesaid any cost to which in his opinion the Crown may have been put in or about or in respect of this application; and this application shall thereupon become and be void, and the possession aforesaid shall cease and determine. And if the lease shall be

granted

granted, I shall and will commence mining operations upon or in connection with the demised land within one month from and after the granting thereof, and shall and will employ upon such land not less than four men during the first three years of the term thereby created, and not less than six men during the remainder of such term. And shall and will at any time when called upon in terms of the regulations relating to mineral leases to do so, execute and take delivery of such lease, or failing therein for a period of fourteen days, after being so called upon, I shall and will forfeit the said sum of £5, and all right, title, or interest in and to the said land and the possession thereof, and the said lease shall be forthwith cancelled.

I have, &c.,
DAVID BAILEY,
Emmaville.

This application was received by me this 19th day of July, 1887, at the hour of 3·30 o'clock in the afternoon, and is numbered 1,476.

JOHN M. SHEAHAN,
Warden's Clerk.

Questions to be answered by Applicants to Lease.

When receiving an application to lease land for mining purposes, the Warden, Warden's Clerk, or an agent, as the case may be, shall require the applicant or applicants, or his or their agent, to answer the following questions, and shall take down such answers in writing. The statement, when complete, to be read over to and signed by the person furnishing the answers :—

3. What was the date and hour of the day when you took possession of the land referred to in application No. 1,476? 18th July, 1887.
4. Did you take possession by erecting posts and cutting trenches at each angle of the land? Yes.
5. What was the diameter of the posts? Three inches.
6. How high did they project above the surface when fixed in the ground? Three feet.
7. What was the length of each arm of each trench—and what was the depth of each trench? Six feet long, 9 inches deep.
9. At which angle of the land is the datum post fixed? South-east corner of portion 173.
10. Did you affix a board or metal plate to the datum post? Metal plate with schedule "A" attached.
11. What was written or painted on each board or plate? Mineral lease application, by David Bailey.
12. Where did you post the notices, schedule 1? Warden's Office, Emmaville, and Post Office, Torrington.
13. When did you post such notices? 19th July, 1887.

I, David Bailey, declare that the foregoing questions have been answered by me truthfully in every particular, and the answers thereto have been read over to me and are correctly taken down in writing.

DAVID BAILEY.

Witness to signature, John M. Sheahan.

G. M. L. Matheson, Esq., M.P., to The Secretary for Mines.

Sir, Sydney, 10 September, 1887.

One of my constituents, Mr. D. Bailey, writes asking me to request that you will push on the issue of the leases for two blocks he applied for at Emmaville. He refers to them as mineral leases 173, 174, but I rather think these are the portion numbers, and that parish is Highland Home, county Gough. They may be known in your Department as M. 1,317, 1,318.

I would like to be informed they have been approved of, and that the leases will be ready shortly.

I am, &c.,
GEORGE M. L. MATHESON.

Memo.

Department of Mines—New England Mining District.

Application No. (Emmaville) 1,476, for a mineral lease, submitted herewith for the consideration of the Honorable the Minister for Mines.

The plans and description have been checked.

No objections appear to have been made.

The number of men proposed to be employed appears reasonable.

The time for commencing work appears to be reasonable. Application No. (Emmaville) 1,476, New England Mining District, approved of.

Minute of the Executive Council.

F.A.

Indenture.

Application No. 3,237.

This indenture, made the eighth day of November, in the year of our Lord one thousand eight hundred and eighty-seven, between Her Most Gracious Majesty Queen Victoria, of the one part, and David Bailey, of Emmaville, in the Colony of New South Wales (hereinafter called the lessee), of the other part, witnesseth :—That in consideration of the sum of ten pounds paid by the said lessee on the nineteenth day of July, 1887, and of the rents hereinafter reserved, and of the covenants and provisoes hereinafter contained, Her Majesty doth by these presents grant and demise unto the lessee, his executors, administrators, and transferees, all that piece or parcel of land containing by admeasurement forty acres, and more particularly described and delineated in the schedule hereto, or in the plan hereunto annexed, and numbered M.L. 173, M.L. 174, and all those mines, veins, seams, or deposits of [the mineral or metal proposed to be worked] in, on, and under the said land (hereinafter called the said mine), together with all

all and singular the shafts, levels, drifts, works, ways, fixtures, erections, liberties, easements, advantages, and appurtenances which are now or at any time during the term hereby granted may be held, occupied, or enjoyed therewith, for the purpose of mining upon and under the said land for tin, and also with full power for the said lessee, his executors, administrators, and transferees, and his and their agents and workmen (including contractors, tributors, and so forth), to dig, sink, drive, make, and use excavations, pits, shafts, levels, tunnels, watercourses, and other works necessary for winning and raising the tin in, on, or under the said land, and to take and appropriate the same during the term hereby granted, and to make and construct on the said land, races, drains, dams, reservoirs, roads, and tramways, and also to erect on the said land all buildings, engines, furnaces, pumps, machinery, and appliances necessary for the purpose of winning and obtaining the tin in, on, or under the said land, and for effectually carrying on the works of the said mine, and also to erect on the said land such offices, cottages, and dwelling-houses, for the use of the agents, workmen, and persons employed in the said mine and works, as the said lessee, his executors, administrators, and transferees shall think proper: To hold the said land, mine, and premises, with the appurtenances (subject nevertheless to the reservation or exception of that portion of the surface of the said land shown on the plan aforesaid, bounded by the lines coloured red, and to such rights and interests as may be lawfully subsisting therein at the date of these presents), unto the said lessee, his executors, administrators, and transferees, from the date hereof, for the term of nineteen years next ensuing, for the purpose of mining therein or thereon, for working or winning the said tin, and for no other purpose,—yielding and paying therefor unto Her Majesty, her heirs and successors, yearly and every year during the said term, the yearly rent of ten pounds in advance, the first year's rent having been paid as aforesaid on the nineteenth day of July, 1887, the next payment being the rent of the said land for one month and twenty-three days, at the rate of fivepence per acre per month, from the eighth day of November to the thirty-first day of December, 1888, shall be made to the Colonial Treasurer in Sydney on or before the thirtieth day of November, 1887; and thereafter, on or before the thirtieth day of November in each and every year, the yearly rent aforesaid (being the rent of the land hereby demised for the year commencing the first day of January next after each such payment) shall be paid to the Colonial Treasurer aforesaid, clear of all rates, taxes, and assessments to which the said land, mine, and premises are now, or at any time during the said term may be, subject or liable: Provided always, and it is hereby agreed that if the said yearly rent shall be in arrear for thirty days after the same shall have become payable, whether such rent shall have been legally demanded or not, any officer appointed or authorized thereto by the Secretary for Mines may, by himself or his agent, enter upon the said land, and seize and distrain all minerals, metals, and ores actually got and raised from the said mine, and all machinery, apparatus, tools, waggons, carts, carriages, engines, plant, and all other goods, chattels, and effects whatsoever in, upon, and about the said land and premises, and every distress thus made may take away, sell, and dispose of as in cases of distress for rent reserved in common leases; and out of the moneys arising thereby retain so much as shall be sufficient to satisfy the said arrears, and which shall at the time of such sale be unpaid, and all expenses incurred by him or them in or in respect of such seizure, distraint, removal, and sale; and if there be any surplus such officer shall pay the same to the said lessee, his executors, administrators, or transferees; and the acceptance or receipt of rent by or on behalf of Her Majesty, after breach of any covenant hereinafter contained, shall not be or be deemed a waiver of the right of Her Majesty, or of the Secretary for Mines, or other officer on behalf of Her Majesty, to enforce observance of such covenant. And if the said lessee, his executors, administrators, or transferees, shall mine for or win from the said land, mine, and premises, any gold, or any earth, rock, stone, quartz, clay, sand, gravel, or soil containing gold, or any mineral or metal with which gold is associated or combined, without the express sanction first had and obtained of the Secretary for Mines for the time being, the Governor, with the advice of the Executive Council, may declare these presents void, and thereupon all the right, title, and interest of the lessee, his executors, administrators, and transferees under these presents shall cease and determine both at law and in equity. And the said lessee doth hereby, for himself, his heirs, executors, administrators, and transferees, covenant with Her Majesty, her heirs and successors, in manner following, that is to say:—

1. That the said lessee, his executors, administrators, and transferees, shall and will during the said term pay unto Her Majesty, her heirs and successors, the rent hereby reserved, at the times and places hereinbefore appointed for payment thereof, clear of all deductions.

2. And shall and will upon and during all lawful working days, except when prevented by inevitable accident or during the execution of repairs, make, construct, and work the said land, mine, and premises in the best and most effectual manner, and to the best advantage, without interruption; and shall and will diligently explore and search for tin in, on, and under the said land, mine, and premises.

3. And shall and will on and from the seventh day of December next employ in the construction of the works, or in mining operations on or under the said land, during the first three years of the said term, and during the usual hours of labour, four able and competent workmen and miners at the least; and during the remainder of the said term, and during the usual hours of labour, shall and will employ as aforesaid not less than six such workmen and miners, unless prevented by inevitable accident, or during the execution of repairs, so that within the first three years of the term hereby created there shall be expended upon the said land, mine, and premises, such a sum of money as shall be equal to five pounds sterling upon each and every acre hereby demised: Provided that the lessee, or if there be more than one lessee, each lessee who shall work as aforesaid, shall count as and be deemed for the purposes of these presents to be a workman or miner employed as aforesaid.

4. And shall and will during the said term effectually drain the said mine, and pump all water likely to cause injury thereto, or which would prevent or interfere with the working thereof; and if the said mine shall be affected, or be liable to be affected, by the same flow or body of water as any other mine or mines contiguous thereto, shall and will, if and whenever requested so to do, contribute with the lessee or lessees or owner or owners of such other mines a reasonable proportion of the machinery and labour necessary to free and keep such mine or mines free from water to a workable extent; or if the said mine shall be kept free from water to a workable extent either wholly or partially by means of the machinery and labour of a contiguous mine or mines, or by reason of any works constructed or money expended by the lessee or lessees, owner or owners, of such contiguous mine or mines,—then shall and will pay to such lessee or lessees, owner or owners, as aforesaid, a reasonable proportion of the cost of such machinery, labour, or works, or a reasonable proportion of the money so expended; and the Secretary

for

for Mines for the time being may, if and whenever he shall think fit, depute some efficient person who shall have access to and inspection of all such mines, to determine when the said mine is so freed or kept wholly or partially free from water, and what are the reasonable proportions of such expenses aforesaid, and to whom and when the same are to be paid—such decision to be final and conclusive on all parties.

5. And shall and will make such provision for the disposal of the detritus, dirt, waste, or refuse of the said mine that the same shall not be an inconvenience, nuisance, or obstruction to any roadway, river, creek, or private or Crown lands, or shall not in any manner occasion any public or private damage or inconvenience.

6. And shall and will erect, and keep erected, during the said term, a post, painted white, at each angle of the said land, and at such points along the boundary-lines as shall be necessary, so as plainly and accurately to define the boundary lines and angles of the said land; and each such post shall be fixed firmly in the ground, and shall project above the surface thereof not less than three feet.

7. And shall and will, as often as required so to do during the term, make and deliver to the Secretary for Mines for the time being, or any officer appointed or instructed to collect, obtain, or receive the same, all such true and proper plans and sections, returns, and statistics of the workings and operations of the said mine, made up to the last day of the preceding month (the truth and accuracy of which shall be verified by the statutory declaration of the lessee for the time being, or the manager or other officer having the charge, control, and direction of the works of the said mine), as the Secretary for Mines shall from time to time direct. And shall and will, whenever required by the Secretary for Mines so to do, deliver to any officer appointed or instructed as aforesaid samples of the minerals, metals, and ores, or any of them, found in or upon such mine and land.

8. And shall and will during the said term make proper and reasonable compensation to the occupier or occupiers, lessee or lessees from the Crown, of any adjoining land in respect of any damage which may be sustained by him or them, by reason of the working of the said mine, or the carrying on of the works thereof or connected therewith, such compensation to be determined by the Secretary for Mines, or by some person authorized by him so to do.

9. And shall and will permit any mining surveyor, or other person duly authorized in that behalf, with all proper or necessary assistants, at all reasonable times, during the said term, quietly to enter into and upon the said land, mine, and premises, to survey and examine the state and condition thereof, and, for the purposes aforesaid, to descend all pits and shafts, and to enter into and use all adits, levels, galleries, drives, and excavations, and to use all roads, ways, engines, ropes, machinery, gear, appliances, materials, labour, and other things in or on the said land and mine, which shall be by him deemed necessary, without making any compensation for the same, so nevertheless that in so doing no unnecessary interference is caused with the carrying on of the said mining works.

10. And further, shall and will at all times during the said term keep and preserve the said mine and premises from all avoidable injury or damage, and also the levels, drifts, shafts, watercourses, roads, ways, works, erections, and fixtures therein and thereon in good repair and condition, except such of the matters and things last aforesaid as shall from time to time be considered by a mining surveyor or other proper officer authorized by the Secretary for Mines to inspect and report upon such matters and things to be unnecessary for the proper working of the said mine or any contiguous mine, and in such state and condition shall and will at the end or sooner determination of the said term deliver peaceable possession thereof, and of all and singular the premises hereby demised to Her Majesty, her heirs and successors, or to the Warden or other officer authorized to receive possession thereof. Nevertheless the Secretary for Mines may, if he think fit, permit the lessee, his executors, administrators, and transferees, within six months after possession shall have been received as aforesaid, to enter upon the said land, and to remove therefrom such machinery, plant, and apparatus as shall have been erected and fixed upon such land, and such earth, rock, ore, mineral, or metal as shall have been won from and raised to the surface of such mine.

11. And shall not nor will use or occupy, or permit to be used or occupied, the said land, or any part thereof, for other than mining purposes, or for pasturage, or as sites for dwellings, or garden ground for the persons employed in, on, or about the said mine.

12. And shall not nor will mine in or upon the said mine, land, and premises, for any mineral, metal, or ore other than tin without the express sanction of the Secretary for Mines.

13. And shall not nor will transfer, underlet, or part with possession of the said land, mine, and premises, or any part thereof, or mortgage, charge, or encumber the same, without the license first had and obtained of the Secretary for Mines for the time being: Provided always that no such license shall be necessary in cases where, by operation of law or otherwise, a sale of the said land, mine, and premises, or any part or parts thereof, is made by any person or persons entitled to sell the same for the benefit of the creditors or a creditor of the lessee or his transferees, or in cases where the lessee or his transferees desire to let the said mine and premises, or any part thereof, to be worked on tribute.

14. And shall not nor will close up or obstruct any adit or adits to or from any contiguous mine or mines, whereby fresh air is admitted or ventilation promoted.

15. And shall not nor will plead acceptance of rent by or on behalf of Her Majesty as a waiver of the right of Her Majesty, or of the Secretary for Mines, or other officer on behalf of Her Majesty, to enforce observance of the covenants herein contained, or of the right of the Governor, with the advice of the Executive Council, to declare these presents void for breach of any such covenant: Provided always and it is hereby agreed and declared in manner following:—

16. That it shall be lawful for Her Majesty, her heirs, successors, and assigns, to make and use in, on, or under the said land, any levels, drifts, leads, shafts, watercourses, adits, roads, ways, and passages for freeing and keeping free any other lands or mines from water, or for conveying water to any other lands or mines for mining purposes, or for supplying any other mines with fresh air, or for effectually working any other mines, or for any public purpose whatsoever, causing as little damage, obstruction, or interference as possible to or with the said mine and the works thereof. And if, at any time during the term hereby created, any part or parts of the land hereby demised, or any part or parts of the surface thereof, shall be required for the purpose of any township, village, railway, road, canal, watercourse, reservoir, or for any other public purpose, it shall be lawful for the Governor for the time being, with the advice of the Executive Council, on giving three months' notice of his intention so to do, to cause to be set out the part or parts of the said land, or of the surface thereof, which shall be so required; and as soon as the same shall be so set out, such part or parts of the said land, or of the surface thereof, shall cease

cease to be included in the land hereby demised, and the lessee, his executors, administrators, or transferees shall not be entitled to any abatement of rent, or any compensation whatever in respect thereof.

17. And if the lessee, his executors, administrators, or transferees shall prove to the satisfaction of the Secretary for Mines for the time being that the said mine is unworkable from any cause whatsoever, or that the lessee, his executors, administrators, or transferees is or are unable, by reason of sickness or other sufficient cause, to work in such land or mine, or that the supply of water is insufficient to allow the working of the said land, mine, and premises to be profitably carried on, the said Secretary for Mines may grant permission to suspend work therein or thereon, for any period not exceeding six months, without the lessee, his executors, administrators, or transferees incurring in respect thereto any forfeiture or penalty for breach of any covenant herein contained.

18. And, lastly, that if the lessee, his executors, administrators, or transferees shall at any time during the said term fail to use such land *bonâ fide* for the purpose for which it has been demised, or if and whenever the said rent shall be in arrear for thirty days after the time appointed for payment thereof, whether the same shall have been legally demanded or not, or if and whenever there shall be a breach of or non-compliance with the covenants and provisoes herein contained by the lessee, his executors, administrators, or transferees, and the lessee, his executors, administrators, or transferees shall not have obtained from the Secretary for Mines for the time being permission to suspend work as aforesaid, in case the breach shall have been for non-compliance with the covenants for the employment of workmen or miners, or for the working of the mine, the Governor, with the advice of the Executive Council, who alone and finally shall judge and determine the matter upon the evidence or reports submitted by the Secretary for Mines for the time being may declare these presents void; and upon publication in the *Government Gazette* of notice of such declaration, all the right, title, and interest of the lessee, his executors, administrators, and transferees under these presents shall cease and determine both at law and in equity; and the production of a copy of the *Government Gazette* containing a notice, purporting to be signed by the Secretary for Mines, declaring the lease void, shall be conclusive evidence in all Courts whatsoever in the Colony of New South Wales, of a breach of or non-compliance with the covenants and provisoes herein contained sufficient to authorize and sustain such declaration having been lawfully made, and that the interest created hereunder has been lawfully determined; and thereupon it shall be lawful for Her Majesty, her heirs and successors, or her or their agents or officers, or for any bailiff or other person duly authorized thereto, or for any holder of a mineral license, who has the permission of the Secretary for Mines for the time being, without any previous demand whatsoever, to enter forthwith into and upon the said land and premises hereby granted, and the same to repossess and enjoy as fully and effectually to all intents and purposes as if these premises had not been made, and the said lessee, his executors, administrators, and transferees, to expel and remove, without any legal process, and as effectually as the Sheriff might do in case judgment in ejectment had been obtained and a writ of *habere facias possessionem* had been issued on such judgment; and in case of such entry and any legal proceeding taken in respect thereof, the defendant or defendants in any such proceeding may plead leave and license in bar thereof; and these presents shall be conclusive evidence of such leave and license by the lessee, his executors, administrators, and transferees, or other the person or persons, plaintiff or plaintiffs in such proceedings, for such entry or other matters complained of in such proceedings.

In witness whereof, His Excellency the Right Honorable Charles Robert, Baron Carrington, a Member of Her Majesty's Most Honorable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies, hath, on behalf of Her Majesty the Queen, caused the Seal of the said Colony to be affixed to this grant, and also set his hand, at Government House, Sydney, in the said Colony, the day and year first above written, and the lessee has also set his hand and seal the seventeenth day of November, 1887.

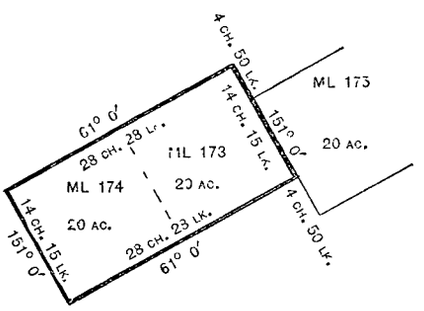
CARRINGTON.

Signed, sealed, and delivered by the within-named David Bailey, in the presence of,— JOHN M. SHEAHAN, W.C.

FRANCIS ABIGAIL.
DAVID BAILEY.

Plan.

Parish of Highland Home, county of Gough. Within reserve 837 B, notified 3rd November, 1884.



Scale, 20 chains to an inch.

Registered in the Department of Mines, at Sydney, this second day of December, A.D. 1887, at the hour of four o'clock in the afternoon, and numbered in the Register 3,237.

EDWARD FARR,
Registrar.

Messrs.

Messrs. Brett and Coghlan to The Under Secretary for Mines.

Sir, 19, Macquarie-place, Sydney, 10 December, 1887.

We understand that a Mr. David Bailey has applied for a mineral lease of 40 acres, in the parish of Highland Home, county Gough, viz., mineral leases 173 and 174, and said application embraces the mineral conditional purchase Tenterfield, C.P. 84–60, E. Prosser.

Under these circumstances we beg respectfully to protest against the granting of the application in question.

We have, &c.,
BRETT AND COGHLAN,
Agents for the Selector.

The portions which have been leased do not embrace a M.C.P. Two other portions bearing the same numbers, without the letters M.L., are embraced in M.C.P. 84–60, J. Graney.—E.F.P., 13/12/87.

Inform.—H.W., 14/12/87.

The Under Secretary for Mines to Messrs. Brett and Coghlan.

Gentlemen, Department of Mines, Sydney, 15 December, 1887.

Referring to your letter of the 10th instant, in which you protest against the application of Mr. David Bailey for a mineral lease of 40 acres of land in the parish of Highland Home being granted, as you understand the land so applied for embraces the mineral conditional purchase No. 84–60, Tenterfield, by E. Prosser, I have the honor to inform you that the portions of land which have been leased do not embrace a conditional purchase. Two other portions bearing the same numbers, without the letters M.L., are embraced in the purchase before mentioned.

I have, &c.,
HARRIE WOOD,
Under Secretary.

Transfer of Mineral Lease.

Mineral Lease Regulations—Schedule 13.

I, DAVID BAILEY, of Emmaville, being registered as the lessee of all those mineral lots demised by a certain mineral lease granted by Her Majesty the Queen to me, and dated the 8th day of November, 1887, and numbered in the Register 3,237, in consideration of the sum of £200 paid to me by the transferee, the receipt of which sum I hereby acknowledge, I do hereby transfer to Kennedy Hill, of Emmaville, all my right, title, and interest in and to the mineral lots demised as aforesaid. And I do hereby accept transfer of the right, title, and interest of the said Kennedy Hill in and to the demised land aforesaid, subject to the provisions of the Mining Act, 1874, and the regulations made thereunder; and I hereby agree to be bound by all and singular the terms, conditions, covenants, provisoes, restrictions, and reservations contained in the said lease.

In witness whereof we have hereunto subscribed our respective names, this 24th day of January, 1888,—

David Bailey, transferror; Kennedy Hill, transferree.

I, Francis Abigail, hereby sanction and authorize the transfer of the interest of David Bailey in the abovenamed lease to Kennedy Hill.

Dated at Sydney, this 10th day of March, 1888.

FRANCIS ABIGAIL.

I have this 10th day of March, 1888, at the hour of 11 o'clock in the forenoon, registered the abovenamed transferee as the holder of the mineral lease No. 3,237.

EDWARD FARR,
Registrar.

Messrs. Brett and Coghlan to The Under Secretary for Mines.

Sir, 19, Macquarie-place, Sydney, 13 April, 1888.

We have the honor to ask for a sketch showing the position of the leases noted below; also copies of descriptions of same. As this is a matter of urgency, may we ask to have our request specially dealt with.

We have, &c.,
BRETT AND COGHLAN,
Agents for E. PROSSER.

Tenterfield, M.Ls. 1,815, 1,816, 1,817; parish Highland Home, county Gough. If possible, supply tracing on usual terms.—H.W., 16/4/88. Lithograph herewith showing portions referred to tinted blue.—W.S.C., 19/4/88.

Mr. K. Hill to The Under Secretary for Mines.

Sir, Emmaville, 8 May, 1889.

On account of pending litigation regarding the issue of a lease to me by your Department for portions mineral lease 173 and mineral lease 174, parish Highland Home, county Gough, I have the honor to request that you will be good enough to grant a suspension of labour on those blocks until the matter of the validity of title has been settled.

I have, &c.,
KENNEDY HILL.

Under the circumstances permission may be granted to suspend work for two months.—H.W., 8/5/89. Submitted. Approved.—S.S., 8/5/89.

The

The Under Secretary for Mines to Mr. K. Hill.

Sir, Department of Mines, Sydney, 13 May, 1889.

Referring to your letter of the 8th instant, applying for suspension of labour on portions 173 and 174, in the parish of Highland Home, county of Gough, I have the honor to inform you that the Secretary for Mines has been pleased to grant suspension for a period of two months.

I have, &c.,
GERARD E. HERRING
(For the Under Secretary).

The Under Secretary for Mines to Mr. Warden Martin.

Sir, Department of Mines, Sydney, 14 May, 1889.

I have the honor to inform you that the Secretary for Mines has been pleased to grant suspension of the labour conditions of mineral lease 3,237, portions 173 and 174, in the parish of Highland Home, county of Gough, to Kennedy Hill, for a period of two months.

I have, &c.,
HARRIE WOOD,
Under Secretary.

[Five Plans.]

Sydney: Charles Potter, Government Printer.—1889.

[2*s*. 9*d*.]

Cat. No. C. 4147. 1761
Con. Sales. No. 86. 33987

Land Dist.t Tenterfield

APPENDIX A

—TRACING—

— Of portion 9 in the —

— Parish of Highland Home —

—COUNTY OF COUGH—

—Scale 20 Chains to an Inch—

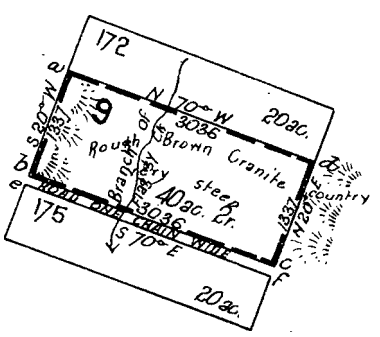
Applied for by James Graney under the 19th Clause of the C.L.A. Act of 1861 ——

— M.C.P. No. 84. 60 of 31st July —

Local Land Board Office Armidale
Instruction to Inspector
No. 87. 243

Tracing to Inspector Wisdom 29. 6. 87

Note:—
(Original Red edging shewn thus :-———)



Reference to Corners				
Corner	Bearing	From	Links	No on Tree
a	226°	Gum	16½	172. 9
b	184°	St. bk.	5	9
c	125°	do	24	9
d	impracticable			
e	28°	St. Bk.	18	175
f	285°	do	22	175

Traced by A.G. Exam.d by M.S. 27.6.89

Date of Survey 4th and 5th Aug.t 1886

Improvements Nil

(Signed) Henry C. Holmes
Licensed Surveyor

Traced E.E.F 24.1.87
Examined

(Sig. 603—)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

APPENDIX B.

— Tracing —

shewing by red ~~hatching~~ edging land to be measured for M.C.P. 84-60 Tenterfield

Prepared by R. L. Horne

— Parish of Highland Home —

— County of Gough —

— Land District of Tenterfield —

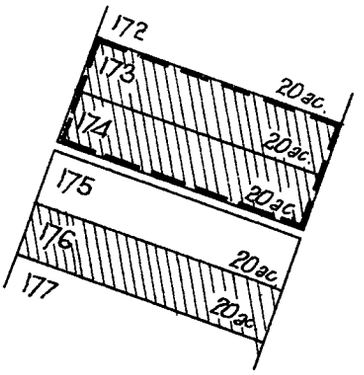
— Scale 20 Chains to an Inch —

Scale

0 10 20 40 60

Note:-

Land applied for Shewn by red Hatching



Notes:-

Original Red hatching shewn thus ▨

do do edging do do ———

Traced by A G

Exam.d by MS 27 6 88

(Sig. 603-)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES

Con. Sales No.
85. 5979
85. 4943 Sur.

APPENDIX C.

— TRACING —

—shewing portions 173. 174. 175 & 176 —

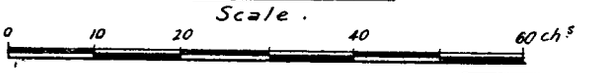
—Parish of Highland Home —

—— COUNTY OF COUGH ——

—— Land District of Tenterfield ——

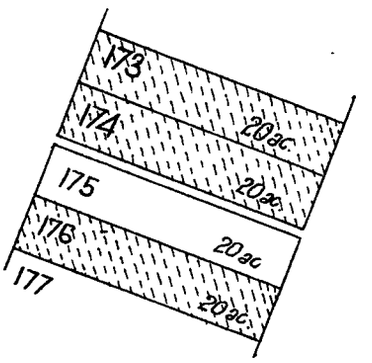
—— Scale 20 Chains to an Inch. ——

Scale.



Note

(Portions hinted red on original tracing shewn thus :-)



— Note :-

173, 174 and 176 applied for by M.C.P. 84.60 submitted for voidance shewn in red.

Traced by A.G.
Exam'd by M.S. 27. 6. 89

(Sig 603-)

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SYDNEY, NEW SOUTH WALES

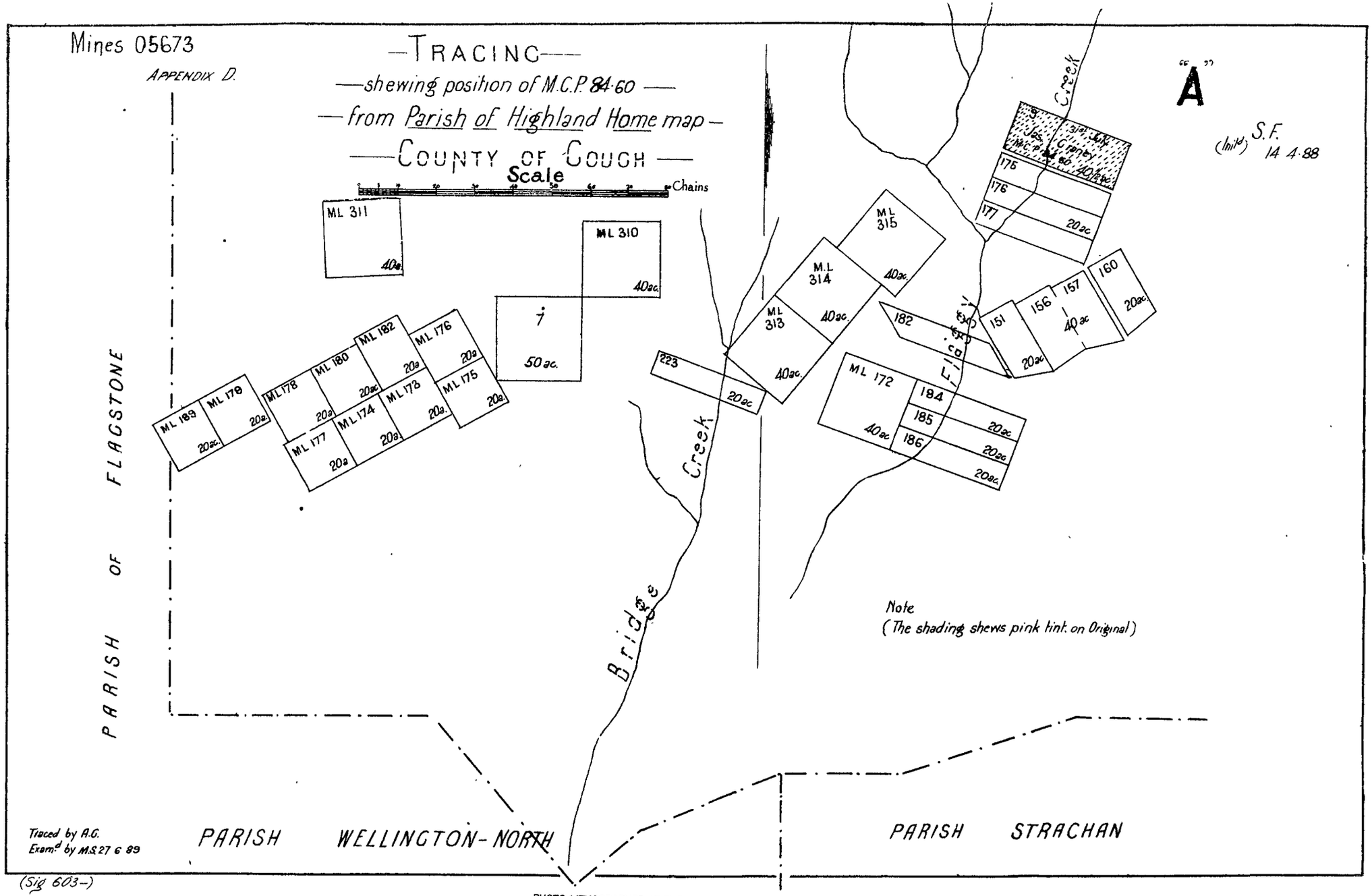


PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

Cat. No. G 4408·1716
L.B No. 89·1660
APPENDIX E.

Land Dist. Tenterfield
Eastern Division
Leasehold Area No. 546
Wellington Vale Pastoral Holding

— Tracing —

— Of portion 8 in the —

— Parish of Highland Home —

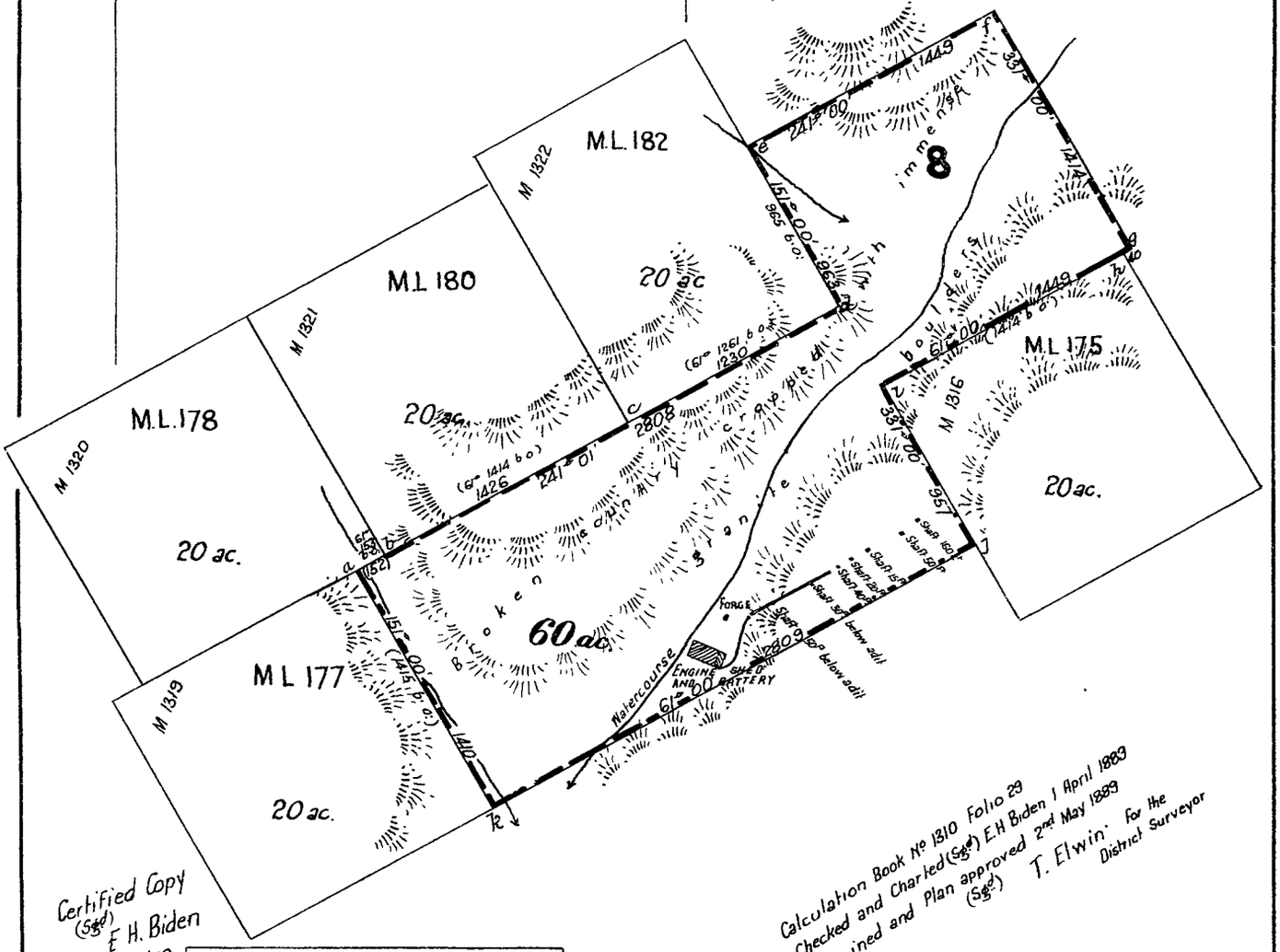
— County of Gough —

— Scale 8 Chains to an Inch. —

Applied for by James Harry Graney under the Section of the C.L. Act of 1861

M.C.P. No. 84·60 of 31st July

Note
(Portion tinted pink on original shewn thus — — —)



Certified Copy
(Sgd) E H. Biden
2 May '89

Calculation Book No 1310 Folio 29
Checked and Charted (Sgd) E.H Biden 1 April 1889
Examined and Plan approved 2nd May 1889
(Sgd) T. Elwin. For the
District Surveyor

— Reference to Corners —

Corner	Bearing	From	Links	No on Tree
a	324° 50'	Gum	12	ML 177 8
b	121° 25'	Gum	45	ML 178 180
c	304° 00'	Stringy bk	15½	ML 180 182
d	320° 30'	Gum	50	ML 182 8
e	175° 20'	Gum	3½	8
f	207° 10'	Gum	44	8
g	103° 30'	Peppermint	18	8
h	87° 40'	Gum	14	ML 175
j	81° 10'	Gum	39½	ML 175 8
j	78° 00'	Gum	24	8
k	221° 30'	Gum	29	ML 177 8

321° 15' 50½ lks by M.1317
7 lks by original

Azimuth taken from k j.

Field Book Vol 4, Folio 124

Date of Survey 9th March 1889

Traced by AC
Exam^d by MS 27·6 89

(Signed) A W. Chapman
Staff
Licensed Surveyor

(Sig. 603—)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE
SYDNEY, NEW SOUTH WALES.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

MINING.

(APPLICATION OF A. J. HACK FOR CONDITIONAL PURCHASE ON GUYRA GOLD-FIELD.)

Ordered by the Legislative Assembly to be printed, 9 *July*, 1889.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 4th June, 1889, That there be laid upon the Table of this House,—

"Copies of all letters, papers, and other documents relating to the appli-"cation of A. J. Hack, dated 21st July, 1887, for the conditional purchase "of 40 acres of measured portion No. 113, on the Guyra Gold-field."

(*Mr. Chanter.*)

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[870 copies—Approximate Cost of Printing (labour and material), £46 12s. 1d.]

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MINING.

No. 1.

Application by Alfred James Hack.

Crown Lands Act of 1884—(Part III, section 47).

[C. P. No. 91 of 1887.]

Application for Conditional Purchase.

Eastern Division, Land District of Armidale—Alfred James Hack; area, 40 acres.

Armidale, 21 July, 1887.

I HEREBY apply for 40 acres of Crown lands, as conditional purchase, 47th clause, non-resident, and I tender the sum of £8, being a deposit of 4s. per acre thereon. A description of the land applied for is on the back hereof, and the prescribed declaration is attached hereto. The land applied for is not improved.

The Land Agent at Armidale.

Received, subject to land being available, and applicant duly cautioned.

L. S. GORDON,
Crown Lands Agent.

21 July, 1887.

Description.

Eastern Division county of Sandon, parish of Metz or Cooney, , 40 acres: Commencing at the south-east corner of 113, and bounded thence by lines west; thence northerly by falls; thence east to the creek, and by it southerly to point of commencement, being measured portion No. 113 (voided mineral conditional purchase of J. Moore).

A. J. HACK,
21 July, 1887.

Applicant's name in full is Alfred James Hack.

L. S. GORDON, C.L.A.

This is the application marked A referred to in the annexed declaration of Alfred James Hack, made before me, at Armidale, this 21st July, 1887,—

LAMBERT S. GORDON,
Commissioner for Affidavits.

This application (together with the deposit of £8) was lodged with me by Alfred James Hack this 21st day of July, 1887, at 56 minutes past 10 of the clock forenoon.

LAMBERT S. GORDON,
Land Agent at Armidale.

No. 2.

Declaration by Alfred James Hack.

Crown Lands Act of 1884—(Part III, sections 24, 26, 42, and 47).

[C. P. No. 91 of 1887.]

Declaration by Applicant for a Conditional Purchase to accompany application.

I, ALFRED JAMES HACK, of Commissioner's Water, farmer, do hereby solemnly declare and affirm that I am the applicant for the conditional purchase, as described in the application hereto annexed and marked A, and that the several answers to the questions in the schedule hereto are true and correct. And I make this solemn declaration as to the several matters aforesaid, according to the law in this behalf made, and subject to the punishment by law provided for any wilfully false statement in any such declaration.

A. J. HACK.

Made before me at Armidale, this 21st day of July, 1887,—

LAMBERT S. GORDON, Commissioner for Affidavits.

SCHEDULE.

The answers to the following questions must be fully and accurately given.

1. What is your name? Alfred James Hack.
2. What is your age? 31.
3. State year and date of birth? 31st July, 1855.
4. Are you married, single, or a widower? Married.
5. Where have you resided for the past two years? Commissioner's Water. And have you during that period borne any name or names other than your present names—and if so, what? No.
6. Have you been in the employment of any person during the last two years—if so, state of whom? No.
7. Do you intend using the land now applied for solely for your own use and benefit? Yes.
8. Have you entered into any agreement, or arrangement, by which any person other than yourself can acquire any interest in the land you apply for? No.
9. Is there any understanding between you and any person in reference to the land applied for that will tend to defeat or evade the provisions of the Crown Lands Act of 1884? No.
10. Are you under any obligation that will prevent you from fulfilling the law in regard to the land you apply for? No.
11. Do you hold any land from the Crown requiring residence at the present time? No.
12. Do you hold any conditional purchases or conditional leases; if so, state the Land District in which they are situated, and the respective dates of taking up the same? No.
13. Do you already hold a conditional purchase, without conditions of residence, under the Crown Lands Act of 1884? No.
14. Have you at any time made any conditional purchase of any kind under the Crown Lands Act of 1884, or any of the repealed Acts? No.

15. If you hold conditional purchases, are they mortgaged or encumbered in any way; and if so, to whom? No.
16. Do you understand the conditions of residence and fencing required by the Crown Lands Act of 1884? Yes.

Give your address and post town. Armidale.

A. J. HACK,
Armidale.

Signature of attesting witness,—LAMBERT S. GORDON,
Commissioner for Affidavits.

No. 3.

The Under Secretary for Mines to The Under Secretary for Lands.

Sir, Department of Mines, Sydney, 15 August, 1887.

I have the honor to ask whether an application has been made by Mr. A. J. Hack for a conditional purchase of 40 acres of land in the parish of Cooney, county of Sandon, portion 113, as said land is said to be auriferous.

I have, &c.,
HARRIE WOOD,
Under Secretary.

Reply in the affirmative, and inform that this letter will be forwarded to the Chairman of the Armidale Board.—W.H.C., 15/8/82. F.H.W. (for the Under Secretary), 15/8/87. Under Secretary for Mines informed.—19/8/87. The Chairman, Local Land Board, Armidale.—F.H.W. (for the Under Secretary), B.C., 19/8/87. Referred to the District Surveyor for report, in connection with A. J. Hack's application for conditional purchase, 87-91, Armidale.—H. T. MAKIN, Clerk-in-charge, 22/8/87.

No. 4.

The Under Secretary for Lands to The Under Secretary for Mines.

Sir, Department of Lands, Sydney, 19 August, 1887.

In reply to your letter of the 15th instant, I have the honor to inform you that an application has been made by Mr. A. J. Hack, for a conditional purchase of the land noted in the margin, C.P. 87-91, Armidale.

Portion No. 113. 40 acres, parish of Cooney, county of Sandon.

I am directed to add that the letter under reply has been forwarded to the Chairman of the Local Land Board at Armidale.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 5.

The Under Secretary for Mines to The Under Secretary for Lands.

Sir, Department of Mines, Sydney, 26 August, 1887.

Referring to conditional purchase application 87-91, at Armidale, by Frederick Hack, for 40 acres of land, portion 113, parish of Cooney, county of Sandon, I am directed by the Secretary for Mines to request that you will be good enough to move the Secretary for Lands to disallow such conditional purchase, as there is reason to believe that the land is auriferous, and a portion of it has been applied for under a gold lease.

I have, &c.,
HARRIE WOOD,
Under Secretary.

No. 6.

Mr. District-Surveyor Finley to The Chairman, Land Board, Armidale.

Armidale Land District.

Papers enclosed: C.P. application, 87-91, and diagram; also C.S. 87-28,806.

REPORT of the District Surveyor upon original conditional purchase, under Section 47, No. 87-91 for 40 acres, in the parish of Cooney, county Sandon, applied for by Alfred James Hack.—D.S.O., 87-167.

The measured portion herein applied for is shown by pink tint on the enclosed diagram. As far as can be ascertained in the absence of the plan, it is vacant and available for conditional purchase.

With regard to the enclosed letter from the Under Secretary for Mines, it may be stated that the land is not within a gold-field.

F. G. FINLEY, D.S.,
30/8/87.

Referred to Minister for Lands under 14th section, sub-section 7.—S. BLYTHE, Chairman, 1/9/87.

[*Enclosure.*]

Land District of Armidale.
(Crown Lands Act of 1884, section 47, C.P. No. 91, of 1887.)

EXTRACT from an application for conditional purchase, lodged with the Land Agent on the 21st day of July, 1887, at 56 minutes past 10 of the clock forenoon, by Alfred James Hack, Armidale. Deposit paid, £8.

Description.

Eastern Division, county of Sandon, parish of Metz or Cooney, 40 acres: Commencing at the south-east corner of 113; and bounded thence by lines west; thence northerly by fall; thence east to the creek, and by it southerly to point of commencement, being measured portion No. 113 (void mineral conditional purchase of J. Moore.)

Examined.—H. T. MAKIN. Referred to the District-Surveyor for report.—Land Board Office, Armidale, 23th July, 1887.—SYDNEY BLYTHE, Chairman.

Received subject to land being available, and applicant duly cautioned.—L. S. GORDON, Crown Land Agent, 21/7/87.

No. 7.

No. 7.

Caption to Depositions of Witnesses.

Crown Lands Act of 1884—(Part II, section 14, sub-section 1).

New South Wales, Armidale, } to wit. }

THE examination of Francis George Finley, of Armidale, in the Colony of New South Wales, District Surveyor; Alfred James Hack, of Armidale, selector; Edward Thorne, of Hillgrove, miner; Edward McNamara, of Hillgrove, miner; and Christopher Allingham, of Hillgrove, miner, in the said Colony.

WHEREAS it hath been alleged that certain valuable auriferous deposits exist on the land applied for by Alfred James Hack, as a conditional purchase on 21st July, 1887, No. 87–91, in county of Sandon, parish Metz or Cooney, and it hath been found necessary to investigate the said matter on oath, the depositions of the several witnesses are appended hereto.

THIS witness, being duly sworn, on oath, states:—My name is *Francis George Finley*, District Surveyor, Armidale Land Board District; I know the portion of land described in Alfred James Hack's application, conditional purchase, 87–91, and I furnished the report, dated 30th August, 1887. At the date of application for this land, and also at the date of my report so far as I knew, the land was open to conditional purchase; my attention, however, has since been directed to the *Government Gazette*, of Tuesday, 30th August, wherein I see proclamation of an extension to the Guyra River Gold-field; I have traced this description out on the maps, and I find that the gold-field which is not open to conditional purchase, embraces the land applied for by Alfred James Hack.

F. G. FINLEY.

Sworn at Armidale, this 1st day of September, 1887, before us,— } SYDNEY BLYTHE, J.P., Chairman. C. E. SMITH, P.M.

THIS witness being duly sworn, states:—My name is *Alfred James Hack*; I am the applicant for 40 acres of land under the 47th section, being portion 113, county Sandon, parish Metz, applied for on 21st July, 1887, and on that date this land was not included in any gold-field reserve not open to conditional purchase; I believe since I took up the land there has been a narrow seam of auriferous quartz found on it, but at the time I applied for it I did not know there was gold on it, although it had been prospected, and no gold found on it; I may add that if this conditional purchase is confirmed, I may use it as a business site; there is a number of men working there at the bottom of the falls.

A. J. HACK.

Sworn at Armidale, this 1st day of September, 1887, before us,— } SYDNEY BLYTHE, J.P., Chairman. C. E. SMITH, P.M.

THIS witness, being duly sworn, on oath, states:—My name is *Edward Thorne*; I am a miner, living at Hillgrove; I know portion 113, of 40 acres; I know two boundaries; and this is the land Mr. Hack applied for; there are three distinct reefs running through it, two of which are auriferous; I am certain they contain payable gold; I found the reef the week before I pegged it out; I pegged it out on the 28th July, 1887; I then made application for a lease; I did not know Mr. Hack had applied for it when I pegged it out; I think the application of Thorne and party was on the 8th August, 1887, not the 28th July.

By Mr. Hack: I was not cautioned that if I prospected that land I was prospecting it for somebody else; it is unusual for a miner after finding a reef to allow it to lie for a week before pegging it out, but I was not on wages at the time.

EDWARD THORNE.

Sworn at Armidale, this 1st day of September, 1887, before us,— } SYDNEY BLYTHE, J.P., Chairman. C. E. SMITH, P.M.

THIS witness, being duly sworn, on oath, states:—My name is *Edward McNamara*; I am a miner; I am a partner with Thorne; I know the ground applied for by Mr. Hack; I did not know that he had applied for the 40 acres until such time that we had found payable gold; we found payable gold on the 29th July; Hack, after that, served us with a notice, saying it was his ground, and we still kept possession, and kept on working; there are three gold-bearing reefs, but whether two are payable I do not know, but one of them is; these three gold-bearing reefs are all on the land.

EDWARD McNAMARA.

Sworn at Armidale, this 1st day of September, 1887, before us,— } SYDNEY BLYTHE, J.P., Chairman. C. E. SMITH, P.M.

THIS witness, being duly sworn, on oath states:—My name is *Christopher Allingham*.

By Mr. Hack: I am a miner; in conversation I heard some one say to Thorne, "Mind you are not prospecting for other people;" it was after I saw in the paper that you had selected that portion.

C. ALLINGHAM.

Sworn at Armidale, this 1st day of September, 1887, before us,— } SYDNEY BLYTHE, J.P., Chairman. C. E. SMITH, P.M.

This closed the evidence.—S. BLYTHE, Chairman.

No. 8.

The Chairman, Land Board, Armidale, to The Under Secretary for Lands.

Crown Lands Act of 1884—(Part II, section 14, sub-section 7).

Reference by Local Land Board to Minister.

New South Wales, Armidale, } to wit. }

WHEREAS, on the 1st day of September, 1887, a case, wherein Alfred James Hack lodged an application at the Crown Lands Office, Armidale, on the 21st July, 1887, for a conditional purchase of 40 acres, in county of Sandon, parish of Metz or Cooney, and it being alleged that the said land contains valuable auriferous deposits, and since date of application has been proclaimed within a gold-field reserve (*Vide Gazette* No.

No. 489, page 5744, of 30th August, 1887), and the said matter came on for decision or adjudication before the Local Land Board, at Armidale, and the said Board having taken evidence, do now, instead of adjudicating further or deciding thereon, refer the case to the Honorable the Minister for Lands for decision.

Given under my hand, this 5th day of September, 1887, at Armidale,—

SYDNEY BLYTHE,
Chairman.

Submitted.—F.H.W., 26/9/87. C.O.

From the evidence there can be no doubt that the ground was open to conditional purchase at date of application, and has been since reserved as part of a gold-field. There can also be no doubt that it has been, since it was applied for, proved to be auriferous, but not by the applicant for the conditional purchase. Under this state of facts, I must confirm the conditional purchase. It will be for the miners, if they think fit, to apply to have permission to dig and search for gold, and then, on application, the conditional purchase may be resumed. The conditional purchaser should be informed of his position at time of Board carrying out this decision.—T.G., 12/11/87.

Enter in Precedent Book.—F.H.W., 14/11/87. Mr. Capper and Mr. Wilmot. Entered in Precedent Book.—W.E.T., 19/11/87. Entered.—G.W., 22/11/17. The Chairman, Local Land Board, Armidale.—F.H.W. (for the Under Secretary), B.C., 8/12/87. Confirmed. Applicant and Land Agent informed.

No. 9.

Mr. Warden Smith to The Under Secretary for Lands.

Armidale, C.P. 87-91, 47 sec. 21 July, 1887. A. J. Hack. 40 acres, county Sandon, parish Cooney, portion 113.

Armidale. Gold lease application, No. 1,328, 8 August, 1887, E. Hume. E. McNamara, and others. 10 acres, county Sandon, Baker's Creek, Hillgroove Falls.

Sir,

Warden's Office, Armidale, 22 October, 1887.

I have the honor to request that you will cause to be laid before the Honorable the Minister for Lands, as soon as possible, the papers in the case of A. J. Hack's application for a conditional purchase, particulars whereof are noted in the margin. My reason for making this request is, that an application for a gold-mining lease for 10 acres, by Edward Thorne and party, has been lodged here, which includes a portion of the land applied for by Hack, and until the Minister's confirmation or otherwise of Hack's application is known, I am unable to deal with Thorne and party's gold-lease application, against which Mr. Hack has lodged objection.

I have, &c.,

C. E. SMITH,
Warden.

No. 10.

The Under Secretary for Mines to The Under Secretary for Lands.

Sir,

Department of Mines, Sydney, 29th October, 1887.

I have the honor to invite your attention to my letter of the 26th August last, relative to conditional purchase application, 87-91, at Armidale, by Frederick Hack, for portion 113 of 40 acres, in the parish of Cooney, county of Sandon, in which, by direction of the Secretary for Mines, you were asked to be good enough to move the Secretary for Lands to disallow such conditional purchase, as there is reason to believe that the land is auriferous, and a portion of it has been applied for under a gold lease.

I have, &c.,

GERRARD E. HERRING
(For the Under Secretary).

[Urgent.] See decision on 87-32,529 D.—J.P.M., 22/11/87. See Ministerial decision on 87-32,529 C.S. Dep. herewith. Submitted that a circular be prepared and forwarded to Chairmen of Boards, quoting the same, for their information and guidance.—G.W., 23/11/87. The Assistant Under Secretary. Approved.—S.F., 23/11/87.

No. 11.

Mr. A. Argles to J. Inglis, Esq., M.P.

My dear Sir,

I drop you a few lines to inform you that A. J. Hack is still trying to get his conditional purchase on the gold-fields, kindly got proclaimed for the miners. So, yesterday, Mr. A. J. Hack tried to get an injunction to stop the miners working on block 113, parish of Metz, county of Cooney; and the miners own you have done a great thing for them. So, dear Mr. Inglis, would you kindly see Mr. Thomas Garrett, Minister for Lands, and state the case to him, and this is the same ground that I wrote you a letter about before. I also sent in a petition to the Minister for Mines, so, Mr. Inglis, you will do all you can for me and all the miners of Hillgrove Falls, and please will you see Mr. T. Garrett at once, as we want it done before the Land Board sit in Armidale, as we do not know what their little game is.

I hope you are enjoying good health.

I am, &c.,

ALFRED ARGLES
(Nephew to old General Argles, of India).

We have great trouble with more ground, but we will get it yet. I hope, of course, you know I am one of the tributers.—A.A.

Dear Garrett,—Kindly look into this, and oblige. Do what is right for the miners if you can.—J.I.

No. 12.

7

No. 12.

The Under Secretary for Land to The Under Secretary for Mines.

Sir, Department of Lands, Sydney, 15 December, 1887.

With reference to your letter of the 29th October last, No. 87–10,588, requesting that conditional purchase, No. 87–91, Armidale, by Frederick Hack, may be disallowed, as the land is believed to be auriferous, I have the honor to forward herewith copy of the decision given by the Minister for Lands in connection with the matter. Circular No. 87-58. Chairman.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

[*Enclosure.*]

Circular, No. 87-58.

Sir, Department of Lands, Sydney, 30 November, 1887.

A question having arisen as to whether Local Land Board should confirm applications for the conditional purchase of lands supposed to be auriferous, and which had been included in proclaimed gold-fields subsequently to the applications being received, but prior to the cases coming on for confirmation, I am directed to forward, for your information and guidance, a copy of a decision by Mr. Secretary Garrett on the point raised.

I have, &c.,
STEPHEN FREEMAN
(For the Under Secretary).

The Chairman, Local Land Board.

Copy referred to.

FROM the evidence, there can be no doubt that the ground was open to conditional purchase at date of application, and has been since reserved as part of a gold-field. There can also be no doubt that it has been, since it was applied for, proved to be auriferous, but not by the applicant for the conditional purchase. Under this state of facts I must confirm the conditional purchase. It will be for the miners, if they think fit, to apply to have permission to dig and search for gold, and then, on application, the conditional purchase may be resumed. The conditional purchaser should be informed of his position at time of Board carrying out this decision.

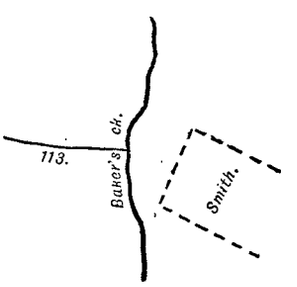
No. 13.

Memo. from Mr. District-Surveyor Finley to Mr. Surveyor Hogarth.

17 December, 1887.

WILL Mr. Hogarth be good enough to run a connection from north-east corner of portion 113, Cooney, to the south corner of Smith's 15-acre gold lease.

F. G. FINLEY,
District Surveyor.



Mr. D.-S. Finley,—The accompanying tracing, showing the desired connection is forwarded herewith.—HENRY HOGARTH, Surveyor. Armidale, 21/12/87. Very urgent.

No. 14.

Thorne and Party to The Land Board, Armidale.

Gentlemen, Armidale, 21 December, 1887.

We, the undersigned (Thorne and party), humbly beg you will not approve of Mr. A. J. Hack's selection, as we were on the ground working under our miners' rights before A. J. Hack applied for it, and we applied for a gold lease a few days after, not knowing of Mr. Hack doing so. One of the party acquainted Mr. Gordon about the matter, and wanted to lodge the objection to Hack, and Mr. Gordon told Mr. Gray that he thought the objection not necessary as it was on a water reserve, and old mineral conditional purchase, and they were working on their miners' rights, and I must state that the said land was proclaimed a gold-field, 30th August, 1887, a few days before the inquiry was held in the Warden's Court, at Armidale, and we have had the land surveyed, and have been working the land ever since. We first pegged it out, and have spent in labour and machinery the sum of £306, and there are three other gold leases applied for and surveyed on the same block, 113, and we, hoping you will consider the matter for the benefit of the mining community,

We are, &c.,
THORNE AND PARTY,
Hillgrove Mines.

[*Enclosure.*]

To the Minister for Lands,— Hillgrove Mines, 20 December, 1887.

Sir,

We, the undersigned miners of Hillgrove, humbly petition you not to grant the application of Mr. A. J. Hack, for portion of No. 113, 40 acres, on the following grounds: The said land being gazetted a gold-field (see *Government Gazette* 30 August, 1887); and if such is granted it will be a great injustice to the mining community, as the ground is totally unfit for any other purpose than that of mining; and as a large amount of money and labour has been expended, and gold lease applied for and surveyed on such application, we trust you will seriously consider the matter.

WM. B. NEALES, mining manager, Hillgrove.
SAMUEL NEWALL, miner, Hillgrove.
R. THOMPSON, miner, Hillgrove.

[Here follow 108 other signatures.]

The papers in this case were recently dealt with. Please state where they are. Immediate.—C.O., 28/12/87.

No. 15.

No. 15.

Thorne and party to The Chairman, Land Board, Armidale.

Sir, Armidale, 22 December, 1887.

At the request of the petitioners, I hand you enclosed petition, which I trust will have a good effect.

Yours, &c.,
THORNE AND PARTY,
Hillgrove Mines.

[*Enclosure.*]

To the Land Board, Armidale,— Hillgrove Mines, 20 December, 1887.

Gentlemen,

We, the undersigned miners of Hillgrove, humbly petition you not to grant the application of Mr. A. J. Hack, for portion No. 113, 40 acres, as a conditional purchase, on the following grounds :—The said land being gazetted a gold-field (see *Government Gazette*, 30th August, 1887); and if such is granted it will be a great injustice to the mining community, as the ground is totally unfit for any other purpose than that of mining, and as a large amount of money and labour has been expended in gold-mining, lease applied for and surveyed on such application, we trust you will seriously consider the matter.

WM. B. NEALES, mining manager, Hillgrove.
SAMUEL NEWALL, miner, Hillgrove.
R. THOMPSON, miner, Hillgrove.

[Here follow 112 other signatures.]

No. 16.

Mr. A. Argles to The Land Board, Armidale.

Gentlemen, Neutral Bay, 24 December, 1887.

I humbly beg you will consider the granting of A. J. Hack's selection, 40 acres, on block 113, old mineral conditional purchase, as there are four different places gold has been found, and gold leases applied for and surveyed; and Brereton and Smith applied for a lease, which takes a portion of 113, 40 acres, and was applied for two months before Hack put in his peg, and Thorne and party were working under their miners' rights before Hack applied, which I can swear, and I can get 100 miners to prove same, and I must remind you the Act says a man cannot take less than 40 acres; so when Brereton and party take their portion off with his claim, there cannot be 40 acres, as the block 113 was surveyed to one Moore as a 40-acre mineral conditional purchase. So, gentlemen, I humbly hope you will seriously consider the matter, as, if granted, it will be a great injustice to the miners, and will be the downfall of the Hillgrove mines, as all the reefs run right into this, and will stop the miners from getting wood, and allowing the principal 40 acres to be shut up, and the Government to receive only £40 per year, and no labour to comply with.

Whereas if for mining it will bring in hundreds of pounds to the revenue; and I must state this ground was proclaimed a gold-field on the 30th August, 1887, and before the inquiry was held in the Warden's Court in Armidale. As I must ask you gentlemen not to close the mining up in this valuable district, as I am a mining expert, and I must speak well of Hillgrove Falls mines, and it will become a big place, and begging you will not stop the mining industry.

I have, &c.,
ALFRED ARGLES,
Hillgrove Falls Mines, Armidale.

We interview the Minister for Lands to-morrow, with petition signed.

No. 17.

Mr. W. Gray to The Secretary for Lands.

Sir, Hillgrove Mines, 24 December, 1887.

I beg your humble services. I wish to draw your notice to portion of land situated at Hillgrove Falls, in the parish of Metz, county of Sandon, portion 113, has been applied for by A. J. Hack as a conditional purchase in July. There was one gold lease taken up on the portion in April last, and there are three more since July. I beg, sir, to bring before your notice that this block of land is not fit for anything but mining purposes, as you could not stand on the surface, some places being perpendicular, and by granting this as a selection it would be a loss to the Government of £40 a year. There are 22 acres taken on it now, and if cancelled there will be 23 more taken on that portion. I myself will be one. There would be a great population here if it is not granted.

I have, &c.,
WILLIAM GRAY.

No. 18.

Mr. District-Surveyor Finley to The Chairman, Land Board, Armidale.

(No. 87–34). A. J. Hack's Conditional Purchase, 87–91, 21st July, 1887.

Sir, District Survey Office, Armidale, 27 December, 1887.

Plan showing conflicting applications. Plan showing encroachments. Memo. and tracing showing Mr. Surveyor Hogarth's connection survey

Since forwarding you my report dated 30th August, 1887, No. 167, on the above conditional purchase, for preliminary hearing at your Court of 1st September, 1887, several circumstances have arisen, which present apparent objections to the immediate confirmation of the conditional purchase, and I now have the honor to draw your attention to them.

A. J. Hack's application was lodged on the 21st July, 1887, but there was an application by Brereton and Smith for an 8-acre gold lease, No. 166, of prior date, in existence, viz., of the 30th April, 1887. Hack's conditional purchase encroached on this lease. There is also an application by Thorne & Co. for a 10-acre gold lease, No. 169, which encroaches on Hack's conditional purchase, but it is of a later

later date, viz., 8th August, 1887. Those two gold leases conflicted, and I believe the dispute has been before the Warden, who had recommended certain boundaries. There is still a third conflicting claim to the land by Hanlon & Co. for a 4-acre gold lease, but this is also of more recent date than the conditional purchase, viz., 22nd September, 1887.

At the time of application Hack's conditional purchase was a measured portion, No. 113, of 40 acres.

All the gold leases which encroach on, or conflict with, conditional purchase, have only recently been surveyed, and at the date of my first report to you it was impossible to locate them, nor was their position known, so that no mention was made of them. In fact, after survey it could not be done until a surveyor was sent from this Department to define the relative positions of the leases and the conditional purchase.

From the foregoing it is clear that the only claim which can stand against Hack's conditional purchase, is gold lease No. 166, Brereton and Smith. This lease is of prior date; all other leases are of more recent date. The area excised from Hack's conditional purchase is clearly shown on the accompanying plan, as also are all other encroachments. According to the boundaries claimed by Brereton and Smith, and as surveyed to him, the extent of the encroachment is about 32 perches, but according to the recommendation by the Warden, consequent on dispute between Brereton and Smith and Thorne & Co., the encroachment is only about 8 perches, a very small area.

In either case the surplus area in the portion will admit of the encroachment and still leave a residue of 40 acres.

The following questions arise:—

1. Will not a subdivision of portion 113 be necessary, and Hack called upon to pay a subdivision fee in terms of the 55th section of the Act?

2. Or does the fact of the land being a measured portion of 40 acres, and there being only a residue of such portion, invalidate Hack's claim, or can the adjustment suggested in question 1 be made in terms of the 58th section of the Act?

I have, &c.,
F. G. FINLEY,
District Surveyor.

No. 18A.

Telegram from The Under Secretary for Lands to The Chairman, Land Board, Armidale.

Sydney, 28 December, 1887.

PLEASE return at once for further perusal papers 87-32,529, Departmental, *re* A. J. Hack's conditional purchase, 87-91, Armidale, portion 113 of 40 acres, sent you 9th instant. Any action in matter should in meantime be suspended.

CHARLES OLIVER,
Under Secretary.

No. 19.

Mr. R. Burchess to The Chairman, Land Board, Armidale.

Dear Sir, Hillgrove, 28 December, 1887.

Concerning this block of land, No. 113, situated on Baker's Creek, Hillgrove Falls, there is now another lease taken up on it and paid for. The land is fit for no other purpose but mining purposes, and it would be a sacrifice to allow any one to select it, as it is a very valuable portion of land; if it was selected it would be hundreds out of the Government's pocket, as well as the miner. There is already two leases taken up on it. I myself intend to take up another portion of it if it is not granted to Hack. Brereton and party have got a portion of it, and Smith and party have got a portion of it, and Thorne and party have got a portion of it, and Dewar and party have got 10 acres of it, and there are several more waiting to take up land on it should it be thrown out, as that is the wish of all the men at Hillgrove Falls that it should be thrown out. On the 30th of August it appeared in the *Gazette*, 20 square miles thrown into a gold-field. The portion that Brereton took up was taken up in May, some two months before Hack applied. As far as grazing purposes goes, it is no use at all, and to fence it in is impossible.

Yours, &c.,
RICHARD BURCHESS.

No. 20.

H. W. Forster, Esq., to The Secretary for Lands.

Re Hack's application for 40 acres, conditional purchase, Thorne and party; application for 10 acres, gold-mining lease.

Sir, 167, York-street, 28 December, 1887.

Following my interview with you this morning, I now, as requested, write you the facts of the above application.

On the 20th July last Mr. Hack applied for a conditional purchase of 40 acres, at Hillgrove Falls. Previously to Hack's application Thorne and Gray, of the party of Thorne and party, were in possession of the ground, for which they applied for a gold-mining lease, by virtue of their miners' rights.

On the 29th July last, Thorne and party gave notice of intention to apply for a 10-acre gold-mining lease (they having at that time proved the ground to contain a payable gold-bearing reef), and in the terms of the Mining Act, on the 8th August following, Thorne and party applied for their said lease, and paid the requisite amount. Since that time Thorne and party have expended on the ground upwards of £300 in making a drive of 45 feet and a shaft of 32 feet deep, and also in erecting plant for quartz-crushing purposes. Thorne and party have, up to the present, obtained some 23 oz. of gold from the mine, and have now at grass about 25 tons of quartz ready for crushing.

On the 20th of April, previously to Hack's application, Brereton and party took up a gold-mining lease of 8 acres, which 8 acres was formed by cutting off a portion of the land since applied for by Hack.

The

The land applied for by Hack was originally a 40-acre mineral conditional purchase known as block 113, and the portion taken by Brereton reduces the land applied for by Hack below 40 acres (*see* section 24 of 48 Victoria 18). The land applied for is situated within the Eastern Division, and sub-section 1 of section 47 of the said Act, both of which sections say that no area shall be less than 40 acres.

The 40 acres applied for by Hack was on the 30th day of August last past proclaimed a gold-field and gazetted as such on that date; therefore, as the land had not up to that time nor since been alienated from the Crown to Hack, his claim for a conditional purchase cannot be sustained.

My clients, Thorne and party, claim a right to this 10 acres by virtue of their miners' rights and virtue of their application for a gold-mining lease on Crown lands. (*See* Interpretation of Crown Lands, section 2, of the Mining, 37 Victoria, No. 13, which states "All lands, &c., which have not been granted *in fee*, or lawfully contracted to be so granted;" also, section 39, 46 Victoria, No. 7, which says that land open to lease and of which possession shall have been taken shall be deemed to be held under promise of lease and to be exempt from sale, &c. *See* also sub-sections 6 and 8 of section 21 of Crown Lands Act, 48 Victoria, No. 18.)

I have personally viewed the land applied for by Hack, and can unhesitatingly say the land, on account of its precipitous and rocky nature, is totally unsuited for a *bonâ fide* selection.

Being informed that Hack's application is to be heard before the Local Land Board, at Armidale, on the 29th December instant, I have hurriedly prepared the foregoing facts for your perusal, in order to prevent this application being granted and an injustice done to my clients, who are, I submit, on the facts stated, legally entitled to their gold-mining lease, as applied for.

Having every confidence that you will see my clients justly dealt with,

I have, &c.,
H. W. FORSTER,
Solicitor.

Telegraph to the Chairman, and request that the papers may be returned for further perusal, and intimate that any action in the matter should, in the meantime, be suspended.—C.O., 28/12/87. Telegram sent, 28/12/87.

No. 21.

Telegram from The Under Secretary for Lands to The Chairman, Land Board, Armidale.

Sydney, 28 September, 1887.

PLEASE return at once, for further perusal, papers 32,529 of 87, Departmental, *re* A. J. Hack's conditional purchase application 91 of 87, Armidale, portion 113, of 40 acres, to you 9th instant. Any action in meantime should be suspended.

CHARLES OLIVER,
Under Secretary for Lands.

No. 22.

Telegram from the Chairman, Land Board Armidale, to The Under Secretary for Lands.

29 December, 1887.

IN reply to your telegram, received yesterday evening, Hack's case was set down for consideration to-day, but withdrawn, and the papers forwarded by post this day.

SYDNEY BLYTHE,
Chairman, Local Land Board.

No. 23.

The Chairman, Land Board, Armidale, to The Under Secretary for Lands.

Sir, Local Land Board Office, Armidale, 29 December, 1887.

C.P. 87-91, parish Cooney, county Sandon, Armidale, Alfred James Hack, 40 acres.

In obedience to your telegram of yesterday, I do myself the honor to forward herewith all papers in connection with the case named in the margin. This matter was set down for consideration by the Board for this day, but withdrawn, as stated in my telegram. Several letters which were received by the Board in this connection will be found with the papers, all strongly protesting against the confirmation of Hack's application.

I have, &c.,
SYDNEY BLYTHE,
Chairman.

Submitted.—C.O., 4/1/88.

From the facts as now set out in the District Surveyor's report, and which were not before me when I gave the decision on 32,529, it is clear that application is open to objection on two grounds, that part of the area was in occupation for mining purposes when it was applied for by Hack as a condititonal purchase, and that, if the area of the gold lease applied for prior to date of Hack's application is deducted, there will not then be 40 acres available in the portion. The case should be referred back to the Board for reconsideration as to the above two grounds of objection.—T.G., 4/1/88.

The Chairman, Armidale.—C.O., B.C., 4/1/88.

No. 24.

Mr. A. Harlow to The Chairman, Land Board, Armidale.

Sir, Armidale, 29 December, 1887.

I object to the granting of a selection on block 113 to Mr. Hack on the ground that it is auriferous, that there are several parties applying for gold leases on it, and others intending to apply as soon as it is settled if it can be proved that the ground is gold bearing, and it is not fit for grazing purposes.

I have, &c.,
A. HARLOW.

No. 25.

No. 25.

Mr. P. Dewar to The Chairman, Land Board, Armidale.

Sir, Armidale, 29 December, 1887.

I strongly object to the granting of a selection to Mr. Hack, on block 113, on the ground that it is auriferous, and I and party have applied for a gold lease on it, and there are several parties waiting to see how the case goes. It will be a valuable piece of ground for mining purposes, and it is not fit for grazing purposes. I shall be in the Court, and if any evidence should be required I shall be ready to state what I know about it. I can prove it to be auriferous, having some of the stone with me.

I have, &c.,
PETER DEWAR.

No. 26.

Mr. W. Black to The Secretary for Lands.

Respected Sir, Hillgrove Mines, December, 1887.

I humbly beg to ask you as a favour not to sanction Mr. A. J. Hack's application for a freehold lease of block 113, in the parish of Metz, county of Sandon. My reason, kind Sir, is—Firstly, it would benefit the Government fourfold a year if kept as a mining lease, whereas, if granted as a freehold, the yearly rental would not amount to as much as a mineral lease. I further beg to bring to your notice that the locality is not suited as a freehold, as its gradient being so steep it is as much as a man can do to stand on the surface, being nearly a perpendicular. I further wish to tell you, Sir, that a portion of this block (113) was taken up in April last as a mining lease, and since then (in July) Mr. A. J. Hack has applied for the above block as a freehold. I therefore beg of you, kind Sir, to consider the matter, and humbly begging of you not to grant the freehold lease, as the Government will derive very little benefit if let as a freehold. I further beg to inform you, Sir, that I, together with others, will take a lease of the block as a mining lease on conditions it is not granted as a freehold.

Trusting, kind Sir, you will carefully consider the matter, both for the benefit of the Government and the working miners,

I have, &c.,
WALTER BLACK.

Referred to the District Surveyor at Armidale as to how the land was applied for and for what purpose.—C.O., B.C., 4/2/88. *Vide* papers, C.S., 87-59,278. Forwarded to Head Office by Local Land Board on 30th January, 1888.—F. G. FINLEY, District Surveyor, 7/2/88.

This case has been under consideration, both by the Honorable the Minister and the Local Land Board for some time. The whole of the papers in the case were forwarded to Sydney by the Local Land Board on the 30th January, 1888. The land was applied for as a conditional purchase by A. J. Hack on 21st July as conditional purchase 87-91, but I would suggest that this paper be attached to the papers in the case.—F. G. FINLEY, District Surveyor, 7/2/88.

No. 27.

Statutory Declaration by W. H. Gray.

I, WILLIAM HENRY GRAY, of Hillgrove Falls, near Armidale, in the Colony of New South Wales, miner, do hereby solemnly and sincerely declare as follows:—That I, and Edward Thorne, for ourselves and party, did, on Saturday, the 16th day of July last past, peg out five men's ground, on the line of reef at Gara Falls, and went into possession thereof, and have continued in such possession to this date, and I and Edward Thorne, for ourselves and party, are the holders of miners' rights, and were the holders of miners' rights at the time of taking such possession, and marking out the five men's ground on the 16th day of July last, as aforesaid. We have worked the ground, and have been until very recently in the undisturbed possession thereof. The five men's ground above mentioned is alleged to be selected as a mineral conditional purchase by one A. J. Hack on the 20th day of July last. The five men's ground pegged out as aforesaid was taken up for Edward Thorne, Richard Golden, Thomas Smith, William Leslie, and myself, all the holders of miners' rights, and such ground is within the proclamation gold-field Hillgrove Falls. And I make this solemn declaration, conscientiously believing the same to be true, and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled, "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oaths and Affidavits."

Subscribed and declared at Armidale, this 3rd day of January, 1888, before me,— } WILLIAM HENRY GRAY.

A. M. SIMPSON,
A Commissioner for Affidavits and Notary Public, Armidale.

Forwarded to the Chairman, at Armidale, in connection with previous papers.—C.O., B.C., 5/1/88.

No. 28.

Mr. J. McNamara to The Secretary for Lands.

A. J. Hack's conditional purchase, Armidale.

Dear Sir, Waltham Buildings, Bond-street, Sydney, 3 January, 1888.

I have been instructed to act in this matter, but have not yet had an opportunity of perusing the papers.

I shall, therefore, be obliged if you would postpone dealing with the matter until I have had an opportunity of perusing the papers, say until Tuesday next.

Yours faithfully,
M. J. McNAMARA.

P.S.—Kindly let me know that you will hold matter over till I see the papers.

No. 29.

Telegram from the Clerk-in-charge, Armidale, to The Under Secretary for Lands.

Armidale, 7 January, 1888.

Re Hack's application for conditional purchase, 87–91, Armidale, Chairman desires to know if it will be necessary for Brereton and others to be notified to appear at Court, and if you will please have all papers connected with Brereton and Thorne and party's application for mining leases on same land forwarded to this office at once, as the case is for hearing on 20th instant.

H. T. MAKIN,
Clerk-in-charge, Local Land Board, Armidale.

Brereton and others should be summoned to give evidence. The Department of Mines will be asked to forward papers.—C.O., 7/1/88. Wire, 7/1/88. Under Secretary for Mines to forward papers, 9/1/88.

No. 30.

Telegram from the Under Secretary for Lands to The Chairman, Land Board, Armidale.

7 January, 1888.

In reply your to-day's wire, Brereton and others should be summoned to give evidence, Department of Mines will be asked to forward papers.

H. CURRY
(For the Under Secretary).

No. 31.

The Chairman, Land Board, Inverell, to The Clerk-in-charge, Armidale.

9 January, 1888.

I think it will only be necessary to summon Brereton and party, as from report of District Surveyor, the applications from others were subsequent to the date of Hack's. By all means notify Mr. Hogarth to attend.

SYDNEY BLYTHE,
Chairman, Local Land Board.

No. 32.

Summons of Witness.

Crown Lands Act of 1884—(Part II, section 14, sub-sections 2 and 9).

New South Wales, Armidale, } to wit. }

To Henry Hogarth, Licensed Surveyor, of Armidale.

Whereas in a certain matter wherein Alfred James Hack applied on the 21st July, 1887, for a conditional purchase of 40 acres, in the county of Sandon, parish of Metz or Cooney, part of which it is alleged was under mining lease to Smith and Brereton at date of the said A. J. Hack's application, it hath been made to appear that you are likely to give material evidence touching the said matter. These are, therefore, in Her Majesty's name, to command you to be, and appear on Friday, the twentieth day of January instant, at ten of the clock in the forenoon, at the Court-house at Armidale, and then and there give such evidence, and testify to what you may know concerning the matter, and produce all books, papers, deeds, and documents, which may be in your possession or under your control, having any reference to the matter under investigation, and so attend from day to day till the said matter be disposed of.

Given under my hand at Armidale, this 9th day of January, 1888,—

C. E. SMITH, P.M.,
Member of the Local Land Board.

Original summons of witness handed this day by me to Mrs. Hogarth for Mr. Hogarth.

C. BECKINGHAM,
9th January, 1888.

No. 33.

Summons of Witness.

Crown Lands Act of 1884—(Part II, section 14, sub-sections 2 and 9).

New South Wales, Armidale, } to wit. }

To George Smith and William Gordon Brereton, of Hillgrove, trading as Smith and Party.

Whereas in a certain matter wherein Alfred James Hack applied on the 21st July, 1887, for a conditional purchase of 40 acres, in the county of Sandon, parish of Metz or Cooney, part of which it is alleged was under mining lease to you at date of the said A. J. Hack's application, it hath been made to appear that you are likely to give material evidence touching the said matter. These are, therefore, in Her Majesty's name, to command you to be, and appear on Friday, the twentieth day of January instant, at ten of the clock in the forenoon, at the Court-house at Armidale, and then and there give such evidence, and testify to

to what you may know concerning the matter, and produce all books, papers, deeds, and documents, which may be in your possession or under your control, having any reference to the matter under investigation, and so attend from day to day till the said matter be disposed of.

Given under my hand at Armidale, this 9th day of January, 1888,—

C. E. SMITH, P.M.,
Member of the Local Land Board.

Summons served this day on Mr. Brereton, who accepted same on behalf of himself and George Smith.

JOS. H. HEALEY,
9th January, 1888.

No. 34.

The Under Secretary for Lands to The Under Secretary for Mines.

Sir, Department of Lands, Sydney, 9 January, 1888.

With reference to the conditional purchase noted in the margin, which will be dealt with by the Local Land Board on the 20th instant, I have the honor to request that you will be so good as to forward to the office, with a view to being referred to the Chairman, by the date above mentioned, all papers relating to the application by Messrs. Brereton and party and Thorne and party for mineral leases on the land in question.

[Very urgent.]

Armidale, C.P. 87-91, parish Metz or Cooney, county Sandon; Mr. Hack.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

The papers may be supplied.—H.W., 10/1/88. The other papers in this case have been forwarded to the Warden for production in Court.—G.E.H. (for the Under Secretary), 13/1/88. May now be forwarded to the Chairman of the Armidale Board, as desired by telegram of the 7th instant.—W.H.C.—17/1/88. Yes.—F.H.W. (for the Under Secretary), 17/1/88.

No. 35.

Office Memorandum.

The enclosed papers referring to the conditional purchase, quoted in the margin are forwarded to the Chairman of the Local Land Board, Armidale, as desired by his telegram of 7th instant.

88-1,907 D. C.P. 87-91, Armidale. A. J. Hack

F.H.W.
(For the Under Secretary), B.C., 17/1/88.

The enclosed papers are now returned to the Department, together with all others relating to the case.—SYDNEY BLYTHE, Chairman, B.C., 27/1/88. To the Under Secretary for Lands, Sydney.

No. 35A.

Caption to Depositions of Witnesses.

Crown Lands Act of 1884—(Part II, section 14, sub-section 1).

New South Wales, }
to wit. }

THE examination of William Gordon Brereton, of Hillgrove, in the Colony of New South Wales, miner; Edward Thorne, of Hillgrove, miner; William Gray, of Hillgrove, miner; Henry Hogarth, of Armidale, Government Surveyor; John Griffin Martyn, of Armidale, Licensed Surveyor; Walter Warner, of Armidale, Licensed Surveyor; and George Smith, of Hillgrove, miner, in the said Colony.

WHEREAS it hath been alleged that a part of the area contained within the conditional purchase application named in the margin, was in occupation for mining purposes, when it was applied for as a conditional purchase, and that if the area so held for mining purposes, prior to the date of Hack's application be deducted from the area applied for, there would not be 40 acres available within the measured portion as applied for by Hack, and it hath been found necessary to investigate the said matter on oath, the depositions of the several witnesses are appended hereto.

C.P. 87-91. Parish Cooney, county Sandon, Armidale. Alfred Jas. Hack; 40 acres; 21 July, 1887.

THIS witness, being duly sworn, on oath, states:—My name is *William Gordon Brereton*; I am one of the partners in Brereton and party, who made application for a gold-mining lease No. 1,323, in the county of Sandon, parish of Cooney; our party were in occupation on the 30th April, 1887, for mining purposes of that land, which has since been measured to us as a gold-lease; that broken blue line on tracing now shown to me (marked A) indicates the dividing line between our party and Thorne and Company; I observe that that broken blue line slightly encroaches on the measured portion No. 113, and it is in my knowledge that that portion has been applied for by A. J. Hack as a conditional purchase; I have heard the letter, dated 7th January instant, addressed to the Minister for Mines read; that letter is signed by me for myself and partner, and in that letter we desire that the portion of our lease which encroaches on portion 113 may be excused therefrom; to that letter we have had no reply; we still desire that that small portion of our lease which encroaches on portion 113 may be excused from such lease; we were in occupation of the land described on 30th April, 1887, for mining purposes, by virtue of an application (marked B) lodged by us and bearing that date; that application gives a description of the land, a portion of which, on measurement, was found to encroach on portion No. 113, and we are still in occupation of the same land.

By Mr. M'Donald, J.P., solicitor: We paid for this lease on the 30th April, 1887, and we pegged it out eight or ten days before, and since the time we took possession, we have done a lot of work on this lease, and we have not done any work on the encroachment on portion 113; our starting point was in a south-westerly direction 3 or 4 chains from a tree marked 113.

By Mr. Forster, solicitor: In my original application, the firm blue line on tracing marked A indicates our southern boundary. That line would be a much greater encroachment on portion 113 than the line we have agreed upon with Thorne and party, and that was one of the boundary lines which we applied for as a gold-mining lease; at the time I applied for that land, I understood it was Crown lands; I was told it was a forfeited block (portion 113); we may have broken some

stones

stones on that portion of our lease which was included in measured portion 113; I did not sign a petition against the application of A. J. Hack; I was never asked to do so; I have seen a letter (read to me by the Board) signed by me on behalf of myself and party, made by me on my own free will and accord, and without the consent of my partner; my reason for not consulting George Smith, whose name appears appended to the letter dated 7th January, 1888, was that Smith has ceased to be a partner in this lease, and will transfer to my son his share whenever the lease is granted; this agreement to transfer was made a couple of months ago, but only signed this year; I think it was signed after the date of the letter referred to; I think the date was the 13th January, 1888.

By Mr. M'Donald, solicitor: I had the consent of my son to act for him; there was money paid a couple of months previous to the letter, but no written agreement drawn up.

Sworn at Armidale, this 20th day of January, 1888, before us,— W. G. BRERETON.

SYDNEY BLYTHE, J.P., Chairman.
C. E. SMITH, P.M.
B. A. MOSES, J.P.

Mr. Brereton, recalled by desire of Mr. Forster, solicitor:—We agreed to accept this modification of our southern boundary line, as shown by broken blue line on tracing "A," in the month of December last.

Sworn at Armidale, this 20th day of January, 1888, before us,— W. G. BRERETON.

SYDNEY BLYTHE, J.P., Chairman.
C. E. SMITH, P.M.
B. A. MOSES, J.P.

By Mr. Forster, solicitor: This witness, being duly sworn, on oath, states as follows:—My name is *Edward Thorne*; I am a gold-miner; I hold a gold-miner's right; I had a gold-miner's right last year, 1887; I see plan marked "A" and the portion No. 169 gold lease marked Thorne and company; that is the land applied for by us as a gold-mining lease; Gray was my partner at the time; previously to my making application for this land as a gold lease, I had possession of it by virtue of my miner's right; we were on the ground before the 16th July, 1887, and we pegged it out on the 16th July, 1887; by virtue of the miners' rights we pegged it out on the 16th; we pegged out five men's ground; it was on the reef, and the reef is inside portion 113; I know the boundary of portion 113; I daresay the reef is 2 or 3 chains south of the northern boundary of portion 113, that is, south of the north-east corner of portion 113 at the creek.

By Mr. M'Donald, solicitor: I and Gray pegged out five men's ground on the west line on the reef; that would be about 300 feet long and about 200 feet wide; the five men's name were Thorne, Gray, Leslie, Golding, Emerson; their Christian names are—Edward Thorne, William Gray, William Leslie, Richard Golding, and David Emerson; none of them were on the ground, with the exception of myself and Gray; they all went on the ground at different times; I have been mining for some years, and I cannot say that I do know the mining regulations here; I suppose there has to be a man to every claim; I mean a man to every 60 feet; there was not a man working on every 60 feet; there were only two of us working on the land at the time we took possession of it by virtue of our miners' rights; within three days after we pegged it out, the three other men I have mentioned went to work on it, so that there were five of us working it within three days; they were prospectieg only for an hour or two on the third day; I was working continuously myself from the 16th on the lease; Gray also worked continuously from the time of pegging out; Golding used to come down two or three times a week; this is between the time we pegged it out and our application for the lease; he used to prospect when he came down; I mean he used to be napping stones when he came down; I am aware that Golding lived in Armidale at that time; Leslie did not work on the land from the 16th; Leslie did not work at all on the ground; Leslie never went there at all, and did not have a man to represent him; Emerson worked on the land within the three days; he continued to work on the ground; I went to Hillgrove 8th July; I started to work for Brereton on that day, but not on this land, and I worked a fortnight for Brereton; it was not after I left Brereton that that land was pegged out; I was in Brereton's employ when I pegged it out; I did my eight hours a day with him, and Gray was employed the same time as I was; I marked out the ground on the 29th July, 1887, for a gold lease of 10 acres, and took possession on that date; I, Michael McNamara, and Edward McNamara marked it out; Mr. Argles and Mr. Edwards were the other two partners; these were the only persons interested in the lease; Leslie, Golding, and Emerson had no interest in the application for the lease; we had a falling out the same day as we pegged out; I swear that it was pegged out twice; we did not peg out the same land in our application for lease as we had pegged out under our miners' rights, but that pegged out under miners' rights was so included in the land applied for as a gold lease; the five men's ground was pegged out about the middle of the 10-acre lease; I gave evidence in the Warden's Court in dispute between myself and Brereton; in giving evidence at that inquiry, I did not say anything about my pegging out under my miner's right; I know that all my mates had miners' rights at the time I pegged it out.

By Mr. Forster, solicitor: At the time I gave evidence with regard to the boundaries between myself and Brereton and party, it was with reference to the boundaries of mining leases only, and the ground pegged out by virtue of miners' rights was not in question; the work I did on the ground at the time was in search of gold; I found quartz about that place about a week before we found the reef.

By the Board: I only know the north-east corner of portion 113, the one on the creek; I can swear distinctly that the ground that we pegged out, as stated by the virtue of our miners' rights, was within the boundaries of measured portion 113, and it was on the 16th July I pegged it out; I could only see one tree blazed on the northern line of portion 113, and it might be 2 or 3 chains or 4 chains west from that, and it was to the south of that blazed tree that we were working under our miners' rights; I think the ground we first occupied ran close alongside the blazed tree mentioned.

Sworn at Armidale, this 20th day of January, 1888, before us,— E. THORNE.

SYDNEY BLYTHE, J.P., Chairman,
C. E. SMITH, P.M.,
B. A. MOSES, J.P.

Examined by Mr. Forster, solicitor: This witness, being duly sworn, on oath, states:—My names is *William Gray*; I am a gold-miner, and hold a miner's right, and held one in the year 1887; I am a partner with Thorne; I know block 113; I know the northern corner of block 113 on the creek; we took up originally by virtue of my miner's right on the 16th July, 1887; we took up about 300 feet by 200 feet; the greater part of the ground I took up on that occasion is south of the northern portion 113; looking at the tracing marked "A" nearly all the ground would be in it; the name of the parties that took up this ground were W. Gray, Edward Thorne, David Emerson, William Leslie, and R. Golding; those pegs were never shifted, and we pegged out the ground again for a gold-mining lease of 10 acres; in that 10 acres pegged out was included the five men's ground; we prospected the ground for a reef; at the time I pegged out the five men's ground I was working for Mr. Brereton, and worked eight hours a day, and used to work on our ground before we went to work for Brereton, and after we had finished our work for him; I see plan marked "A," and see block marked 169, and that shows an encroachment on portion 113; I also see a dotted blue line, that is our present line, and the one agreed upon as our boundary and Brereton's, and that also was an encroachment on portion 113; I do not think the present line between our lease and Brereton's is above a chain from the creek; we made application for this lease 29th July, and paid for same on the 8th August, 1887; nobody interfered with us while we had this land marked out.

By Mr. M'Donald, solicitor: I have not got my miner's right with me; I took it out about the first of the year; I helped to peg out the ground with Thorne on the 16th July, 1887; it was about 12 or 1 o'clock in the day; I pegged it out on a Saturday, but I cannot say the correct time; some of my mates went on to the ground after we pegged it out; Golding was there, and sometimes came out for a week at a time; Golding was there nearly every day prospecting on the ground between the 16th and 29th of July; Emerson was camped there, and was working on the ground between the dates mentioned; Leslie was not on the ground when we pegged it out; he has been on the ground, but I could not say between

the 16th and 29th of July; Thorne and I have been working the ground sometimes before 7 o'clock in the morning; I knocked off working for Brereton somewhere about the 18th July; we were on the ground long before the 16th July; I cannot state the exact time I left off work for Brereton.

By Mr. Forster, solicitor: Our datum post is inside portion 113 somewhere about a chain.

Sworn at Armidale, this 20th day of January, 1888, before us,— WILLIAM GRAY.

SYDNEY BLYTHE, J.P., Chairman.
C. E. SMITH, P.M.
B. A. MOSES, J.P.

[This closed evidence with regard to the first ground as contained in the Minister's minutes.]

By the Board: This deponent, being duly sworn, on oath, states:—My name is *Henry Hogarth*, Government surveyor, residing in Armidale; under instructions I visited portion 113, applied for by A. J. Hack as a conditional purchase on 21st July, 1887; my duties out there were merely to make a connection between Smith's gold lease and the north-east corner of portion 113; the tracing now shown me, marked "D," is the one prepared; according to the tracing it would encroach on portion 113, but I am not prepared to say that is the correct position of Brereton's lease; I looked at the tracing marked "A"; assuming that the blue dotted line on that plan is the correct one, there would be an encroachment on measured portion No. 113; I made that encroachment by scale measurement 10 perches; I have not actually measured it; assuming that were taken out of portion 113, I am not in a position to state whether or no there would be still left 40 acres within that portion; I could not state this without an actual survey.

By Mr. Forster, solicitor: Assuming the firm blue line to be correct, the boundary there would be a greater encroachment than by the blue broken line; by scale measurement there would be 36 perches; the area of five men's ground would be 1 acre 1 rood 16 perches, and assuming that portion 113 is 40 acres, it would be considerably less than 40 acres if that area were deducted; I did not survey this block.

By the Board: Assuming the area to be pegged out as quartz claims, five men would be entitled to a considerably greater area than that stated by Mr. Forster, and would, in fact, exceed 2 acres 32 perches, that being the allowance for four men.

Sworn at Armidale, this 20th day of January, 1888, before us,— HENRY HOGARTH.

SYDNEY BLYTHE, J.P., Chairman.
C. E. SMITH, P.M.
B. A. MOSES, J.P.

By Mr. M'Donald, solicitor: This witness, who being duly sworn, on oath, states:—My name is *John Griffin Martyn*, licensed surveyor, in Armidale; some years ago I made a survey of portion 113, in parish Cooney; I made the survey in the last week in January, 1882; it was a portion of 40 acres; the actual measurement is 40 acres 2 roods and 24 perches; I have not been on the ground since for the purpose of measuring any encroachment as shown on plan marked "A"; I have refreshed my memory by my field book with regard to the above fact.

By Mr. Forster, solicitor: Assuming five men's land were taken out of the land, 300 x 200 feet, it would be 1 acre 1 rood 16 perches; if that area were taken out there would not be 40 acres in measured portion 113.

By Mr. M'Donald, solicitor: I am quite sure that there would be 1 acre 1 rood and 16 perches to be deducted from area.

By the Board: It is usual on frontage blocks to omit the roods and perches in writing the area on the plan.

Sworn at Armidale, this 20th day of January, 1888, before us,— JOHN G. MARTYN.

SYDNEY BLYTHE, J.P., Chairman.
C. E. SMITH, P.M.
B. A. MOSES, J.P.

Examined by Mr. M'Donald, solicitor: This witness, being duly sworn, on oath, states:—My name is *Walter Warner*; I am a licensed surveyor in this district; I made a survey of an encroachment on portion 113, parish Cooney, this morning; I surveyed the encroachment shown by dotted blue line on tracing marked "A"; the encroachment on portion 113 is between 11 and 12 perches; that is the exact measurement; I did not survey the encroachment shown by firm line; I only surveyed that shown by dotted blue line; I calculated the encroachment shown by firm blue line is slightly over a quarter of an acre, and I made that calculation on the ground.

By Mr. Forster, solicitor: The boundary peg of Brereton was found by me; I found the corner pegs of portion 113; I did not survey block 113; I heard Mr. Martyn and Mr. Hogarth giving their evidence; assuming that a block of 300 x 200 feet were taken out of block 113 apart from the encroachment there would be 1 acre 1 rood and 16 perches in reduction of area.

Sworn at Armidale, this 20th day of September, 1888, before us,— WALTER WARNER.

SYDNEY BLYTHE, J.P., Chairman.
C. E. SMITH, P.M.
B. A. MOSES, J.P.

W. G. Brereton, recalled by Mr. M'Donald, solicitor: Gray left off working for me on the 28th July, 1887, and Thorne on the 26th; they had been working for me a little over a fortnight; they worked from half-past 7 to 5 at night, with an hour for their dinner; all I know is that they pegged on to our ground and outside of portion 113 altogether, and they might have pegged inside altogether.

By Mr. Forster, solicitor: They just worked eight and a half hours; there was a little wet weather during the time they worked for me; Thorne worked only for about an hour the first day he worked for me; I made the note of the payment in my book on the 26th July, 1887; they told me they were going to leave, as they had found some ground; I did not make a note of this.

Sworn at Armidale, this 20th day of January, 1888, before us,— W. G. BRERETON.

SYDNEY BLYTHE, J.P., Chairman.
C. E. SMITH, P.M.
B. A. MOSES, J.P.

Examined by Mr. M'Donald, solicitor: This deponent, being duly sworn, on oath, states:—My name is *Charles Leonard Badham*; I was Mining Registrar during last year, and up to January this year, and have made search to the best of my ability of the rights issued by me; the only miner's right in the name of Golding is the one issued on 5th October last year, and in the name of James Golden; this man sometimes went by the name of Purchase, at least I believe this is the same person; I do not see any record of a miners' right in the name of Richard Golding; a miner's right taken out in any Warden's Court is available for any part of the Colony, and would not be recorded by me, excepting where application was made for a lease when I required to be satisfied that anyone signing the application should hold a miner's right.

Sworn at Armidale, this 20th day of January, 1888, before us,— CHARLES L. BEDHAM.

SYDNEY BLYTHE, J.P., Chairman.
C. E. SMITH, P.M.
B. A. MOSES, J.P.

This

This witness, being duly sworn, on oath, states :—My name is *George Smith* ; I am a miner out at Hillgrove ; I know Thorne and Gray, the applicants for 10-acre lease ; I have seen them on their ground ; I saw them about the 25th July ; I did not see them previous to that ; I was in Sydney ; I could see that they had been working there previous to the 26th July.

Sworn at Armidale, this 20th day of January, 1888, before us,— GEORGE SMITH.

SYDNEY BLYTHE, J.P., Chairman.
C. E. SMITH, M.P.
B. A. MOSES, J.P.

This closed evidence 27.

S. BLYTHE, Chairman.

No. 36.

Decision of the Board.

Crown Lands Act of 1881—(Part II, section 14, sub-section, 4).

New South Wales, Armidale, to wit.

C.P. 87-91, parish Cooney, county Sandon, Armidale. Alfred Jas. Hack 40 acres. 21st July, 1887.

WHEREAS, on the 20th day of January, 1888, it became a matter for investigation before us whether, prior to the date of application for the conditional purchase named on the margin, a part of the area so applied for was not in occupation for mining purposes ; and whether, if the area so occupied for mining purposes be deducted from that applied for as a conditional purchase by Hack, the latter would not be thereby reduced to a less area than 40 acres ; and having taken evidence, and inquired into the said matter, we find that a part of the area so applied for as a conditional purchase was, prior to the date of such application, in occupation for mining purposes, and that, if the area so occupied for mining purposes be deducted from the area applied for as a conditional purchase, there will not be an area of 40 acres left to satisfy such application. We beg, therefore, to recommend that the application of Hack for 40 acres be disallowed, there not appearing to us to have been that area available at the date of Hack's application.

Given under our hands, at the Office of the Local Land Board, at Armidale, in the Colony of New South Wales, this 20th day of January, 1888,—

SYDNEY BLYTHE, J.P., Chairman.
B. A. MOSES, JP., } Members.
C. E. SMITH, P.M., }

Submitted.—C.O., 7/2/88. Disallowed.—T.G., 7/2/88.

No. 37.

Messrs. Abbott and Allen to The Secretary for Lands.

Re Thorne and Party's Gold-mining lease application 17,002, Hillgrove—A. J. Hack's objection.

Sir, Wentworth Court, Sydney, 30th January, 1888.

Our client, Mr. Hack, informs us that an inquiry was held before the Land Board at Armidale hereon, on the 20th instant, and that the evidence then taken was to be submitted to you for your decision.

Mr. Hack states that, at a previous inquiry in August last, certain evidence was given in his behalf, which, if brought forward, would directly nullify the effect of some of the evidence taken at the last inquiry, but that such evidence cannot be found, and upon inquiry at the Department of Mines we can learn nothing of it.

We have the honor, therefore, to request that you will be pleased to cause an inquiry to be made as to the existence of such evidence, and, if discovered, that we may be furnished with a copy thereof.

We have, &c.,
ABBOTT AND ALLEN.

No. 38.

Messrs. Abbott and Allen to The Secretary for Lands.

Re Thorpe and Party's Gold-mining lease application, 17,002—A. J. Hack's objection.

Sir, Wentworth Court, Sydney, 2 February, 1883.

Referring to our letter of the 30th ultimo hereon, when we alluded to an inquiry held before the Local Land Board, on the 30th January last, also that certain evidence taken at a prior inquiry, on the 24th August last, bearing very strongly on the subject, could not be found, we now have the honor to forward a copy of statutory declaration by Christopher Allingham, one of the witnesses at the last-mentioned inquiry, and to repeat our urgent request that you will be pleased to cause that evidence to be produced, and a copy sent to us, feeling certain that, upon reading and weighing the whole evidence, your decision will be in favour of our client, Mr. A. J. Hack, the objector.

We have, &c.,
ABBOTT AND ALLEN.

[*Enclosure.*]

STATUTORY DECLARATION.

I, CHRISTOPHER ALLINGHAM, of Hillgrove Falls, near Armidale, in the Colony of New South Wales, miner, do hereby solemnly and sincerely declare as follows :—

1. On or about the 24th day of August last, I gave evidence in the Warden's Court at Armidale, at the hearing of the objection made by Alfred James Hack against an application by Edward Thorne and party for a gold lease at Hillgrove Falls aforesaid. My evidence on that occasion was taken down by the Warden's Clerk in writing, and after he had finished doing so I signed my name to the depositions.
2. On the same occasion, I heard evidence given in like manner by Alfred James Hack, Edward Thorne, and Edward McNamara, witnesses in the matter then before the Court, and saw them, as I believe, severally sign their depositions.

3.

3. On the 26th day of July last, I was on portion No. 113, in the parish of Metz or Cooney, and on leaving the said portion I met the said Edward McNamara, a man named Edwards, and Edward Thorne. The said Edward Thorne was then going on the said portion 113. He had a pick in his hand, and the said Edward McNamara said to him (Thorne), "Take care you are not prospecting for other people." Thorne replied, "Oh, I'll chance that," and proceeded on to the said land.
4. I was upon the said portion No. 113 almost every day between the 21st and the 26th days of July last, searching and prospecting on the eastern half of the said portion, and I am positive that there were no pegs on the said land marking out five men's ground, as alleged by the said Edward Thorne and one William Gray, the mate of the said Edward Thorne.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled, "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oath and Affidavits."

Subscribed and declared at Armidale, this 23rd day of January, 1888, before me,— C. ALLINGHAM.

A. RICHARDSON, J.P.

No. 39.

Mr. A. J. Hack to The Secretary for Lands.

The No. 1 Sydney Coffee Palace Hotel Company, 391, 393, and 395, George-street,

Sir, Sydney, 11 February, 1888.

I beg to request that you will allow further evidence to be taken before the Local Land Board at Armidale, *re* my application for a conditional purchase of 40 acres, made at Armidale on the 21st July, 1887.

The evidence I propose to produce, is to the effect that Thorne and party were not in possession of the said land previous to my application.

I would respectfully ask you to cause a search to be made for the depositions taken at Armidale before the Warden, on or about 24th August, 1887, these papers not having been forwarded to you, and upon my making application for a copy of same in the Warden's office, no trace of them could be found, and no record of their having been sent to Sydney. These papers, if found, would clearly show that I was the first applicant for the land.

I have, &c.,

A. J. HACK.

It is presumed inquiry may be made in the Mines Department for the depositions referred to.—W.H.C., 16/2/88. The depositions referred to were returned to the Warden (C. E. Smith) on the 12th ultimo. The Mines Department will obtain them (or copies) by wire, if required.—H.P., 16/2/88. The Assistant Under Secretary.—W.H.C., 17/2/88.

I understood Mr. Secretary Garrett to say that he made no promise to Mr. Hack about this case, beyond consenting to taking no further action in the matter, pending the receipt of a letter from that gentleman. If Mr. Hack's request be complied with, it will be a reopening of the case by what is virtually a side wind. Submitted as to what is to be done.—S.F., 17/2/88.

Mr. Freeman is quite right. I can see no good purpose to be gained by reopening the case.—T.G., 22/2/88. A. J. Hack informed, 23/2/88. May those Hack's case papers be returned to the Chairman of the Armidale Board?—W.H.C., 14/3/88. The Chairman, Armidale.—S.F., B.C., 14/3/88.

No. 39A.

The Under Secretary for Lands to Mr. A. J. Hack.

Sir, Department of Lands, Sydney, 23 February, 1888.

Referring to your letter of the 11th instant, respecting your conditional purchase noted in the margin, which was the subject of inquiry by the Local Land Board at Armidale, on the 20th January, 1888, I am directed to inform you that, under the report of the Board referred to, the Secretary for Lands has decided that the conditional purchase in question be disallowed, and that the case cannot be reopened.

Armidale, C.P., 87-91; 40 acres; 21st July, 1887; A. J. Hack.

I have, &c.,

F. H. WILSON

(For the Under Secretary).

O.H.M.S.

Advertised Unclaimed.

MR. A. J. HACK,

Sydney Coffee Palace Hotel Co.,

391, 393, 395, George-street,

Sydney.

Returned from 1 Coffee Palace.

Returned letter from No. 1 Coffee Palace by M. DAVIN.

Department of Lands,
Sydney, 23/2/88.

No. 40.

Mr. A. J. Hack to The Secretary for Lands.

Sir, Armidale, 6 March, 1888.

I have the honor to hand you, under separate cover herewith, seven statutory declarations by George Phillips, Neil O'Donnell, James Elliott, Christopher Allingham, William Harlow, Robert Brown, and Peter Daly, proving that the gold-mining lease applied for by Messrs. Thorne and party on the 29th July

July last (and embracing part of measured portion No. 113, parish of Cooney, Hillgrove Falls) was not in their occupation, pegged, or marked by them at the time sworn to by them before the Land Board here upon the inquiry held by the Board respecting our conflicting claims to the land.

Upon the 21st July last I made application at the local Lands Office to conditionally purchase the said measured portion 113 under the 47th section of the Crown Lands Act of 1884, and it was not until the 29th July, eight days subsequently to my application, that Thorne and party applied for the land as a gold-mining lease. In the first instance it was decided that my application for the land as additional conditional purchase was good, but upon representations subsequently made by Thorne and party to the Department, an inquiry was directed to be made by the Land Board here as to whether the land had been in occupation for gold-mining purposes by Messrs. Thorne and party prior to the date of my application for it.

Upon the hearing of that inquiry Messrs. Thorne and Gray (of Thorne and party) swore that they were in occupation of the land prior to my application, viz., on the 16th July, and that they had pegged it and held it under their miners' rights, but I entirely disbelieve this statement, as on several occasions, before the Warden and Local Land Board, when the whole matter of pegging was gone fully into (at which I was present), they never once mentioned any pegging out or possession previous to that of the 29th July last.

The declarants are persons who have been living in the immediate neighbourhood of the land for a considerable time past, and are well acquainted with the land and locality. At the inquiry I was taken completely by surprise by Thorne and party's evidence, or I should then have tendered the evidence contained in the declarations I forward herewith. I would most respectfully submit that upon the evidence which I have forwarded, it may be decided that Messrs. Thorne and party were not in occupation of this land until some eight days after my application, and I respectfully desire that my application may be finally confirmed and possession of the land given me as speedily as may conveniently be done, as I am suffering considerable loss and inconvenience through not being able to complete contracts entered into by me upon the decision given by you in my favour in the first instance.

I am, &c.,

A. J. HACK.

T.G., 17/3/88. May be forwarded to the Chairman of the Armidale Board, to be placed with the previous papers on the case.—W.H.C., 22/3/88. Yes.—F.H.W. (for the Under Secretary), 22/3/88. The Chairman, Local Land Board, Armidale.—F.H.W. (for the Under Secretary), B.C., 22/3/88. May be placed with other papers in the case.—S. BLYTHE, Chairman, 27/3/88.

[*Enclosures.*]

STATUTORY DECLARATION.

I, GEORGE PHILLIPS, of Hillgrove, near Armidale, in the Colony of New South Wales, miner, do hereby solemnly and sincerely declare as follows:—

1. That I have followed the occupation of mining for some years, and am well acquainted with mining work in all its branches.
2. I know portion No. 113, containing 40 acres, in the county of Sandon and parish of Cooney, applied for as a conditional purchase by one, A. J. Hack, in July last past.
3. I was on the said portion on the 4th day of August last past, and saw four men working thereon, whom I knew to be Edward McNamarra, Michael McNamarra, Alfred Argles, and Edward Thorne.
4. From the appearance of the ground and the quantity of mining work done by these men thereon at the said date, they could not have been working for more than three days, at the utmost.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled, "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oaths and Affidavits."

Subscribed and declared at Armidale, this 3rd day of March, 1888, before me,— GEORGE PHILLIPS.

GEO. ALLINGHAM, J.P.

STATUTORY DECLARATION.

I, NEIL O'DONNELL, of Hillgrove, in the Colony of New South Wales, miner, do hereby solemnly and sincerely declare as follows:—

1. I know portion No. 113, containing 40 acres, in the parish of Cooney and county of Sandon, taken up as a conditional purchase by A. J. Hack, on the 21st day of July last.
2. I was frequently on the said portion both immediately before and after the said 21st day of July, and I am certain that at that date there were no pegs of any description denoting occupation of the said land for mining purposes, nor were there any such, nor any work done thereon for some days after the aforesaid date.
3. I was on the said portion about the 30th July, and saw two men, one named W. Gray, and one whose proper name I do not know, at work thereon. From the appearance of the ground, and the quantity of work visible, these men could not have been working for more than a few hours. On this date I saw mining pegs distinctly visible on the land.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oaths and Affidavits."

Subscribed and declared at Armidale, this 3rd day of March, 1888, before me,— NEIL O'DONNELL.

JAMES M'LEAN, J.P.

STATUTORY DECLARATION.

I, JAMES ELLIOTT, of Hillgrove, in the Colony of New South Wales, miner, do hereby solemnly and sincerely declare as follows:—

1. I know portion No. 113, containing 40 acres, in the parish of Cooney and county of Sandon, taken up as a conditional purchase by A. J. Hack, on the 21st day of July last.
2. I was frequently on the said portion, both immediately before and after the said 21st day of July, and I am certain that at that date there were no pegs of any description denoting occupation of the said land for mining purposes, nor were there any such, nor any work done thereon for some days after the aforesaid date.

And

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oaths and Affidavits."

Subscribed and declared at Armidale, this 3rd day of March, 1888, before me,— JAMES ELLIOTT.

JAMES M'LEAN, J.P.

STATUTORY DECLARATION.

I, CHRISTOPHER ALLINGHAM, of Hillgrove, near Armidale, in the Colony of New South Wales, miner, do hereby solemnly and sincerely declare as follows :—

1. That I know portion No. 113, containing 40 acres, in the county of Sandon and parish of Cooney, applied for as a conditional purchase by one A. J. Hack, on July last.
2. I was on the said portion on the 22nd day of July, and also on the 26th day of July, and on neither of these occasions did I see any mining pegs on the said portion, nor any of the usual indications of the said land, or a part thereof, having been taken up for mining purposes.
3. On the last-mentioned occasion, the 26th July, I went on to the said portion for the express purpose of looking for pegs, and as before mentioned, found none.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oaths and Affidavits."

Subscribed and declared at Armidale, this 5th day of March, 1888, before me,— C. ALLINGHAM.

A. CROSSMAN, J.P.

STATUTORY DECLARATION.

I, WILLIAM HARLOW, of Hillgrove, near Armidale, in the Colony of New South Wales, miner, do hereby solemnly and sincerely declare as follows :—

1. I know portion No. 113, in the county of Sandon and parish of Cooney, which has been taken up as a conditional purchase by A. J. Hack, in July last past.
2. I was frequently on the said portion, both immediately before and immediately after the 21st day of July last past, being there almost daily, and I never saw any mining pegs on the said land on the said dates, and I am positive there were none such erected upon the said portion until some days after the said 21st day of July.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oaths and Affidavits."

Subscribed and declared at Armidale, this 5th day of March, 1888, before me, the contents having been read over and explained to him, and he appearing to understand the same,— his WILLIAM x HARLOW. mark

JAMES M'LEAN, J.P.

Witness to mark,— J. A. GLASS.

STATUTORY DECLARATION.

I, ROBERT BROWN, of Hillgrove, near Armidale, in the Colony of New South Wales, miner, do hereby solemnly and sincerely declare as follows :—

1. That I know A. J. Hack's conditional purchase of 40 acres, portion No. 113, in the county of Sandon and parish of Cooney.
2. That on the 21st day of July last past there were no claims on the said portion, and if there had been any I would have seen them, for I was over and across the land every other day.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oaths and Affidavits."

Subscribed and declared at Armidale, this 5th day of March, 1888, before me,— ROBERT BROWN.

GEO. ALLINGHAM, J.P.

STATUTORY DECLARATION.

I, PETER DALY, of Hillgrove, in the Colony of New South Wales, miner, do hereby solemnly and sincerely declare as follows :—

1. I know portion No. 113, containing 40 acres, in the county of Sandon and parish of Cooney, applied for as a conditional purchase by A. J. Hack in July last.
2. I was on the said portion on the 28th day of July, and saw two men prospecting thereon, whom I know to be Edward and Michael McNamara. They had only commenced work, and could not have been employed for more than half-an-hour at the outside. I saw no marks or mining-pegs of any description on the said portion on this date, although I made a careful search for any such.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oaths and Affidavits."

Subscribed and declared at Armidale, this 3rd day of March, 1888, before me,— PETER DALY.

JAMES M'LEAN, J.P.

No. 41.

Office Memorandum.

THE papers referring to the conditional purchase quoted in the margin were to-day returned to the Chairman of the Local Land Board, Armidale, under a blank cover of the Assistant Under Secretary, the application having been made under the Crown Lands Act of 1884.

88-1,079 Cor., C.P. 87-91, Armidale, A J Hack.

The Chairman, Armidale.

W.H.C., 15/3/88.

Refund, £8. Applicant, agent, and Treasury informed, 22/3/88. Voucher No. 88-26.

No. 42.

No. 42.

Mr. A. J. Hack to The Secretary for Lands.

Sir, Armidale, 20 March, 1888.

In addition to the declarations I had the honor to forward to you I now forward another by William Gordon Brereton *re* my application for a conditional purchase of 40 acres, county of Sandon, parish of Cooney.

I have, &c.,
A. J. HACK.

Put with other papers and submit.—T.G., 22/3/88.

[*Enclosure.*]

STATUTORY DECLARATION.

I, WILLIAM GORDON BRERETON, of Hillgrove, near Armidale, in the Colony of New South Wales, miner, do hereby solemnly and sincerely declare as follows :—

1. That I know portion No. 113, in the county of Sandon, parish of Metz, containing 40 acres, selected by A. J. Hack on 21st July, 1887.
2. Edward Thorne, of Hillgrove aforesaid, miner, was in my employment from the 13th to 26th days of July last past, and in constant work from daylight to dark on my grant, never leaving during working hours.
3. William Gray, of Hillgrove aforesaid, miner, was in my employment from the 13th to the 28th days of July last, and likewise never leaving work during working hours.
4. I was working between 50 and 60 yards away from the place on said portion 113, where the said William Gray and Edward Thorne deposed at the Local Land Court at Armidale, on the 20th January last, that they worked on the 16th July, and I am certain that had they or any other person been at work there on that date I must have seen them. Whereas no such persons or their work was observed by me.
5. It was after the said Edward Thorne and William Gray left my employment that any claims were pegged out on the said portion No. 113, so far as I am aware, and I had every opportunity of observing, as I was working constantly in close proximity to the said block, on my gold-mining lease.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oaths and Affidavits."

Subscribed and declared at Armidale, this 19th day of March, 1888, before me,— W. G. BRERETON.

JOHN A. M'DONALD, Notary Public, Armidale.

No. 43.

Mr. A. J. Hack to Messrs. Brett and Coghlan.

1 June, 1888.

I HEREBY authorize Messrs. Brett and Coghlan to act as my agents in connection with my conditional purchase, Armidale, 87–91, 40 acres, selected 21st July, 1887.

A. J. HACK.

No. 44.

The Under Secretary for Mines to The Under Secretary for Lands.

Sir, Department of Mines, Sydney, 7 June, 1888.

Conditional purchase. 87–91 Armidale.

I have the honor, by direction of the Secretary for Mines, to request you to inform me whether any decision has been arrived at with reference to the case of A. J. Hack's conditional purchase of portion 113, parish of Cooney, county of Sandon, and if so, the nature of it.

I have, &c.,
GERARD E. HERRING
(For the Under Secretary).

Have the papers been received this morning? They were applied for by telegraph on the 15th.—W.H.C., 18/6/88. Records.

No. 45.

Office Memorandum.

15 June, 1888.

THE Under Secretary desires that a telegram be sent to Mr. Chairman Blythe asking him to forward, for perusal at this office, all the papers in connection with Hack's conditional purchase case at Hillgrove.

W.H.C.

Mr. Thompson.

Wire, 15/6/88. Papers herewith.—J.P.M., 18/6/88.

No. 46.

Telegram from The Under Secretary for Lands to The Chairman, Land Board, Armidale.

15 June, 1888.

PLEASE forward for perusal all papers *re* Hack's conditional purchase at Hillgrove. Urgent.

CHARLES OLIVER,
Under Secretary for Lands.

No. 47.

No. 47.

The Clerk-in-charge, Armidale, to The Under Secretary for Lands.

Sir, Local Land Board Office, Armidale, 16 June, 1888.

I do myself the honor to acknowledge the receipt of your telegram of the 15th instant, and herewith beg to enclose all papers connected with Alfred James Hack's application for conditional purchase, as noted in the margin. I have, &c.,

HENRY T. MAKIN,
Clerk-in-charge.

Armidale, C. P., 87-91, A. J. Hack; 40 acres; county Sandon, parish Cooney.

Inform the Under Secretary for Mines that the conditional purchase was disallowed on the 7th February last.—C.O., 18/6/88. To-day. U.S. Mines informed, 18/6/88.

No. 48.

The Under Secretary for Lands to The Under Secretary for Mines.

Sir, Department of Lands, Sydney, 18 June, 1888.

Referring to your letter of the 7th instant respecting the conditional purchase noted in the margin, I have the honor to inform you that the purchase in question was disallowed on the 7th February last. I have, &c.,

F. H. WILSON
(For the Under Secretary).

Armidale, C.P., 87-91; 40 acres; A. J. Hack.

No. 49.

The Under Secretary for Mines to The Under Secretary for Lands.

Sir, Department of Mines, Sydney, 19 June, 1888.

I have the honor, by direction of the Secretary for Mines, to request that you will be so good as to favour me with the loan of all the papers having reference to conditional purchase No. 87-91 at Armidale by A. J. Hack. I have, &c.,

GERARD E. HERRING,
(For the Under Secretary).

C.P., 87-91; Armidale; 40 acres; A. J. Hack.

The Under Secretary for Mines was informed of the decision in the case on the 18th instant, a loan of the papers is however now applied for.—W.H.C., 27/6/88. The Under Secretary for Mines.—S.F. (for the Under Secretary), B.C., 27/6/88. To be returned.—Submitted.—H.W., 27/6/88. Seen.—F.A., 28/6/88. The Under Secretary for Lands.—G.E.H. (for the Under Secretary), B.C., 28/6/88.

No. 50.

Mr. A. J. Hack to The Minister for Mines.

Sir, 144, King-street, 25 June, 1888.

I beg to protest against any gold leases other than Brereton and Smith's being issued, in respect of my 40-acre block, conditional purchase, as it has been discovered that there are fully 40 acres within my boundaries, exclusive of the said Brereton and Smith's application, of which the Lands Department is now being made cognizant, Brereton and Smith being the only parties who might reasonably be supposed to have any rights to gold leases. All other parties applied long after I was in legal possession of my said conditional purchase, and it is with a view of avoiding long and expensive legal proceedings, which I am otherwise advised to take, that I respectfully enter this protest, which I hope may take effect until the matter is finally disposed of by the Lands Department.

I have, &c.,
A. J. HACK.

This might be sent to the Lands Department for their final opinion, *re* Hack's conditional purchase.—F.A., 25/6/88. The Under Secretary for Lands.—H.W., B.C., 25/6/88.

No. 51.

Messrs. Brett and Coghlan to The Under Secretary for Lands.

Sir, 19, Macquarie-place, Sydney, 30 June, 1888.

With reference to the conditional purchase, noted in the margin, we have the honor to submit the following, with the view of showing cause why the matter of granting to Hack the 40 acres should be reconsidered.

1. We contend that the only application lodged for any part of the land in question before Hack's was that of Brereton and Smith, and if their application was satisfied there would still be an area of over 40 acres left to meet Hack's application.
2. The statement of Thorne and party that they worked continuously on the land under reference is flatly contradicted by their employer at the time (W. G. Brereton).
3. One of the party of Thorne & Co. (Golding) did not, at the time of the alleged pegging, hold a miner's right.
4. As proof of the opinion held as to the *bona fides* of Hack's selection, Brereton and Smith, the only applicants before him, are willing to withdraw from that part of their lease, which overlaps portion 113, if such action on their part would assist Hack's claim, without prejudice to them as applicants for the lease.

Armidale, C.P. 87-91, A. J. Hack; 88-24,168 Dep.

See copy of telegram herewith, marked "A." See copy of evidence of Mr. L. S. Martyn, herewith, marked "B"; also copy of report by District Surveyor Finley.

See copy of W. G. Brereton's evidence herewith, marked "C," and his declaration, marked "E."

5.

See declaration of C. Allingham herewith marked "D."

5. Thorne and Gray, at an inquiry before the Warden, stated that they did not peg the land until after they left Brereton's employ, which would be about the 28th July, 1887 (seven days after Hack applied). This evidence was taken down at the Court, and the depositions signed, but they cannot now be traced. Hack is prepared to swear to this, having been present and being under examination at the time.

The foregoing statement of facts, which we are prepared to prove, will, we trust, show the justice and the necessity of having the case reopened, when we shall be prepared to answer any objection that may be brought forward.

We have, &c.,
BRETT AND COGHLAN.

Special. Register and submit with the papers.—C.O., 4/7/88. The Under Secretary.—W.H.C., 7/7/88.

As this case may be reopened, write to the Department of Mines with reference to former correspondence on the subject, and request that any action on mineral lease applications may be stayed for the present.—C.O., 10/7/88. Immediate. Done.—10/7/88.

A.

Telegram to Henry T. Makin, Clerk-in-charge, Local Land Board.

I THINK it will only be necessary to summon Brereton and party, as from report of District Surveyor the applications from others were subsequent to the date of Hack's. By all means notifiy Mr. Hogarth to attend.

SYDNEY BLYTHE,
Chairman, Local Land Board.

B.

Examined by Mr. M'Donald, solicitor: This witness, who being duly sworn on oath, states:—My name is *John Griffin Martin*, licensed surveyor in Armidale; some years ago I made a survey of portion 113 in parish Cooney; I made the survey in the last week in January, 1882; it was a portion of 40 acres; the actual measurement is 40 acres 2 roods 24 perches; I have not been on the ground since for the purpose of measuring any encroachment, as shown on plan marked "A"; I have refreshed my memory by my field-book with regard to the above fact.

By Mr. Forster, solicitor: Assuming five men's land were taken out of the land, 300 x 200 feet, it would be 1 acre 1 rood 16 perches; if that area were taken out there would not be 40 acres in measured portion 113.

By Mr. M'Donald solicitor: I am quite sure that there would be 1 acre 1 rood and 16 perches to be deducted from area.

By the Board: It is usual on frontage blocks to omit the roods and perches in writing the area on the plan.

Sworn at Armidale, this 20th day of January, 1888, before us,— } JOHN G. MARTYN.

SYDNEY BLYTHE, J.P., Chairman.
C. E. SMITH, P.M.

A. J. Hack's conditional purchase, 87–91, 21st July, 1887.

Sir, District Survey Office, Armidale, 27 December, 1887.

Since forwarding you my report dated 30th August, 1887, No. 167, on the above conditional purchase, for preliminary hearing at your Court on the 1st September, 1887, several circumstances have arisen which present apparent objections to the immediate confirmation of the conditional purchase, and I now have the honor to draw your attention to them.

A. J. Hack's application was lodged on the 21st July, 1887, but there was an application by Brereton and Smith for an 8-acre gold lease, No. 166, of prior date, in existence, viz., of 30th April, 1887. Hack's conditional purchase encroaches on this lease. There is also an application by Thorne & Co. for a 10-acre gold lease, No. 169, which encroaches on Hack's conditional purchase, but it is of a later date, viz., 8th August, 1887. These two gold leases conflicted, and I believe the dispute has been before the Warden, who has recommended certain boundaries. There is still a third conflicting claim to the land by Hanlon & Co., for a 4-acre gold lease, but this is also of a more recent date than the conditional purchase, viz., 22nd September, 1887.

At the time of application Hack's conditional purchase was a measured portion, No. 113, of 40 acres.

All the gold leases, which encroach on, or conflict with, the conditional purchase, have only recently been surveyed, and at the date of my first report to you it was impossible to locate them, nor was their position known, so that no mention was made of them.

In fact, after survey it could not be done until a surveyor was sent from this Department to define the relative positions of the leases and the conditional purchases.

From the foregoing it is clear that the only claim which can stand against Hack's conditional purchase, is gold lease No. 166, Brereton and Smith's. This lease is of prior date, all other leases are of more recent date. The area excised from Hack's conditional purchase is clearly shown on the accompanying plan, as also are all other encroachments. According to the boundaries claimed by Brereton and Smith, and as surveyed to him. The extent of the encroachment is about 32 perches, but according to the recommendation by the Warden, consequent on dispute between Brereton and Smith and Thorne & Co., the encroachment is only about 8 perches, a very small area.

In either case the surplus area in the portion will admit of the encroachment, and still leave a residue of 40 acres.

The following questions arise:—

1. Will not a subdivision of portion 113 be necessary, and Hack called upon to pay a subdivision fee in terms of the 55th section of the Act?

2. Or does the fact of the land being a measured portion of 40 acres, and there being only a residue of such portion, invalidate Hack's claim, or can the adjustment suggested in question 1 be made in terms of the 58th section of the Act?

I have, &c.,
F. G. FINLEY,
District Surveyor.

The Chairman, Local Land Board, Armidale.

Enclosure. Plan showing conflicting applications. Plan showing encroachments. Memo. and tracing showing Mr. Surveyor Hogarth's connection survey.

C.

W. G. BRERETON *recalled by Mr. M'Donald, solicitor:* Gray left off working for me on the 28th July, 1887, and Thorne on the 26th; they have been working for me a little over a fortnight; they worked from half-past seven to five at night, with an hour for their dinner; all I know is, that they pegged on to our ground, and outside of portion 113 altogether, and they might have pegged inside altogether.

By Mr. Forster, solicitor: They just worked eight and a half hours; there was a little wet weather during the time they worked for me; Thorne worked only for about an hour the first day he worked for me; I made the note of the payment in my book on the 26th July, 1887; they told me they were going to leave, as they had found some ground; I did not make a note of this.

Sworn at Armidale, this 20th day of December, 1888, before us,— W. G. BRERETON.

SYDNEY BLYTHE, J.P., Chairman.
C. E. SMITH, P.M.

D.

STATUTORY DECLARATION.

I, CHRISTOPHER ALLINGHAM, of Hillgrove Falls, near Armidale, in the Colony of New South Wales, miner, do hereby solemnly and sincerely declare as follows:—

1. On or about the 24th day of August last, I gave evidence in the Warden's Court at Armidale, at the hearing of the objections made by Alfred James Hack against an application by Edward Thorne and party for a gold lease at Hillgrove Falls aforesaid. My evidence on that occasion was taken down by the Warden's clerk in writing, and after he had finished doing so, I signed my name to the depositions.
2. On the same occasion I heard evidence given in like manner by Alfred James Hack, Edward Thorne, and Edward McNamara, witnesses in the matter then before the Court, and saw them, as I believe, severally sign their depositions.
3. On the 26th day of July last I was on portion 113, in the parish of Metz, or Cooney, and on leaving the said portion I met the said Edward M'Namara, a man named Edwards, and Edward Thorne; the said Edward Thorne was then going on the said portion 113. He had a pick in his hand, and the said Edward McNamara said to him (Thorne), "Take care you are not prospecting for other people," Thorne replied, "Oh, I'll chance that," and proceeded on to the said land.
4. I was upon the said portion No. 113 almost every day between the 21st and the 26th days of July last, searching and prospecting on the eastern half of the said portion, and I am positive that there were no pegs on the said land marking out five men's ground, as alleged by the said Edward Thorne and one William Gray, the mate of the said Edward Thorne.

And I make this solemn declaration, conscientiously believing the same to be true, and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oaths and Affidavits."

Subscribed and declared at Armidale, this 23rd day of January, 1888, before me,— C. ALLINGHAM.

A. RICHARDSON, J.P.

E.

STATUTORY DECLARATION.

I, WILLIAM GORDON BRERETON, of Hillgrove, near Armidale, in the Colony of New South Wales, miner, do hereby solemnly and sincerely declare as follows:—

1. That I know portion No. 113 in the county Sandon, and parish of Metz, containing 40 acres, selected by A. J. Hack on 21st of July, 1887.
2. Edward Thorne of Hillgrove, aforesaid, miner, was in my employmont from the 13th to 26th days of July last past, and in constant work from daylight to dark on my ground, never leaving it during working hours.
3. William Gray, of Hillgrove, aforesaid, miner, was in my employment from the 13th to the 28th days of July last, and likewise never leaving work during working hours.
4. I was working between 50 and 60 yards away from the place on said portion 113, where the said William Gray and Edward Thorne deposed at the Local Land Court at Armidale on the 20th January last that they worked on the 16th July, and I am certain that had they or any other person been at work there on that date I must have seen them, whereas no such persons or their works was observed by me.
5. It was after the said Edward Thorne and William Gray left my employment that any claims were pegged out on the said portion 113 so far as I am aware, and I had every opportunity of observing, as I was working constantly in close proximity to the said block on my gold mining lease.

And

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled, "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of extra-judicial Oaths and Affidavits."

Subscribed and declared at Armidale, this 19th day of March, 1888, before me,— } W. G. BRERETON.

JOHN A. MACDONALD, Notary Public, Armidale.

No. 52.

Memo. by The Under Secretary for Lands.

UPON the 22nd February last it was decided that this case should not be reopened, but in view of the statements contained in the letter from Messrs. Brett and Coghlan, on behalf of Mr. Hack, it is a matter for consideration whether the further inquiry should not be granted. If the representations are well founded, the case would appear not to have been fully before the Board, and for this reason a rehearing is desirable. Against this view it could be urged that Mr. Hack should at the inquiries already held have adduced the evidence he now desires to put forward, but taking into consideration all the circumstances of the case, and the alleged great value of the land, it may be deemed prudent to grant a further inquiry. With regard however to Brereton and Smith being willing to amend their lease application, it should not be permitted, as this may be the results of an arrangement between them and Mr. Hack in order to defeat the claims of others. Should the reinquiry be granted, the result will be the same as that which followed the previous inquiry unless the further evidence it is alleged can be brought forward demands a different finding, and if this should be so, justice only will be done in the matter.

C. O., 7/7/88.

The foregoing recommendation approved.—H.P., 27/7/88. Inform the parties and Department of Mines, and then refer to the Chairman of the Local Land Board.—C.O., 27/7/88. Brett and Coghlan and Under Secretary for Mines informed, 31/7/88.

The Chairman, Local Land Board, Armidale.—F.H.W. (for the under Secretary), B.C., 31/7/88.

No. 53.

The Under Secretary for Lands to Messrs. Brett and Coghlan.

Gentlemen, Department of Lands, Sydney, 31 July, 1888.

Armidale C.P. 87-91, A. J. Hack.

Referring to your letter of the 30th ultimo, I have the honor to inform you that the papers relating to the conditional purchase noted in the margin are about to be forwarded to the Chairman of the Local Land Board for further inquiry.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 54.

The Under Secretary for Lands to The Under Secretary for Mines.

Sir, Department of Lands, Sydney, 31 July, 1888.

Armidale. C.P 87-91, 40 acres. A. J. Hack.

Referring to your letter of the 19th ultimo (88-3,859), I have the honor to inform you that the papers relating to the conditional purchase noted in the margin, are about to be forwarded to the Chairman of the Local Land Board for further inquiry.

I have, &c.,
F. H. WILSON
(For the Under Secretary).

No. 55.

Mr. Mining-Surveyor Sullivan to The Chairman, Land Board, Armidale.

Sir, Camp, 17 August, 1888.

In accordance with your request, I have the honor to transmit herewith a tracing showing portion 113, parish of Metz, county of Sandon, together with all the gold leases which encroach upon it.

Trusting that my sketch may give you all the information required,

I have, &c.,
H. B. SULLIVAN,
Mining Surveyor.

No. 56.

The Chairman, Land Board, Armidale, to The Under Secretary for Lands.

Sir, Local Land Board Office, Armidale, 18 August, 1888.

I do myself the honor to return herewith all the papers in connection with the conditional purchase of A. J. Hack, 87-91, 40 acres, which were received here on 2nd instant, for a further inquiry to be instituted. I may here state such further inquiry could not have taken place since receipt of papers, owing to absence of members of the Board.

My reason for now returning the papers is that the matter may be reconsidered, in view of the tremendous conflicting interests that have arisen since the Minister for Lands gave his last decision that he would not reopen the case, although statutory declarations were forwarded that former evidence was wrong.

Having

Having understood that much of this land had been applied for as gold leases, and parties there in full work, I applied to Mr. Sullivan, mining surveyor, for a tracing of the land applied for as gold leases within the said portion, No. 113, and beg to enclose his letter covering tracing containing the names of all the applicants for leases by which it will be seen that fifteen leases are located wholly or in part on this portion.

If it is decided that the inquiry into Hack's claim to the lands should still go on, I presume it will be necessary at once to notify the same to all the applicants for lease.

I have, &c.,
SYDNEY BLYTHE,
Chairman.

Although a number of leases have been applied for, it would appear that the safest course to pursue will be to permit the further inquiry to proceed; indeed, the greater the conflict of interest the more necessity for the fullest possible inquiry.—C.O., 22/8/88.

Approved.—H.P., 30/8/88.

No. 57.

Office Memorandum.

THE enclosed papers referring to the conditional purchase quoted in the margin, are now returned to the Chairman of the Local Land Board, Armidale, whose attention is directed to the Minister's minute of yesterday's date as to a further inquiry being held regarding the land in question.

88-31,436 D. C.P., 87-91, Armidale. A. J. Hack.

F. H. W.
(For the Under Secretary.)

B.C., 31/8/88.

Notice to A. J. Hack to attend Court, Armidale, 18/12/88; posted 15/11/88.

No. 58.

Petition from the Miners of Hillgrove.

To the Honorable the Minister for Lands—

Sir,

We, the undersigned humble petitioners, being *bonâ fide* miners, do petition and pray that the conditional purchase No. 113, county of Sandon, parish of Metz, applied for by A. J. Hack, be not granted, as, in the first place, part of such land was applied for as a gold-mining lease previous to A. J. Hack's application; and, furthermore, we believe that there is not the requisite area, viz., 40 acres in the said portion to enable him to take it up as a conditional purchase; and we, your humble petitioners, as in duty bound, will ever pray.

M. McNAMARA, miner, Hillgrove.
E. McNAMARA, miner, Hillgrove.
W. H. COOPER, miner, Hillgrove.

[And 71 others.]

Memorandum attached to Petition.

WE must also state that this block 113 has all been paid for and measured for gold leases in 5 and 10-acre blocks, and some two or three blocks a good deal of money has been spent in sinking and tunnelling. This block 113 is also unfit for agricultural or grazing purposes. Trusting that you will do your best to set this matter right.

We remain, &c.,
MINERS, Hillgrove.

No. 59.

The Under Secretary for Mines to The Under Secretary for Lands.

Sir,

Department of Mines, Sydney, 11 December, 1888.

I have the honor to request that you will be good enough to state if the conditional purchase noted in the margin has been finally settled.

Armidale, C.P. 87-91 40 acres. A. J. Hack.

I have, &c.,
GERARD E. HERRING
(For the Under Secretary).

Papers 88-31,436 D, noted to L.B., Armidale, for inquiry, 31/8/88. Papers 88-37,687 D, noted to Mines, 11/10/88.—J.P.M., 17/12/88. Mr. Capper. Mr. M'Guanne,—Please give subject matter of above quoted papers.—W.H.C., 4/1/87. 88-37,686 D is a communication from the Mines Department, forwarding letter from Brett and Coghlan, withdrawing opposition to mineral lease being issued. Paper still under reference to Mines Department, under B.C., 11/10/88.—J.P.M., 5/1/88.

No. 60.

Caption to Deposition of Witnesses.

Crown Lands Act of 1884—(Part II, section 14, subsection 1).

New South Wales, } to wit. }

THE examination of Alfred James Hack, of Hillgrove, in the Colony of New South Wales, selector; John Griffin Martyn, of Armidale; Walker Warner, of Armidale; Mordaunt Alister Maclean, of Armidale; Edward Thorne, of Hillgrove; William Gray, of Hillgrove; Edward McNamara, of Hillgrove; Martin Brislane, of Hillgrove; and Michael McNamara, of Hillgrove, in the said Colony.

WHEREAS it became a matter for inquiry as to whether the land applied for by Alfred James Hack on the 21st July, 1887, at Armidale, as a conditional purchase, No. 87-91, of 40 acres, county Sandon, parish Cooney, was available at date of application, and it hath been found necessary to investigate the said matter on oath, the depositions of the several witnesses are appended hereto.

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Crown Lands Act of 1884—(Part II, section 14, subsection 1).

Caption to Deposition of Witnesses.

New South Wales, }
to wit. }

THE examination of James William Metcalfe, of Hillgrove, in the Colony of New South Wales, miner; John Moore, of Armidale; William Gordon Brereton, of Hillgrove; Peter Dale, of Hillgrove; John James M'Neill, of Hillgrove; George Burton, of Hillgrove; Christopher Allingham, of Hillgrove; George Phillips, of Hillgrove; William Harlow, of Hillgrove; Robert Brown, of Hillgrove; Neil O'Donnell, of Hillgrove; and John Michael Sheahan, of Armidale, in the said Colony.

WHEREAS it became a matter for inquiry as to whether the land applied for by Alfred James Hack on the 21st July, 1887, at Armidale, as conditional purchase, No. 87-91, of 40 acres, county Sandon, parish Cooney, was available at date of application, and it hath been found necessary to investigate the said matter on oath, the depositions of the several witnesses are appended hereto.

[*Enclosure.*]

Local Land Board Meeting, Armidale, 18th, 19th, 21st, and 22nd December, 1888.

Case of Alfred James Hack, C.P. 87-91, 21st July, 1887, Armidale, 40 acres, 47th section, county Sandon, parish Cooney.

Members of Board:—F. G. Finley, Esq., J.P., Acting Chairman, C. E. Smith, Esq., P.M., Member.

Solicitors:—Messrs. M'Donald and Kearney appeared on behalf of A J. Hack; Messrs. Simpson and Forster appeared on behalf of Thorne and party.

Examined by Mr. M'Donald, solicitor: This deponent, being duly sworn, on oath, saith as follows:—My name is *Alfred James Hack;* I was the applicant on the 21st July, 1887, for a non-residential selection of 40 acres, county Sandon, parish Cooney; I was over the age of 21 years when I applied for the land; I paid the deposit required by law on that land before I selected it; I was on the land the day before; I examined the plans at the Lands Office and found it was open to selection; I believe there was no one in occupation the day before when I was there; I went on to the creek on the 20th July, 1887, and on to the land, and as far as I could know there was no one there; I have seen the place since several times that Thorne and party pegged out; I was at the very place on the 20th July, 1887; I know that they allege that they had, prior to that date, pegged out claims on portion 113; I saw that part of portion 113, and I am certain that no one was there; I know that to be a portion of the land they claim on portion 113; I also know portion 113 by the marked trees on the creek; I saw the marked tree that morning, and I know that the workings of Thorne and party are within the boundaries of portion 113; I did not notice any pegs belonging to any person on portion 113 on the 20th July, 1887; I went to the land with the object of taking up this land as a conditional purchase the next day, and I searched it very carefully; I went on to the ground after I heard that something had been found there; I sent Christopher Allingham to see the ground the day after I took it up; I have been on the land since the date of my application, but have not interfered with it in any way; I served Thorne and party with a notice, and protested against anyone being in occupation.

Examined by Mr. Simpson, solicitor: I have not interfered with the land in any way, except serving the notice; I know portion 113, and what it contains, and I applied for 40 acres; the description is in my application; I went over one portion of this land along the creek carefully, and I did not see any pegs; I do not know that Smith and Brereton had any pegs on portion 113 at that time; I have never heard that Smith and Brereton had pegs on portion 113; I know that Brereton and Smith's lease embraces a portion of 113; I have not measured the encroachment; I recollect a dispute between Thorne and party and Brereton; I may have been in Court or I may not; the dispute was about Brereton's southern boundary; I know nothing of the dispute of my own knowledge; I am aware that Brereton and Smith have written to the Minister for Mines to have a pre-lease excised from portion 113; looking at a plan marked "A," and the dotted line thereon, I am aware that he wanted the corner of portion excised; I took this portion of 40 acres, No. 113, as a conditional purchase on the 21st July, 1887, as a non-residential selection; this 40 acres is on a place called the Falls; I do not know the depth, but of my knowledge it is of some considerable distance; this portion extends from the top to the bottom of the Falls; I have not sworn that I took it up as a business site; I took up the land as a conditional purchase, knowing it to be open for selection; I did not take this up for auriferous purposes; I have applied for a permit to work this after I knew that others had proved the ground to be auriferous; it was some considerable time after I made application that I applied for a permit; I think it was made about December, but I could not say, as it was made by a firm of solicitors in Sydney; before I took up this selection I had not been on the ground with any particular purpose, and had never prospected it; I have no knowledge that the ground was being prospected by Thorne and Gray; I have heard that there are several applications for lease on portion 113; I have seen marked trees on the ground, and have heard that it was surveyed for leases; I have not given the other applicants for gold lease notice except Thorne and party, but I did lodge a protest at the Mines Department against the granting of gold leases; it was not long after I made this application that I gave Thorne and party notice; I know Thorne and party's lease is surveyed, but cannot remember when.

By the Board: I know the position of the workings of Thorne and party; I am not aware that Thorne and party pegged out any portion in virtue of their miners' rights on portion 113; I was not aware when I took up the land that Brereton's lease encroached on portion 113; I know now that Brereton's lease does encroach on this portion, but cannot state the exact area.

By Mr. M'Donald, solicitor: I am aware that the encroachment of Brereton's does not reduce the area less than 40 acres; I am aware that all other applications for lease, except Brereton's, were subsequent to my application for conditional purchase; the first time I heard of Thorne and party's miners' rights claim was when the case was before the Board in January last; it was then stated by Thorne and Gray before the Land Board; I was in the Court before the Warden in August last year when their lease was dealt with, and I lodged an objection against Thorne and party's lease in August last year; on that occasion I appeared in support of my objection, and I cross-examined Thorne; on that occasion they did not mention one word about their having pegged out under miners' rights; they then swore to pegging out their lease application on the 29th July, 1887, and added that they had proved the ground to be auriferous some time before they pegged it out; I asked him if it was a usual thing for a miner who had found a payable reef to allow so long a time to elapse before pegging it out, and he said, "No, it is not usual; but I was working for Brereton at the time I found the gold."

Examined by Mr. Simpson: I did not follow the line of Brereton's lease on the 20th July, 1887, on the other side of the creek, but I looked along the line in the direction of the trench, and that went as fair as possible to the marked tree; I did not see the blazed trees.

Sworn at Armidale, this 18th day of December, 1888, before us,— } A. J. HACK.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. M'Donald: This witness, being duly sworn, on oath, states:—My name is *John Gubben Martyn;* I am a licensed surveyor residing in Armidale; I made the original survey of portion 113, parish Cooney, the land which is the subject of inquiry; I surveyed it on the 1st February, 1882; I measured the block as 40 acres; but it is a fact that the area included in the boundaries of my survey was 40 acres 3 roods and 20 perches; in frontage blocks we are allowed a margin; the roods and perches are always omitted from the plan in accordance with the regulations; that block fronted to Baker's Creek.

Cross-examined by Mr. Simpson: My survey was given as 40 acres 3 roods and 20 perches, but I called it 40 acres, as allowed in regulations; I have gone over my former calculations; I find it to be 40 acres 3 roods 20 perches, not 40 acres 2 roods 24 perches; I do not know any of the circumstances in connection with Hack's application; if five men's

ground

ground as a mineral lease were taken out of the portion 300 x 200, it would be under 40 acres; I do not know anything of an application by Brereton and Smith for a portion of this land looking at the plan A; I see Brereton and Smith's application for gold lease 166, 30th April, 1887, and that would take in a portion of 113; I cannot say how much the fixed blue or dotted blue line would embrace of portion 113.

By the Board: The area in excess is inside the portion 113, a marked tree stands on the corner of the portion, and there is no peg.

By Mr. M'Donald, solicitor: The tree stands at the north-east corner.

Sworn at Armidale, this 18th day of December, 1888, before us,— JOHN G. MARTYN.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. M'Donald: This witness, being duly sworn, on oath, states:—My name is *Walter Warner*, licensed surveyor, living in this district; I made a survey on the morning of the 20th January, 1888, upon portion 113, parish Cooney; looking at the plan A, I made a survey of the dotted blue line, which shows the encroachment of Brereton and Smith's lease application; I found the area of that encroachment to be about 12 perches; that is gold lease 166; I also estimated the encroachment shown by the firm blue line by calculation, and found it in area to be a little over a quarter of an acre; I found the tree on the corner of portion 113. 12 perches.

Cross-examined by Mr. Simpson: I did not put the chain over the firm blue line, and I did not survey the original portion 113; I did not see a peg on the corner of portion 113; it was a tree there; I do not remember seeing any pegs on portion 113; I took my line from the marked tree at the north-east corner.

By the Board: I cannot remember having seen any pegs on the ground.

Sworn at Armidale, this 18th day of December, 1888, before us,— WALTER WARNER.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. M'Donald: This deponent being duly sworn, maketh oath, and saith as follows:—My name is *Mordaunt Alister Maclean*, draftsman in the District Survey Office, Armidale, looking at the map of the parish of Cooney from the District Survey Office, Armidale, I observe portion 113 of 40 acres; on the 21st July, 1887, portion 113 was not within the Guyra River Gold-field Reserve; at that time the land appeared as open for selection; I am aware a gold-field has been gazetted on the 30th August, 1887; and portion 113 is within the boundaries of that proclamation; prior to the date of proclamation, portion 113, had been applied for as a conditional purchase by A. J. Hack.

Cross-examined by Mr. Simpson: No portion of this portion 113, prior to 30th August, 1887, formed part of a gold-field reserve or any other reserve as far as the records show.

Cross-examined by Mr. M'Donald: I am aware the land adjoined water reserve 1,393A.

Cross-examined by Mr. Simpson: It appears by this plan that portion 113 was Crown land at the date of application by Hack; a measured portion.

Sworn at Armidale, this 18th day of December, 1888, before us,— M. A. MACLEAN.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. Simpson: This witness, being duly sworn, on oath, states:—My name is *Edward Thorne*; I am a gold-miner; and I have got a miner's right, and had a miner's right for last year, 1887; I know measured portion 113, of 40 acres, county Sandon, parish Cooney; I know the marked tree at the north-east corner; I applied for a lease of portion of this portion 113, under the name of Thorne and party; I cannot remember when I pegged this out as a gold lease; I took possession under my miner's right on the 16th July, 1887, and pegged it out; Gray and I were present on that occasion; we then pegged out six men's ground; there was myself, Gray, Leslie, Golding, and Emerson; this was all there were, so there was only five men's ground; the area of the land pegged out was, I believe, 60 x 60, but I can hardly remember what we pegged out; the land we pegged out was down the falls just over the creek, a portion of it was on measured portion 113; when we pegged it out we worked it every day; the other four men did not work at the time we pegged it out; two of us worked the land on the day we pegged it out, the others worked it a day or two after we took it up; I found a reef there the same day as we pegged it out; there was more than one reef on the ground; there were two reefs; we have been in possession working this as a gold lease, and are working this up to the present time; the land we pegged out under our miners' rights was embraced entirely within the gold lease; we applied for a 10-acre gold lease; McNamara and myself pegged out the gold lease; I think both the McNamaras were there on the land at the time of pegging out the gold lease; I made the lockspits in accordance with the regulations, put pegs up.

Cross-examined by Mr. M'Donald: I do not recollect the date I pegged the gold lease, but I do recollect the date of my pegging out under my miner's right, because I noted it down at the time; Gray and I pegged it out on a Saturday between 2 and 3 o'clock in the afternoon, and we worked on it that day; I do not know the day the others worked on the land; I would not swear that they worked on it within ten days; I remember giving evidence before the Land Court in January last; I say that some of the others worked on the land; it is not true that some of the men were never on the ground at that time; they were all there at different times; I do not recollect swearing in January last that Leslie never worked on the ground or was there at all; Leslie had no interest in it after we applied for the lease; neither had Golding or Emerson; I cannot say whether these three men worked on the land; I worked on the land every day, including the 16th, and since I was in Mr. Brereton's employment at that time, and I worked for Mr. Brereton about a week after the 16th; my working hours were eight hours a day, from 7 a.m. to 3 p.m.; I could not say when I left Brereton; it might have been a week after the 16th; I will swear I worked two hours a day on the land during the time I was in Brereton's employ, and my mates worked with me sometimes; Gray and I worked regularly; that is Gray came sometimes; Gray was in Mr. Brereton's employment; I cannot say how many times Gray worked there; I cannot remember if any of the others worked there; a portion of the ground I pegged out as a quartz claim was on portion 113; the reef is on the north-east side of our 10 acres, and in pegging out we pegged out along the reef, making the reef as near as possible the centre; there would not be much of our quartz claim on portion 113; I cannot say if there was as much as half our claim on portion 113; I recollect giving evidence before the Warden in August last year, when Mr. Hack objected to our claim; I do not remember saying that we found the reef on portion 113 about a week before my pegging it out on the 29th July, 1887; we pegged it out as soon as we found it; I would not swear that I did not say in reply to Mr. Hack, "I did not peg it out sooner, because I was in the employ of Mr. Brereton"; I did not register the claim I pegged out on the 16th July with the Warden's Clerk; I have been mining for about twelve years; I have been mining in this Colony for about three years; I produce a note-book, with a note in it, that I pegged out the land on the 16th July; I made the note in my book on the 16th July; I do not know how long I have had the book; I was working on a reserve at Tilbuster before going out to Hillgrove.

Sworn at Armidale, this 18th day of December, 1888, before us,— E. THORNE.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. Simpson: This deponent being duly sworn, on oath, states:—My name is *William Gray*; I am a gold-miner, residing at Hillgrove; I hold a miner's right, and did hold one for last year, 1887; I am a partner in the firm of Thorne and party; I know block 113, county Sandon, parish Cooney; I know the north-east corner of that portion; there is a peg and a tree marked at the north-east corner; the peg represents two parties, one Thorne and party, and the other Hanlon; that is about 10 or 12 links from where the tree is marked; the corner I refer to is the corner of a gold lease,

lease, and I also know where the corner tree stands on the corner of portion 113; I know the lower portion of 113, that is near the creek; I pegged out a claim on this portion with Thorne the last witness; we pegged it out on Saturday the 16th July, 1887; nobody else was with us when we pegged it out; we pegged out five men's ground along the line of reef; looking at the plan, marked "A," all the claim was pegged out, the biggest part of it on portion 113; we pegged out about 300 feet along the line of reef by 200 feet; when we pegged it out on Saturday afternoon, we worked on it the rest of the afternoon, that is Thorne and I; the names of the five men were, Thorne, Gray, Emerson, Golding, and Leslie; after the 16th July, Thorne and I were working there every day after I had done my work for Mr. Brereton; I worked for Mr. Brereton eight hours a day, and the rest of the day, sometimes two, three, and four hours, I worked on my claim; Thorne was with me, but the other parties were not with us on all occasions; some of the others worked a little on the ground, but Thorne and I did the principal part of the work; we found the one reef on the land on the 16th July; when we pegged it out; the other reef we found about the 23rd or 24th July; that was the second reef; we applied for a lease on the 29th July; we had a disagreement with some of our party, and we applied for a 10-acre lease in the name of another party; Thorne and I were still in the lease; we took in the two McNamaras, Argles, and Edwards; this application was formed in the name of six parties, and we have been in possession ever since; looking at the plan "A," the dotted blue line represents the line between us and Brereton; Brereton then claimed the firm blue line, and claimed that firm blue line up to August, 1887, I think; that firm blue line would embrace a great deal more land of portion 113 than the broken blue line; we had notice about trespass on this land about three or four weeks after we took up this land; the notice was that we were trespassing on Mr. Hack's freehold, or something to that effect; this lease we have measured to us, and this lease embraces the whole of the land we took up under miners' rights; Golding did not do much on this ground after the 16th July; he was there several times; I knocked off work for Brereton about the 27th or 28th July, 1887; our datum post for the lease is on portion 113.

Cross-examined by Mr. M'Donald: I used to work for Mr. Brereton between 7·30 a.m. and 5 p.m.; it was dusk at 5 o'clock at that time; we had our hour for meals, and worked for eight hours; we worked with a candle on our lease; Thorne and I used to go after we had done our work for Brereton: we did not work always together; we did not knock off work always at the same time; I do not know what date Thorne left Mr. Brereton; we have worked every day on our claim, and up to the present date; I know a man named M'Neill; he was not working with us; he was working at Brereton's at the same time, and was not camped with me; I am a married man; I do not think he was camped with Thorne; we were camped close together; we were mates, and used to converse in the evenings; M'Neill asked me for a share in the land, or, in other words, asked me if I could give him a show, but he did not say where; when M'Neill came back from Armidale, on the 23rd or 24th July, I told him we had found the reef, but I cannot swear to the exact date; I cannot swear that he returned on the Monday; M'Neill never worked with me at all; Thorne was with me when I pegged out the land on the 16th July; it was in the afternoon; I gave evidence here before the Land Court in January last, and on that occasion I said that we pegged it out in the afternoon; I stuck in pegs and made trenches in assisting to peg out the land; the pegs we put in were about 3 or 4 feet high and 3 inches square; in putting in the pegs under our miners' rights we started at the nort-east corner of portion 113, about 8 or 9 links from the tree marked 113; we then went 200 feet south-westerly along the creek, and then about 300 feet north-westerly, and then across the reef again to the point of commencement; the reef is nearer the north-eastern boundary of our gold lease than the south-western boundary; we paced the distance along the creek, but did not measure it exactly; the pegs we put in to mark the ground are not there now; since it was surveyed as a lease, more than six months ago; the pegs we put in as a miner's right were there when we gave evidence before the Land Board last time, and the datum peg of the quartz claim, put in on the 16th July, is within a few links of the corner of portion 113, and was standing at the time when I gave evidence before the Land Board in January last; the datum peg for gold lease and miner's right is identical, and it was big enough for anyone to see at that date; we pegged fresh for a gold lease on the 29th July, and started from the same peg, but put in other pegs for the other corners; it is not a fact that we would not have Golding in the party for the lease application because he had not a miner's right; I was not aware that Golding had not a miner's right; we never registered our claim with the Warden's Clerk; we were prospecting it, and did not know that it was applied for as a conditional purchase; there was no gold in the first reef that we found on the 16th July, but there was gold in the one we found on the 23rd July; Emerson, Golding, and Leslie worked on the land at odd times; I will swear that Leslie worked on the ground, but I do not remember whether he worked on it while we held it under miner's right; I did not sign a petition to the Minister, asking for a refusal of Hack's conditional purchase, as there was a large amount of machinery on the land; there is some machinery on the land, but I cannot swear whether it is on the land or just off it; we have had it there since March last.

Cross-examined by Mr. Simpson: We have had the machinery on the land since about two months after we took the land up.

Cross-examined by Mr. M'Donald: I was not here when the objection of A. J. Hack, lodged against Thorne's lease, was heard before the Warden in August, 1887; when I said, in answer to you, a little while ago, M'Neill and I were talking about selections, I had one at Bathurst, I made a mistake, as we were not talking about selections.

Sworn, at Armidale, this 18th day of January, 1887, before us,— WILLIAM GRAY.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. Simpson: This witness, being duly sworn, on oath, states:—My name is *Edward McNamara*; I am a miner, residing at Hillgrove; I am one of the parties in the firm of Thorne and party, and applicants for a lease of 10 acres; I know portion 113, parish Cooney, that Hack selected, subject of this inquiry; our lease embraces some portion of this portion 113; we gave notice of intention to apply for this lease on the 29th July, 1887; before we applied for this lease we had occasion to visit the ground; I was taken there on the 25th July by Gray and Thorne; I saw that they had opened a small leader on the ground; I saw that work had been performed on the ground; they asked me over to see the reef that they (Thorne and Gray) had found, and they said they had no money to work it; I inspected the ground, and I saw the pegs myself; looking at the plan "A," I point out where there was a peg about half a chain from the tree marked 113; south of that about 300 feet I saw another peg, and north-west about 300 feet I saw another peg; I saw another peg north-east of portion 169; all this evidence about the pegs refers to the quartz claim that I saw on the 25th July; previous to the 23rd July I saw two pegs close to the creek; on the 29th July, 1887, we applied for a lease, and we have been working on the ground ever since; we had a small two-head battery there; there was a dispute between our boundary and Brereton's boundary; that is our northern boundary and Brereton's southern boundary; there was about and acre in dispute between Thorne and party and Brereton; there would be half an acre of the portion in dispute in portion 113; I got a notice from Mr. A. J. Hack, on or about the 3rd August, claiming the land; the day before I got the notice I saw Hack, and on that occasion he said, "Chaps, I do not know whether you are working on the ground claimed by me or not; if you are I certainly will have to object to you"; Hack never said anything then about his corner pegs, and I have received no notice whatever, excepting what I have already mentioned; I helped to peg out the lease on the 29th July; I am the holder of a miner's right, and held one in 1887.

Cross-examined by Mr. Kearney: I had no interest in the miners' rights until the 25th July; I worked mates with them from the 25th, share and share alike; I did not purchase a share in this; there were three parties to go out between the time they pegged out their mining tenement and my joining them; there was no transfer of this mining tenement registered to me, and I am aware that there was no registration of the mining tenement; there was no repegging on the 25th, when I joined; there were four fresh men who joined the party on the 25th, including myself; there were three to go out and four to come in, and this made a six men's claim of it; the names of the persons who came in were Michael McNamara, Alfred Argles, J. C. Edwards, and myself, and the matter remained in that position until we made our application on the 29th; there were no transfers; it was about dinner-time that I went on to the ground on the 25th, and went with Gray there and Thorne; it is the same witness as in Court; I had been prospecting about there for some months; I saw two pegs there on the 23rd, but the trenches did not seem to have been freshly done; there were not a great number of pegs in that locality; the pegs I saw represented about five men's ground; I was present when they put down the pegs to mark the 10-acre lease. We left the pegs of the quartz claim standing, and put other pegs outside for the lease; the peg near the corner tree was left; to the best of my opinion the datum peg was left there; the pegs we put in were conspicuous, and could be seen; they were of the usual height; I have seen the ground recently, and I know two of the pegs are not there; I do not know what became of them; I cannot say when I saw the two pegs there last; I never heard of them being removed; they were there after the 29th July, and after that we took no notice of them; on the 25th, when I visited the land,

land, I saw a hole that had been made by a pick and shovel; I think the hole may have been 5 feet long; it was an ordinary trench; they were prospecting at that time; this was situated under the big boulder; I have no doubt about that whatever; I have been earning my livelihood by mining for some years; I could not tell what length of time had been expended in the trench, it might have been done in a day, or it might have taken a week.

Cross-examined by Mr. Simpson: I know that Thorne and Gray had found a reef before they told me; I knew some two or three days before they came and showed it to me; they came and borrowed our mortar and showed me some stone.

Cross-examined by Mr. Kearney: I said that I worked on and off this land since the 25th July; I have not worked on it continually myself since that date, I mean some of our party have; if there had been no crushing done while the trench was being dug it could have been done in a day; there was no usual transfer, when I joined the party, of any share that I acquired in the claim; on the 23rd July I saw two pegs myself, and on the 25th I was shown the four pegs by Thorne and Gray; I did not go over the whole of the ground; on the 23rd July I knew the two pegs did not belong to Brereton, but I did not know that they belonged to Thorne and party.

Cross-examined by Mr. Simpson: The two pegs I saw on the 23rd July were two of the pegs shown to me by Thorne and Gray on the 25th July; it is all hard working ground on the side of this mountain.

Cross-examined by Mr. Kearney: There was stone there.

By the Board: Looking at the plan A, I observe portion 113; I will swear positively that three pegs shown to me by Thorne and party were on portion 113, that is, the pegs under the miners' rights.

EDWARD McNAMARA.

Sworn at Armidale, the 19th December, 1888, before us,—
F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. Simpson, recalled and resworn: This witness, being duly sworn, on oath, states:—My name is *William Gray;* I gave evidence here yesterday; I recollect the 25th July, 1887 last; I saw Edward McNamara; I took him up to my miners' rights claim; I took him there to show him that we had found a reef; I showed him the reef, and he asked me where our top pegs were; when he started to go up, I said, "You had better join us, as we are poor, and some of our partners are going out"; before the 25th July I went to borrow his mortar; it was on the 17th that I borrowed McNamara's mortar; it was on a Sunday, that was the next day after we took up the ground; I believe I showed McNamara the stone, and that was out of our reef; after that everybody knew that Thorne and party had pegged out.

Cross-examined by Mr. M'Donald: It was on Sunday, the 17th July, that I borrowed McNamara's mortar; I did not crush the stone that day; I did not show McNamara what I got out of it.

WILLIAM GRAY.

Sworn at Armidale, this 19th day of December, 1888, before us,—
F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. Simpson: This deponent, duly sworn, maketh oath, and saith as follows:—My name is *Martin Brislane;* I am a miner at Hillgrove, and I am one of the party of Hanlon and party, and we adjoin Thorne and party; I know where the marked tree of portion 113 on the creek is; I know Thorne and party's Enterprise Claim; I know Thorne and Gray; I recollect going on to the land they pegged out; I did not see them pegging out, but I saw Thorne and Gray on the 16th; it was a Saturday; I saw them bringing stone from the direction of Thorne and party's claim on that day; it was after dinner; they brought the stone to the camp and threw it down and burnt it some time after on the same day and crushed it, but I did not see what they got out of it; on the Saturday following I went to peg out some ground, and then we went to find the top pegs of Thorne and Gray's claim; we found the pegs of their claim some time after looking for them; we were then pegging out a claim on the top of their claim; I did not go round any other pegs; I have seen Thorne and Gray on their claim before the 23rd; I could not say how many times I saw them there before the 23rd.

Cross-examined by Mr. M'Donald: Our claim joins the bottom end of Thorne and party's, but I pegged out on the top end; I pegged out at the top end before I joined Hanlon and party, but did not keep it; I know that it is the 16th, because I went to work for Brereton on the 13th, and worked half a day on the 13th; there was a man named M'Neill with Brereton at the same time; he was not in the camp when they brought the stone, and knew nothing about them finding the reef until he came out from Armidale; we were all camped together; I do not know that part of Hanlon & Co.'s lease is on portion 113, except what I am told; I do not know that if Hack loses this land that I shall get a larger area of land than if he did not; I know that our lease has not been granted to us yet, and I do not know the reason why.

Cross-examined by Mr. Kearney: There was a telegram sent to the Mines Department about the sale of our claim; I did not cause a telegram to be sent as to the cause why the lease was not granted, and did not receive a reply; I heard Mr. Elliott read a telegram, and I cannot say that the telegram gave the reason why the lease was not granted.

Cross-examined by Mr. Simpson: There is no arrangement between myself and Thorne and party assuming that I would get more ground if Hack loses this land; this would make no difference in my evidence.

MARTIN BRISLANE.

Sworn at Armidale, this 19th day of December, 1888, before us,—
F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. Simpson: This witness being recalled and resworn, states:—My name is *Alfred James Hack;* I have never conditionally purchased land in New South Wales before the present application; I have never before held a selection of any kind.

By the Board: I discovered that this portion was over 40 acres subsequent to my making application for it; I did not know at the time I applied that it was over 40 acres; I took this land up as a measured portion of 40 acres; I was not aware that Brereton and party's gold-lease interfered with portion 113 when I took the land up.

Cross-examined by Mr. Simpson: I was told that the area of this portion was over 40 acres.

Cross-examined by Mr. Kearney: I went purposely on to the ground to select it.

A. J. HACK.

Sworn at Armidale, this 19th day of December, 1888, before us,—
F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. Simpson: This witness, being duly sworn, on oath, states:—My name is *Michael McNamara;* I am one of the party of Thorne and party; I hold a miner's right, and had one in 1887; I know portion 113, parish Cooney, and I know the tree at the north-east corner; in fact, I know the whole of the corners; I know Gray and Thorne, and I also know that they have a quartz-mining claim; I know it by their showing me their pegs on the 26th July, 1887; I went round the ground with them on that day; I should say the north-east peg of their claim is about half a chain from a marked tree, No. 113; that was the peg they showed me as the peg of their mining tenement; I went to the south-easterly peg, and from there to the south-westerly peg, and from there to the northerly peg, as I should term it, the north-westerly peg; the greater portion of this land stands on portion 113, and except the northerly peg, and that may have stood outside portion 113, the ground they had pegged, I should say, was 300 x 200 feet; it might be an acre and a half, but I could not say exactly; there was a dispute between Brereton's southern boundary and Thorne and party; looking at the plan "A" I see a dotted blue line; Brereton's peg stood on the corner of the dotted blue line; taking Mr. Brereton's southern line as shown by dotted blue line, it embraces a corner of portion 113; I cannot say what area; I saw Mr. Brereton's application for gold-mining lease of 8 acres, that being the southern peg of his lease; I stood at the southern peg of Brereton's lease and looked along the line of his lockspit; I saw that it embraced part of portion 113; on the 26th July, 1887, I understood I had an interest in the ground which had been preferred to me by my brother on the 25th July; on the 29th July I applied

for

for a lease of this ground, with five other parties, and I prospected on the ground that they showed me; they pegged out from the 26th to the 29th; we have machinery there; the mine is opened up; on the 26th July I had a look at the hole that Thorne and party had opened on one side of the reef; the ground looked as if it had been recently worked, and there had been quartz crushed on this reef; on the 26th July, I crushed some quartz myself out of the reef pegged out by Thorne and party, under their miner's right; the 26th was the first day that Thorne and party told me they had found the reef; from something I heard previous to the 26th, I went on to the ground to look at it.

Cross-examined by Mr. Kearney: I became interested in this land for the first time on the 26th; there was no transfer, as far as interest of the land was concerned, on the 26th July; at that time, as far as I knew, this was a quartz claim of five men; up to that date all I knew about the pegs was from hearsay; at the time I stood on Brereton's peg, and looked along the line; I knew the marked tree of portion 113; I saw the tree previous to my looking along the lockspits, and I had been prospecting for some five or six weeks previous to the 26th July; I had not seen this land pegged out prior to the 26th July, and had no connection with Thorne and party during the five or six weeks referred to; I have had a fair experience as a miner, and while I was prospecting there I might not have seen the pegs there; my object for prospecting was with the idea that I might possibly find a reef worth taking up; in the event of my finding anything, I would have looked out for pegs; I remember giving evidence here in Warden's Court on one occasion, to the best of my knowledge last year, but the date I cannot fix; in all probability I did state in the Warden's Court that we at first intended to apply for this ground under miners' rights, but changing our minds, we remarked, and applied for the land to lease; I do not remember if I stated on that occasion whether Thorne and Gray held a quartz claim; my position as regards the quartz claim is not altered from that day to this; I had not seen any quartz raised from Thorne and party's land previous to the 26th; the quartz I crushed on the 26th contained a little gold, but not much; we have erected a small water-mill, I think it is on portion 113, and a small 2-head stamper; we started to erect these in September, 1887; it is used for crushing quartz that we raised off that ground, and has not been used for any other purpose since; I am pretty certain about the position of this machinery; it stands between the two corner trees of 113 in the creek; according to the plan "A" the machinery stands on the land applied for by Hanlon & Co. as a lease; I know, for a positive fact, that it is not within the portion applied for as miners' rights; it is not in the portion applied for by us as a lease on the 29th July; I signed a petition to the Minister for Mines, asking that Hack's conditional purchase be refused, on the ground that large sums of money had been expended in machinery and working the ground.

Sworn at Armidale, the 19th day of December, 1888, before us,— MICHAEL McNAMARA.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Case postponed until Friday, the 21st instant, at 11 o'clock.

Cross-examined by Mr. Forster: This deponent, being duly sworn, on oath, states:—My name is *James William Metcalfe;* I am a miner; I know Gray and Thorne, by having seen them knocking about the Baker's Falls; I was at Morton's on the 15th July, 1887; Morton's is a half-way house between Armidale and Hillgrove; on the noon of the 16th I went down the Falls; I saw two men pegging out some ground between 2 and 3 o'clock; I said to them, "Hullo, you are pegging out a claim," and they replied, "Yes"; I asked them if they had a miner's right, and they said, "Yes, they were pegging out five men's ground"; I said, "You had better give me a show in it," and they said, "We cannot—it is too late"; there is a tree marked 113, and the peg is put about half a chain away from the tree 113, the north-east corner of the ground, the way it is laid; this land Thorne and Gray were pegging out was on the opposite side to Hillgrove and Baker's Creek Company's claim; I saw them put the peg in and cut the trenches out; I only saw one peg and trench in the lower end of the ground; the ground is a little steep.

Cross-examined by Mr. Kearney: It was only from a remark they made to me that they were pegging out five men's ground; Gray passed this remark; my memory is very good as to dates; I have got the date of 16th July noted in a book, which I do not produce; I met with an unfortunate accident on the 15th November, 1887, at Hillgrove; I may have noted the accident in my book; I was not spoken to before the 18th, not until last evening, about giving evidence here; Gray spoke to me last evening, and said to me, "What day did you come down the Falls?" and I said, "On the 16th"; when I got on the ground on the 16th, Gray and Thorne were pegging out the ground; I never said to Mr. Hack that these men were blasting on the ground; I told Mr. Hack that it was days afterwards the 16th that they were blasting; I did not go all round the ground; I saw them putting the last peg in about half a chain from tree marked 113; I cannot tell what sort of a boulder they got out, as it is so long ago; I did not take notice on the 21st or 22nd whether there was anything else near this boulder; the ground is very steep above where they put in the trench; I did not notice if they put a trench in for a reef; I might have signed a petition against Hack getting the ground, but I do not remember.

Sworn at Armidale, this 21st day of December, 1888, before us,— J. W. METCALFE.

F. G. FINLEY. J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. Forster, solicitor: This witness, being duly sworn on oath, states:—My name is *John Moore;* I am a storekeeper residing in Armidale; I know block 113, parish Cooney, Hillgrove Falls; I was an applicant with others for this block; I cannot recollect the date I selected it; I think it was after the year 1881; we applied for 40 acres; looking at plan "A" I recognize portion shown thereon in red colour as No. 113, and adjoining blocks 109 and 110; at the time we applied for this land, and we only paid for 40 acres, and the land was surveyed to us; the interest we only paid on 40 acres up to the time of its lapsing, in consequence of Mr. Speer not paying for his interest.

Sworn at Armidale, this 21st day of December, 1888, before us,— JOHN MOORE.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. Forster, resworn and recalled: This witness, being duly sworn, on oath, states:—My name is *William Gray;* I remember giving evidence referring to the pegging out of the five men's ground; they each had miners' rights; the names of the parties were Thorne, Leslie, Emerson, Golding, and myself; they showed me their miners' rights; Golding has three names which he goes by; they are Golding, Purchase, and Purdey.

Cross-examined by Mr. M'Donald: I do not know where Golding is now; I may have seen him two or three months ago; I was present at the Land Court in January last; I do not remember whether Golding was called at that Court; I do not think he gave evidence; I do not recollect Mr. Badham being called; I do not know that Golding obtained a miner's right at the office here in October, 1887; Golding showed me a miner's right in the name of Purdey or Purchase, not in the name of Golding; I was never asked if his name was Purchase or Purdey; in January last I did not say if his miner's right was in the name of Purchase or Purdey; I did not read his miner's right; he told me that his miner's right was in the name of Purdey, but he said I am better known as Golding; it was taken out at Armidale; this same man did not have an interest in another claim with me; he is not the same man that sold a cab to me; I had a buggy given over to me, but I never bought it; the man that lent me the cab is the same man as had an interest in the Enterprise claim of five men's ground.

Sworn at Armidale, this 21st day of December, 1888, before us,— WILLIAM GRAY.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. Forster, solicitor: This witness being duly resworn on oath, states:—My name is *John Griffin Martyn;* I am a licensed surveyor residing in this district; I know block 113 referred to in this case; I think it was applied for by John Moore for 40 acres under the 19th section; I surveyed this land as 40 acres; when I measured the block I knew the block contained more than 40 acres; at the time I measured I made it 40 acres 2 roods 24 perches; since

since then I have increased the area slightly; it is quite possible that surveyors may make a difference in the survey of traversing creek boundaries, and it is a discretionary matter with surveyor as to the traversing boundaries on a creek; we recognize the edge of the bed of the creek as the boundary of the portion; the fair mean high water-mark which the surveyor fixes at the time of his survey from what he sees.

Cross-examined by Mr. Kearney, solicitor: Having taken this mean I surveyed the block, and the survey has been accepted, I believe.

Sworn at Armidale, this 21st day of December, 1888, before us,— JOHN G. MARTYN.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. Kearney, solicitor: This deponent, duly sworn, on oath, states:—My name is *William Gordon Brereton;* I am a miner; I am interested in same claim at Hillgrove; I know the end of portion 113 near the creek; I have not been much on that block; I made an application for a lease, and it crosses the creek; I have been on the ground; looking at the plan "A" I pegged off gold lease 166; I think I pegged this out in April, 1887, I point out on the plan, at the north-east corner a tree marked 113; in April, 1887, there were no pegs there that I could see, only what I put in myself; I saw this land every month after this until the end of the year; I saw some pegs there, but I would not be sure whether it was in July or August; I saw lots of pegs there a month or two after I pegged out; I saw one peg in particular inside the land I pegged out, claimed by Thorne and party, up the creek about 1 chain or 1½ chain outside of block 113, and they claimed that as their datum until the surveyor came, and after that, as far as I know, they started on a new line altogether; I knew Thorne and Gray pretty well; they had been in my employ a little while; I think I only paid them once; they were only about a fortnight with me; on the 26th July I paid Thorne £4 17s. for two weeks and one hour, and on the 28th July I paid Gray £5 8s. for thirteen and a half days work; I was on the land then looking after it but not doing much work; they were generally there before I came in the morning, and I very seldom left before they finished in the evening; their working hours were from 7·30 a.m. to 5 p.m., with an hour for dinner; their day's work was for eight hours; the half hour was so they could knock off at 12 o'clock on Saturday; I have no doubt that they worked constantly whilst in my employ; they did not work on block 113, as far as I knew, while in my employ; as soon as they had done work I got on my horse and went to the top of the hill; it was in the middle of winter; it was often dark when I got on to the top of the hill; Thorne told me that he had found a piece of ground of his own, and was not going to work any more for me, and I paid him as soon as ever he told me; I paid him on the same day, but I thought it was about the 26th July; I went down on my horse on the morning; I think it was a Tuesday, and this was the first time that they told me that they had found a piece of ground; I never heard any blasting going on before the date Thorne left me; that is on portion 113; I know the position of their claim very well.

Cross-examined by Mr. Forster, solicitor: I did not put all these writings in my book at the same time; there may have been writing in my note-book on the second leaf before I wrote in lead-pencil; I never rubbed anything out; looking at plan marked "A" I encroached on portion 113 by firm blue line showing my application for gold lease made in April; I withdrew my claim as far as the firm blue line and accepted the dotted blue line by mutual agreement with Thorne and party; notwithstanding this, there was still a small encroachment on portion 113; after that I never asked for a part of the firm blue line to be excised; I wrote to the Minister asking for a part of dotted blue line to be excised, that is, a small part inside the dotted blue line; I mean the encroachment of portion 113 from my lease; I wanted a modification cutting that out of my lease; I recollect giving evidence here before the Land Court on or about the 20th January, 1888; I cannot remember the exact date; my lease has been granted to me for about 7 acres; I recollect the dispute between Thorne and party and myself before the Warden; I was in possession of the firm blue line up to the date that the surveyor came and surveyed it; I think the lease survey was made before the date of the Warden's Court; I have remarked before the Land Court and before the Warden that Thorne and party's peg was on my land; their peg was about 1 chain or 1½ chain from the marked tree 113; I saw other pegs on the other side of the tree; my peg at the top was an apple-tree stump; there was one wet day while Thorne and party worked for me; I did not make a note of this wet day; I think this was the only wet day; they do not generally work on wet days; there had been very little work done on my ground at that time; I had four men there prospecting; I was dollying in the creek very often all day long; I often would be dollying all day long from 8 o'clock to 5, except Sundays; I might have been away half-an-hour or an hour at different times; my application for lease was 8 acres, and about 7 acres has been allowed to me; the dotted blue line forms a boundary of the 7 acres.

Cross-examined by Mr. Kearney, solicitor: The loss of the acre on my gold lease does not all come out of portion 113.

Sworn at Armidale, this 21st day of December, 1888, before us,— W. G. BRERETON.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. Kearney, solicitor: This witness, being duly sworn, on oath, states:—My name is *Peter Daly;* I am a miner; I was a miner in July, 1887; I was at Hillgrove nearly all of July; I know portion 113; I was on that portion about the 27th July; I saw Michael and Edward McNamarra there; they were taking out a big rock that they said covered a reef; they had just about commenced the work; they had been working there about half-an-hour; I did not see any pegs on the ground; I went on to the land to see about pegging a piece for myself, but I did not search so diligently as I would have done had I liked the ground; I could not see any other work done on the ground, except the work at the rock; I had been mining at Hillgrove some time previous to this; I am an old miner; I fixed the time in my mind by the receipt for the purchase of a horse.

Cross-examined by Mr. Forster, solicitor: I was only on the ground once, but I looked pretty carefully over it.

By the Board: I did not know at that time that I was on portion 113, except what I was told; I did not see a tree marked 113.

Sworn at Armidale this 21st day of December, 1888, before us,— PETER DALY.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. M'Donald, solicitor: This deponent, being duly sworn, on oath, states:—My name is *John James M'Neill;* I was at Hillgrove about the commencement of July last year; I was working for Mr. Brereton at that time; I know Gray and Thorne; they came to work for Brereton after I did; they worked for Brereton during the time I worked for him; I came into Armidale on the 23rd July; it was a Saturday evening; I considered about this date when I was summoned to appear in this case; I had been working for Brereton from somewhere about the beginning of July; my family were living in Armidale when I came in to see them; I received £4 from Brereton for wages; I went back to Hillgrove on the Monday following; I had some conversation with Thorne on the Monday night, the 25th; he said to me, "I found something good on Saturday while you were away in Armidale"; he did not seem to care to show me where it was; I saw where Thorne went, it was on the opposite side of the creek to where we were camped; I went over to see the ground that Thorne was working; I went over on a Wednesday, it was the 27th; I had no other conversation with him on the Wednesday about this.

Cross-examined by Mr. Simpson, solicitor: I cannot fetch it any other date but the 23rd; Mr. Hack did not say anything to me about the date.

Sworn at Armidale this 21st day of December, 1888, before us,— J. J. M'NEILL.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. M'Donald, solicitor: This witness, being duly sworn, on oath, states:—My name is *George Burton;* I was at Hillgrove last year working for George Smith; I was mining for him; altogether I was working for eighteen months for Smith; I know Gray and Thorne; I know the place where they had a claim at Hillgrove; I know

portion

portion 113; it is close to Baker's Creek mine; it is north-west from Baker's Creek; I knew the place where Thorne and Gray's claim is before they took it up; I have split timber on that land, but I cannot state the day or date; I have seen Thorne and Gray working at their claim just after they had pegged it out, but cannot say the date; I remember seeing Hack at their claim; Hack served some of the party with a notice, they were working on the ground a week or so before that I suppose it was about a week before they pegged it out; I was splitting timber there; I saw them working on the ground I suppose between 8 a.m. and 5 p.m., ordinary working hours; I know the two McNamaras; I have seen them working there; I saw them working there the day the notice was served, and a few days before it also; there was only my mate working with me then, and there was no one on it then; I was camped close to it; I have seen Thorne and party working at a tunnel by candle-light, but not about that time; I never saw them working by candle-light before Hack served them with the notice; there was one shot fired at Thorne and Gray's after the time I saw Hack.

By the Board: I cannot remember date or month.

Sworn at Armidale, this 21st day of December, 1888, before us,— GEORGE BURTON.

F. G. FINLEY, Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. M'Donald, solicitor: This witness, being duly sworn, on oath, states:—My name is *Christopher Allingham;* I am a miner at Hillgrove; I know Hack and Thorne and Gray; I know portion 113 at Hillgrove; I remember being there on the 22nd July last year; I went there purposely; I went to see if any pegs were on the land; I made a search, but found no pegs; I was there on 26th July; on that occasion I looked over the ground, but did not search particularly; I walked across the land at the lower end; I found no marked trees there on the 22nd, nor any trenches cut, and I did not see any one on the ground; it was after dinner when I got down there; I went down there at Hack's request.

Cross-examined by Mr. Forster, solicitor: There were no pegs there that I saw; I searched carefully on the lower end of this land—at the lower end; I did not know if I should find pegs there; I went there at Hack's request; I do not think there could have been pegs there; I found tree No. 113; I believe I went up the creek from 113; I saw a peg up the hill on Brereton's ground; I mean an apple-tree stump; I am not interested in this case, but Hack is my brother-in-law.

By the Board: I found the old corner of portion 113, but I did not find any new marked trees.

Sworn at Armidale, this 21st day of December, 1888, before us,— C. ALLINGHAM.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. M'Donald, solicitor: This witness, being duly sworn, on oath, states:—My name is *George Phillips;* I am a miner at Hillgrove, and I have been a miner for some years, and during that time have had a good deal of experience in mining work; I know portion 113, parish Cooney; I know Thorne and Gray and their party; I know their mine on portion 113; I was there on the 4th August last year; I had been there before; on the 4th August I saw four men there, and also saw what work had been done; I thought that three days' work had been done by the four men there; that is what I thought.

Sworn at Armidale, this 21st day of December, 1888, before us,— GEORGE PHILLIPS.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. M'Donald, solicitor: This witness, being duly sworn, on oath, states:—My name is *William Hanlon;* I am a miner, at Hillgrove; I know a portion of ground that goes by the name of Enterprise Mine; I know where Thorne and party's claim is; I was there before they pegged it out; I remember that it was pegged out by Thorne and party; I meant to peg it out, but they were too early for me; that was somewhere about the 21st July.

By the Board: If I am not mistaken, the pegging out took place on a Friday; I never saw any pegs there; they told me I was too late to peg it; Thorne and Gray told me.

Sworn at Armidale, this 21st day of December, 1888, before us,— WM. HANLON.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. M'Donald, solicitor: This witness, being duly sworn, on oath, states:—My name is *Robert Brown;* I am a miner, at Hillgrove; I know a place called the Enterprise; I was there before Thorne and Gray had a claim; I have been off and on at Hillgrove for the past two and a half years; I was on that ground somewhere about the 18th or 20th July, 1887; I did not see anyone there then; I did not see any pegs or any markings of a claim; I was over the land two or three times, both before and since; at that time I speak of I did not notice any work done on the land; I have an interest in a claim pegged out on portion 113; I know the land; Hack's claim and part of my claim is on that portion.

Cross-examined by Mr. Forster, solicitor: I was on the land about 11 o'clock, and I was there in August last; I did not look to see if any work had been done; I went there prospecting, and not to look for pegs; I only remained about an hour on the ground.

By the Board: At the time I went there in July I knew where the corner tree of portion 113 was on the gully; I do not know which corner that is, only that it is close to the creek; I should say that corner 113 is 6 or 7 chains from the Enterprise claim.

Sworn at Armidale, this 21st day of December, 1888, before us,— ROBT. BROWN.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. M'Donald, solicitor: This witness, being duly sworn, on oath, states:—My name is *Neill O'Donnell;* I am a miner, and live at Hillgrove; I know Hack, Thorne, and Gray; I know portion 113, parish Cooney; I know where Thorne and Gray's mine, called the Enterprise claim is; I have known that ground for thirty years, and before Gray and Thorne were there; I was there about the 24th July, last year; I did not see anyone there on that occasion; I did not see any claim pegged out then; I was there about the 30th July; I am not quite sure about the day I saw Mr. Thorne there; on that day I saw them digging; there was not much work done; they had made a bit of a hole.

Sworn at Armidale, this 21st day of December, 1888, before us,— NEILL O'DONNELL.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined by Mr. M'Donald, solicitor: This deponent, being duly sworn, on oath, states:—My name is *John Michael Sheahan;* I am Mining Registrar at Armidale; I produce the book which shows the lists of miners' rights issued during 1887: I have made search in that book for a miner's right in the name of Richard Golding, or Purchase, or Purdey; I found a miner's right, issued on the 6th October, 1887, to James Golding; there has been no miner's right issued to anyone of the name of Purchase; but one was issued on the 14th January, 1887, to Henry Purdey.

Sworn at Armidale, this 21st day of December, 1888, before us,— JOHN M. SHEAHAN.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

Cross-examined

Cross-examined by M. M'Donald, solicitor : This witness being duly resworn on oath, states :—My name is *Alfred James Hack* ; I served the notice on Thorne on the 4th August, and on Alfred Argles on the 3rd; also the two McNamaras on the 4th August; the notice was warning them that I conditionally purchased the land on the 21st day of July ; I had a conversation with Metcalfe this morning, and I asked him what brought him to town, and he told me he came to town about my case ; he said, "I saw them on the 16th July" ; I said, "what were they doing there then ?" and he said "they were blasting a big rock that the reef went through" ; it was on the 9th December that I applied for a permit to search for gold.

Cross-examined by Mr. Simpson, solicitor : Up to the present time I have not expended a fraction on the land, and I have not taken possession.

Sworn at Armidale, this 21st day of December, 1888, before us,— A. J. HACK.

F. G. FINLEY, J.P., Acting Chairman.
C. E. SMITH, P.M.

This closed the evidence.

Acting Chairman.

No. 61.

Decision of the Board.

Crown Lands Act of 1884—(Part II, section 14, subsection 4.)

Decision of Local Land Board.

New South Wales, Armidale, to wit.

WHEREAS on the 18th, 19th, 21st, and 22nd days of December, 1888, it became a matter for investigation before us whether the land applied for by Alfred James Hack, on the 21st July, 1887, at Armidale, as conditional purchase No. 87-91, of 40 acres, in the county of Sandon, parish of Cooney, was available at date of application, and having taken evidence and inquired into the said matter, we decide to forward the evidence to the Honorable the Minister for Lands, for his decision under section 14, subsection 7, and beg to attach the following report, viz. :—

1. That, in the opinion of the Board, W. G. Brereton was in lawful occupation, for mining purposes, of that part of measured portion No. 113, as shown to be embraced within gold lease, No. 166, by the firm blue line on plan A, on the date of A. J. Hack's conditional purchase ; and that the said measured portion, in consequence thereof, was not open to, nor available for, conditional purchase on the 21st July, 1887, the date of A. J. Hack's application. The land had been previously measured to satisfy an application of one John Moore for a mineral conditional purchase of 40 acres, and any encroachment thereon, such as Brereton's gold lease, would reduce the area below 40 acres.
2. That, in the opinion of the Board, the evidence does not satisfactorily prove that Thorne and party were in lawful occupation, for mining purposes, of any part of measured portion No. 113, prior to the 21st July, 1887, the date of A. J. Hack's conditional purchase.

F. G. FINLEY, Acting Chairman.
C. E. SMITH, P.M., Member.

No. 62.

The Acting Chairman, Land Board, Armidale, to The Under Secretary for Lands.

Crown Lands Act of 1884—Part II, section 14, subsection 7.)

Reference by Local Land Board to Minister.

New South Wales, Armidale, to wit.

WHEREAS on the 18th, 19th, 21st, and 22nd days of December, 1888, a case wherein Alfred James Hack applied for 40 acres of land on the 21st July, 1887, at Armidale, as a conditional purchase No. 87-91, in the county of Sandon, parish of Cooney, and the said matter came on for decision or adjudication before the Local Land Board at Armidale, and the said Board having taken evidence, do now, instead of adjudicating further or deciding thereon, refer the case to the Honorable the Minister for Lands for decision.

Given under my hand, this 27th day of December, 1888, at Armidale.

F. G. FINLEY,
Acting Chairman.

No. 63.

The Acting Chairman, Land Board, Armidale, to The Under Secretary for Lands.

Sir, Local Land Board Office, Armidale, 27 December, 1888.

Herewith I have the honor to forward you the whole of the papers in the case of A. J. Hack, together with the depositions taken before the Board at the rehearing of the case, recently held in accordance with the Honorable the Minister's memorandum dated 27th July, 1888, on papers C.S. 88-29,169.

Alfred James Hack, C.P. 87-91, 21 April, 1887, 40 acres, 47 section.

Having in view the fact that the previous decisions in the case were given by the Minister, the Board has not thought it within its province to give an actual decision on the rehearing of the case. It has, however, had the advantage of a personal hearing of the evidence and observation of the witnesses, and it is thought that the Minister might wish to have an expression of opinion from the Board on the case. A short report has, therefore, been appended, which will be found on the decision paper.

I might add that the Board has given every opportunity to all parties interested in the case to produce evidence to put the case fully before the Minister.

I have, &c.,
F. G. FINLEY,
Acting Chairman.

No. 64

No. 64.

Précis of Mr. A. J. Hack's case.

Armidale Conditional Purchase 87–91, 47th section, 40 acres, portion 113, Alfred James Hack.

THE above conditional purchase, being measured portion 113 of 40 acres, was selected under the non-residential clause by A. J. Hack, on 21st July, 1887, and the land agent made the following endorsement upon the application:—"Received, subject to land being available, and applicant duly cautioned."

On 20th December following, the miners of the district petitioned against the allowance of the conditional purchase, on the grounds that the land had been gazetted a gold-field, and if the selection were allowed it would be a great injustice to the mining community; and by letter of 15th August, 1887, the Under Secretary for Mines stated that the land embraced by portion 113 was auriferous, and asked whether it had been selected by Hack. He was informed that it had been so selected, and on 19th of the same month this letter was forwarded to the Chairman, in whose hands the former papers were.

On 30th August, 1887, Mr. District-Surveyor Finley reported that the land in question was not within any gold-field. The gold-field was, however, proclaimed upon date of surveyor's report, viz., 30th August.

On the 1st September, 1887, the case came before the Land Board, who, having taken evidence, decided to refer it for the decision of the Minister, and on 12th November following, Mr. Secretary Garrett decided as follows:—"From the evidence there can be no doubt that the portion was open to conditional purchase at date of application, and has since been reserved as part of a gold-field. There can also be no doubt that it has been, since it was applied for, proved to be auriferous, but not by the applicant for the conditional purchase. Under this state of facts I must confirm the conditional purchase. It will be for the miners, if they think fit, to apply to have permission to dig and search for gold, and then, on application, the conditional purchase may be resumed. The conditional purchaser should be informed of his position at the time of Board carrying out this decision." The papers were then returned to the Chairman, and the application was accordingly confirmed.

On 27th December, 1887 (6,615 L.B.), Mr. District-Surveyor Finley made a further report, in which he drew attention to the fact that several circumstances had arisen which presented apparent objections to the immediate confirmation of the conditional purchase.

He pointed out that a number of conflicting gold leases encroached upon the portion in question, but the only claim that could stand against the conditional purchase was gold lease No. 166 by Brereton and Smith, which was of prior date to the conditional purchase, all the other leases being of subsequent date. He also pointed out that the encroachment of Brereton and Smith's gold lease, as claimed by them, was about 32 perches, but according to the Warden's recommendation, consequent on a dispute between Brereton and Smith (gold lease 166) and Thorne & Co. (gold lease 169); the encroachment was only about 8 perches; but in any case the surplus area in the portion would admit of the encroachment, and still leave a residue of 40 acres.

In view of a letter, dated 28th December, 1887 (7,311c), from Mr. W. H. Forster, solicitor, the papers were recalled from the Board, and the Chairman intimated that any action in the matter should, in the meantime, be suspended, and on the 4th January, 1888, the following minute was made by Mr. Secretary Garrett:—"From the facts as now set out in the district surveyor's report, and which were not before me when I gave the decision on 32,529, it is clear that application is open to objection on two grounds—that a part of the area was in occupation for mining purposes when it was applied for by Hack as a conditional purchase, and that if the area of the gold lease prior to date of Hack's application is deducted, there will not then be 40 acres available in the portion. The case should be referred back to the Board for consideration as to the above grounds of objection."

The papers were accordingly returned to the Chairman, and on 20th January last the Board held an inquiry, and found as follows:—"A part of the area so applied for as a conditional purchase was, prior to the date of such application, in occupation for mining purposes, and if the area so occupied for mining purposes be deducted from the area applied for as a conditional purchase, there will not be an area of 40 acres left to satisfy such application. We beg, therefore, to recommend that the application of Hack be disallowed, there not appearing to us to have been that area available at the date of Hack's application."

This recommendation was approved by Mr. Secretary Garrett on 7th February, 1888, and upon a protest by Hack (88–650 Cor.), he decided on 22nd of same month that no good purpose could be served by reopening the case. Numerous letters and statutory declarations, both in favour of and against the granting of the conditional purchase, were then received, and on the 27th July last, in view of certain statements made by Messrs. Brett and Coghlan, in their letter of 30th June last (88–3,450 Cor.), Sir Henry Parkes decided to grant a rehearing, and the papers were forwarded to the Chairman with that object.

On the 18th, 19th, 21st, and 22nd ultimo the Board held an inquiry, and decided to forward the evidence to the Minister for his decision, under section 14, sub-section 7. They, at the same time, reported that, in their opinion, Brereton was in lawful occupation for mining purposes of that part of portion 113 as shown to be embraced within gold lease 166 at date of Hack's application, and the said measured portion in consequence was not open to, nor available for, conditional purchase at date of Hack's application, and the land being a measured portion of 40 acres, any encroachment, such as Brereton's lease, would reduce the area below 40 acres. In their opinion, however, there was not sufficient evidence to prove that Thorne and party were in lawful occupation of any part of the measured portion at date of Hack's application.

From the foregoing it will be seen that the main issue of the case depends upon the correct area of portion 113, *i.e.*, whether after satisfying Brereton and Smith's gold lease 166, there were 40 acres available within the portion to satisfy the conditional purchase. Upon this point there appears to be some doubt, on account of the rugged nature of the country making exact measurement very difficult, and with a view of putting this matter more clearly before the Minister, the following extracts are made from the evidence upon that point:—

At page 9, Mr. Licensed-surveyor Martyn states:—" . . . . I surveyed portion 113 on 1st February, 1882. I measured the block as 40 acres, but it is a fact that the area included in the boundaries of my survey was 40 acres 3 roods 20 perches. In frontage blocks we are allowed a margin. The roods and perches are always omitted from the plan in accordance with the regulations. . . . . My survey was given as 40 acres 3 roods 20 perches, but I called it 40 acres, as allowed in regulations. . . . . "

At

At page 11, Mr. Licensed-surveyor Warner states:—" . . . . I made a survey on 20th January, 1888, upon portion 113, parish Cooney. Looking at the plan 'A,' I made a survey of the dotted blue line, which shows the encroachment of Brereton and Smith's lease application 166. I found the area of that encroachment to be about 12 perches. I also estimated the encroachment shown by firm blue line by calculation, and found it in area to be a little over a quarter of an acre. . . . ."

Again, at pages 58 and 59, Mr. Licensed-surveyor Martyn states:—" . . . . When I measured the block I knew it contained more than 40 acres. At the time I measured I made it 40 acres 2 roods 24 perches. Since then I have increased the area slightly. It is quite possible that surveyors may make a difference in the survey of traversing creek boundaries, and it is a discretionary matter with surveyors as to the traversing boundaries on a creek. We recognize the edge of the bed of the creek as the boundary of the portion. . . . ."

W.H.C., 4/1/89.

No. 65.

The Acting Surveyor-General to The Under Secretary for Lands.

Alteration of area of measured portion after approval of plan.

7 January, 1889.

In reply to the annexed memo., I would state that I believe measured unsold portions have been altered in respect of area after approval of plan, in minor particulars, *e.g.*, the introduction of a reserved road or exclusion of a small part for a reserve.

I am not aware of any precedent for alteration of area of an alienated portion conditionally purchased under the repealed land laws, except where an error has been disclosed, and I do not know of any such case under the existing Land Act.

In the matter of portions conditionally purchased, it has for many years been insisted on that there should be no alterations of boundaries after approval of plan (except in cases of erroneous measurement).

I may add that it was in order (partly) to meet the frequently occurring necessity for providing roads through conditionally purchased land that the 110th section was introduced into the Crown Lands Act, so as to avoid altering plans, which was seen to be objectionable, and under an opinion of Mr. Attorney-General Wisdom (*see* opposite page), it is implied that conditionally purchased land must be treated as freehold land, *i.e.*, that similar rights appertain to both classes of tenure.

E. TWYNAN.

[*Enclosure.*]

Opinion.

Prior to the passing of section 27 of the Lands Act Amendment Act, it was considered doubtful whether the Crown had the right under the Act 4 William IV No. 11 to make roads through conditionally purchased lands, and that section was introduced for the purpose of giving that right.

In my opinion the Legislature, in passing the section referred to, did not intend to alter the mode of procedure prescribed by 4 William IV No. 11, and there does not appear to me to be any sufficient reason why the same formalities should not be observed with respect to roads opened through conditionally purchased lands, as are observed with respect to roads opened through ordinary freehold property.

No. 66.

Office Memorandum.

Mr. Saunders,

Kindly have the area computed in the most accurate manner practicable, and give result.

W.H., 7/1/89.

Urgent. Mr. Skinner,—Do this special for me, please.—C.J.S, 7/1/89. *Vide* memo. herewith.—C.J.S., 8/1/89.

No. 67.

Memo. from The Chief Draftsman to The Assistant Under Secretary.

Lands Department, 8 January, 1889.

The area of portion 113, parish of Cooney, county of Sandon, has been carefully calculated; and accepting the position of the falls forming the west boundary of the portion as delineated by Licensed-surveyor Martyn, it has been found to contain 42 acres 1 rood 38 perches, which, under surveyor's regulations, would be called 42 acres.

It is observed, however, that Mr. Martyn has adopted, in fixing the position of the falls, the same traverse as Licensed-surveyor Manning, in the survey of portion 59 adjoining, and on Mr. Manning's plan the outline of the falls is somewhat differently shown.

Taking Mr. Manning's definition of the falls, portion 113 has been calculated to contain 41½ acres, or, according to practice, 41 acres. Portion 113 has, therefore, been under-estimated by at least 1 acre, if not by 2, the error being apparently in computing the area between the traverse and the edge of the falls.

C. J. SAUNDERS.

No. 68.

The Under Secretary for Lands to The Under Secretary for Mines.

Armidale, C.P. 87-91, 40 acres. Portion 113, parish Cooney, county Sandon. A. J. Hack.

Sir, Department of Lands, Sydney, 11 January, 1889.

In reply to your letter of the 11th ultimo, respecting the conditional purchase noted in the margin, I have the honor to inform you that the papers in the case have this day been referred to the Chairman of the Local Land Board, to cause the boundaries of the portion applied for, viz., 113, to be modified so as to exclude so much of the gold lease (Brereton and Smith) as encroached on that portion.

I have, &c.,
F. H. WILSON,
(For the Under Secretary.)

No. 69.

Messrs. Brett and Coghlan to The Under Secretary for Lands.

Dear sir, Friday.

Enclosed is a letter which, under the circumstances of the case, I take the liberty of asking you to make special.

The Minister for Mines stated he could take no notice of verbal intimation of the action of your Department, and if at all possible, I would esteem it a great favour if you intimated action to the Mines to-day.

I have, &c.,
VINCENT COGHLAN.

[*Enclosure.*]

Armidale, C.P., 87-91. A. J. Hack.

Sir, 19 Macquarie-place, Sydney, 11 January, 1889.

We have the honor to ask that you will be pleased to notify to-day if possible, the Department of Mines, the decision in the case of the conditional purchase noted in the margin.

We have, &c.,
BRETT AND COGHLAN.

89-1,050 D., Land Board, Armidale, 11/1/89. Submitted whether this notification should be made.—W.H., 11/1/89. Inform.—S.F., 11/1/89. The Under Secretary for Mines was informed this morning, and the papers were despatched to the Chairman of the Armidale Board this afternoon.—W.H.C., 11/1/89. The Chairman of the Armidale Board.—F.H.W. (for the Under Secretary), B.C., 12/1/89. Received and placed with former papers in the case.—F.G.F., 21/1/89.

No. 70.

The Under Secretary for Lands to The Chairman, Land Board, Armidale.

89-1,050 C.S.D. C.P. 87-91, Armidale. A. J. Hack.

THE papers referring to the conditional purchase noted in the margin are forwarded to the Chairman of the Local Land Board, Armidale, with the Minister's authority to cause the boundaries of portion 113 to be modified, so as to exclude so much of gold lease 166 (Brereton and Smith) as encroaches on the portion, and to confirm the application for the balance of portion 113, if not less than 40 acres. As it is clearly shown that in reality portion 113 contains 40 acres 3 roods 22 perches, and the encroachment of the gold lease is only 12 perches, it is evident that the portion contains a sufficient area to satisfy Hack's conditional purchase, 87-91, irrespective of the gold lease.

F.H.W.,
(For the Under Secretary.)

Department of Lands, B.C., 11th January, 1889.

Under Secretary, Mines, informed, 11/1/89.

No. 71.

Memo. by The Assistant Under Secretary for Lands.

THE accompanying *précis* sets out the successive stages of action in this case, from the date of A. J. Hack's application under the 47th section of the Act to the finding of the Land Board on the 22nd ultimo, at a rehearing directed by Sir Henry Parkes, as Secretary for Lands.

The Board, after taking voluminous evidence, have remitted the case to the Minister for decision, in terms of subsection 7 of section 14, and report that so far as the supposed conflicting gold leases are concerned the conditional purchase application is anterior to all but that of W. G. Brereton. This lease overlaps the measured portion 113 applied for to the extent of about 12 perches.

The Board state as their opinion that the portion was not available for conditional purchase at the date of Hack's application, as the encroachment referred to reduced the area to less than 40 acres.

Although no explanation is afforded on this point—in respect to which there is direct evidence—the Board were probably influenced by the fact that the plan of portion 113 had been duly approved in 1884 as for 40 acres.

The evidence of the surveyor (Martyn), who executed the survey in 1882, shows, however, that the area of the portion is actually 40 acres 3 roods 20 perches, and that the excess over the 40 acres was omitted from the plan in accordance with the survey regulation. By an independent calculation in this office, the area is found to be at least 41½ acres.

The point upon which the legality of the conditional purchase application turns is, whether in view of the plan having been approved as for a survey of 40 acres in 1884, and the application lodged for that area, it can now be corrected to what is more nearly then the true area.

The approval of the plan under the Act of 1875 is apparently a formal sanction of the measurement, required to distinguish lands open to conditional purchase as measured portions from other lands open but unmeasured.

The 55th section of the present Act requires that "measured Crown lands shall, upon being conditionally purchased, be taken in portions as measured, but if the area applied for be less than a measured portion, such portion may on approval by the Local Land Board be subdivided, &c." It

It may be pointed out that the application has not yet been confirmed, and that in the case of any vacant measured portion it would be absurd to suppose that a correction of the plan, such as an alteration of the length of a boundary or of area could not be effected without a reapproval of the plan.

W.H., 9/1/89.

Submitted.

I direct the Board to cause the boundaries of portion 113 to be modified, so as to exclude so much of gold lease 166 (Brereton and Smith) as encroaches on the portion, and to confirm the application for the balance of portion 113, if not less than 40 acres. As it is clearly shown that in reality portion 113 contains 40 acres 3 roods 22 perches, and the encroachment of the gold lease is only 12 perches, it is evident to me that the portion contains a sufficient area to satisfy Hack's conditional purchase, 87–91, irrespective of the gold lease.—J.N.B., 10/1/89.

Send copy of this minute to Minister for Mines.—J.N.B., 12/1/89. Copy forwarded.—T.D., 12/1/89.

No. 72.

Memo. from The Under Secretary for Mines.

EXTRACT.

(1.) WAS the land (Hack's conditional purchase, 87–91, Armidale), within a gold-field when the selection was made?
(2.) Was it within a gold-field when the conditional purchase was confirmed?
(3.) Does the title under conditional purchase date from selection or confirmation?

H.W., 12/1/89.

Chief Draftsman.—E.T.P., 12/1/89. Urgent. (1) No; (2) Yes; (3) From date of confimation.—P.D. (*per* C.W.) The Chief Mining Surveyor.

As the action of this Department in regard to granting permits to search, or permit to remove gold, must depend upon the date of the title under the conditional purchase, perhaps the question should be asked officially.

Submitted.—H.W., 14/1/89. Approved.—F.A., 14/1/89. Under Seeretary's Land Bill.—H.W., 15/1/89. The title dates from the moment of application, but the conditional purchaser cannot take permission of ordeal with the land until confirmation.—S.F., 15/1/89. Approved.—J.N.B., 15/1/89.

No. 73.

Office Memorandum.

PAPERS of Hack's case, conditional purchase 87–91, Armidale, were forwarded to the Chairman, Armidale, 11th January, 1889, for confirmation of the application for balance of portion 113, if not less than 40 acres, after excluding so much of gold lease (166, Brereton and Smith's) as encroached upon that portion. The Under Secretary.

F.B.S., 22/1/89.

Prevent further action being taken, and send for papers.—W.J.L., 22/1/89. Telegraph to Acting Chairman to suspend action, and return the papers to this office.—W.H., 22/1/89. Urgent. In reference to previous directions to have the papers in Hack's case returned to Head Office, the Minister directs that the Chairman be requested to stay action on this case until further advised.—S.F., 23/1/89. Mr. Capper. Wire, 23/1/89. Hack's case. Mr. Secretary Lyne desires to see Mr. M. J. McNamara before a decision is given in the matter.—S.F., 23/1/89. Mr. Capper. Mr. M'Guanne to bring forward papers as soon as received.—W.H.C., 23/1/89.

No. 74.

W. C. Proctor, Esq., to The Honorable the Minister for Lands.

Sir, Victoria Chambers, 23 January, 1889.

I have the honor on behalf of the owners of the Enterprise Gold-mine, at Hillgrove, in the county of Sandon, and parish of Metz or Cooney, which is partly embraced in the conditional purchase of A. J. Hack, to forward to you herewith a leader from the *Armidale Chronicle* containing the facts of the case lately before the Land Board at Armidale, and commenting upon the wrongful action of Mr. Brunker, the late Minister, in upholding Hack's application, notwithstanding that it was twice decided by the Local Land Board that the conditional purchase should be disallowed, as the area was proved to be under 40 acres at the time of Hack's application. Hoping you will see the justice of reopening the case in the interest of the miners and the public.

I have, &c.,

W. C. PROCTOR.

These papers relating to the conditional purchase of A. J. Hack, Armidale, were recalled by direction of the Minister on the 23rd instant, are now submitted for instructions.—W.H., 25/1/89. S.F. Instruct District Surveyor to have another survey made by a surveyor not already employed in connection with this.—W.J.L., 1/2/89.

[*Enclosure.*]

Extract from the "Armidale Chronicle," 19th January, 1889.

HACK'S 40-ACRE CONDITIONAL PURCHASE.

THE granting by the Minister of Hack's conditional purchase of 40 acres at Hillgrove, against the recommendation of the Local Land Board, has caused considerable surprise and much adverse comment. We do not say that Hack is not entitled to the land in question, but we do say that, where such large interests are at stake, something more is required than the mere dictum of the Minister overriding the decision of the Land Board. On a previous occasion this same land was recommended

recommended by the Land Board not to be granted, and, through some mysterious influence at work, the particulars of which are probably only known to the Department itself and those immediately concerned, the matter was referred back to the Board for further consideration. The case came again before the Board a few days ago, and for a second time the land was recommended to be disallowed on the same grounds as before, viz., that the minimum area of 40 acres was not available. From the evidence adduced at the last hearing, it would appear that when Hack made his application a portion of a gold-mining lease, legally applied for by W. G. Brereton, reduced the area available to less than 40 acres. Brereton subsequently abandoned, in favour of Hack, sufficient of his lease application to allow Hack his 40 acres. It was, however, argued by Mr. Forster, who came specially from Sydney to oppose Hack's claim before the Board, that Brereton's subsequent abandonment did not avail Hack, since, on the date of his application, Brereton's application held good, thus making the area vacant less than 40 acres; also, that since then, and before Brereton's abandonment, the whole of the land claimed by Hack had been applied for by others under application for various gold-mining leases. This view of the case was sustained by the Board, who for a second time recommended that Hack's application be disallowed on account of there having been insufficient area when he applied. The Minister has now set aside the recommendation of the Board, and has granted Hack his 40 acres. As we said, we do not wish now to question the justness of Hack's claim, but we decidedly protest, in the first place, against such clauses in the Land and Mining Acts as give the Minister, or perhaps the Under Secretary, the absolute power over courts of law; and we also deprecate such arbitrary action of the Minister by which he uses the powers so wrongly vested in him in an arbitrary and unreasoning manner. It would seem as if the granting of this land to Hack were a final act before the last Ministry went out, following the advice given in the Bible, and "making friends of the mammon of unrighteousness." The land in question is said to be very valuable, and there is no knowing who have had a hand in the matter. It is also understood that a "permit to mine" has been granted to Hack. If so, this shows injudicious haste on the part of an outgoing Ministry. As Hack did not take up the ground legitimately for mining purposes, if it had to be granted to him, it should have been at once resumed and thrown open to the miners. This giving up and absolutely selling for £40 land on which the Crown should have received a yearly rent of £40, especially as it was not taken up under an Act intended for mining purposes is, to say the least, straining the law, besides parting with the Crown revenue. Of course no one can blame Hack for doing his best for himself, and he has shown extreme cleverness in thus effectually carrying through to the finish so very difficult an undertaking.

No. 75.

Telegram from The Under Secretary for Lands to The Chairman, Land Board, Armidale.

23 January, 1889.

PLEASE stay action in Hack's case until further advised, and return papers first post.

WM. HOUSTON,
(For the Under Secretary.)

Papers herewith, as directed.—F. G. FINLEY, Acting Chairman, 23/1/89.

No. 76.

Telegram from The Acting Chairman, Land Board, Armidale, to The Under Secretary for Lands.

23 January, 1889.

PAPERS, Hack's case, returned to-day.

F. G. FINLEY,
Acting Chairman.

No. 77.

Telegram from H. Copeland, Esq., to The Secretary for Lands.

23 January, 1889.

STRONGLY urge not granting Hack's conditional purchase, Hillgrove. New important law point. Reply Armidale.

HY. COPELAND,
"New England Hotel," Armidale.

Urgent,—Inform Mr. Copeland that nothing further will be done towards granting Hack's conditional purchase at present, and that I have wired to Chairman, Land Board, to return the papers to this office.—W.J.L., 23/1/89. Wire, 23/1/89.

No. 78.

Telegram from The Under Secretary for Lands to H. Copeland, Esq.

23 January, 1889.

IN reply to your to-day's wire, I am directed by Mr. Lyne to inform you that nothing further will be done towards granting Hack conditional purchase at present. Chairman, Local Land Board, asked by wire to return papers to this office.

CHARLES OLIVER,
Under Secretary.

No. 79.

Mr. Saul Solomon to The Secretary for Lands.

Sir, "Empire Hotel," Sydney, 23 January, 1889.

I have the honor to call your attention to an attempt by certain persons to obtain from your Department approval of a conditional purchase of 40 acres, situated at Baker's Creek, Hillgrove Gold-mining District, in favour of Mr. Hack.

As a claim-holder entitled to a lease for gold-mining purposes, under application Nos. 1,344 and 1,522, in common with other claim-holders who would be affected by the proposed conditional purchase, and in the interest of public policy, I respectfully protest against the conditional purchase being granted to Mr. Hack or his nominees.

I

I enclose, for your information, copies of two letters recently received by my agent in Sydney from the Mines Department, in the first of which you will see that my claim for leases Nos. 1,344 and 1,522 is fully recognized, and the promise is made that steps will be taken to expedite the issue of the leases referred to.

Other correspondence in your office will prove that mine is not the only protest that has been made against Mr. Hack's application for the conditional purchase.

I would also point out that the gold-mining district I am referring to (Guyra) was proclaimed on 30th August, 1887. Mr. Hack's conditional purchase application was disallowed by a previous Minister for Lands on 7th February, 1888, and its approval now would, in my opinion, be illegal, but would certainly be unjust, inasmuch as it would obliterate a number of gold-mining claims which have already been accepted by the Mines Department, and upon which rent has been paid, work done, and leases officially promised.

I thank you for the attention you have already given to the matter, I relying on your further consideration.

I have, &c.,
SAUL SOLOMON.

[*Enclosures.*]

Sir,

Department of Mines, Sydney, 12 January, 1889.

Referring to your letter, dated 6th ultimo, *re* gold lease application, No. 1,344, at Armidale, I have the honor to enclose herewith a tracing of the land as surveyed, and to inform you that more land is included in the survey than is embraced by the applicant's pegs, and apparently all the land that was available.

I have, &c.,
HARRIE WOOD,
Under Secretary.

T. F. De Courcy Brown, Esq., M.P., 52 Castlereagh-street, Sydney.

Sir,

Department of Mines, Sydney, 31 October, 1888.

In reply to your letter of the 24th instant, with reference to the issue of leases under applications, Nos. 1,344 and 1,522, at Armidale (on behalf of Mr. Saul Solomon), I have the honor to inform you that steps will be taken to expedite the issue of the leases referred to.

I have, &c.,
HARRIE WOOD,
Under Secretary.

T. F. De Courcy Brown, Esq., M.P., 52 Castlereagh-street.

No. 80.

E. Ward, Esq., to The Secretary for Lands.

Sir,

Sydney, 6 February, 1889.

With reference to the petitions and protests which have already been presented to you against the confirmation of Mr. A. J. Hack's application for the conditional purchase of 40 acres of auriferous land on the Guyra gold-field (Hillgrove District) to the exclusion of a number of *bonâ fide* claim-holders whose leases have been promised and rents therefore received by the Mines Department, I have the honor to submit for your information the following particulars of the case, which I have obtained from the most careful investigation I have been enabled to make.

Mr. Hack's application is dated July 21st, 1887, and was forwarded to the District Surveyor for report on July 28th, 1887.

On the 15th August, 1887 a letter was written by the Secretary for Mines to the Secretary for Lands, asking whether such an application had been made, and stating that the land was said to be auriferous.

The Mines Department was therefore informed that such an application had been made, and the letter from the Mines Department was sent on to the Land Board.

On the 30th August, 1887, the land applied for by Hack was proclaimed a gold-field.

On the 1st September, 1887, Hack's application came before the Land Board when considerable evidence was taken. I presume this evidence will be available for your inspection, but I may mention that it was proved by the District Surveyor that the land applied for by Hack was within the gold-field proclaimed on August 30th, and Hack himself admitted that since his application was made, auriferous deposits had been found on the land. Other witnesses deposed to having pegged out gold claims on the land in July and August, and to having found payable gold.

The case was referred by the Board to the Minister for Lands on the 5th September, 1887.

The Minister at first decided to confirm Hack's application, but a letter was written by the Mines Department asking that it might be disallowed.

Numerous petitions were also presented to the Minister, and to the Land Board, protesting against Hack's application being confirmed. These are mostly dated in December, 1887. In one letter Alfred Argles asserts that Brereton and Smith applied for a lease which included portion of Hack's claim, two months before Hack pegged out, and that Thorne and party were also in occupation under their miners' rights.

On the 27th December, 1887, the District Surveyor reported the existence of Brereton and Smith's lease of 8 acres, dated 30th April, 1887, and that this encroached on the 40 acres claimed by Hack, and thereupon arose the question of the area of that claim being less than 40 acres.

I contend that the application being for a measured portion of 40 acres, and for which the applicant only paid for 40 acres, any encroachment however slight must reduce the area to less than 40 acres, and be therefore in a strictly legal sense fatal to the application for conditional purchase.

I know that it has been urged that Brereton is willing to waive so much of his claim as would adjust Hack's area to the full 40 acres, but it was forcibly pointed out by Mr. Solicitor Forster at the hearing before the Land Board that no action by Brereton, subsequent to the date of Hack's application, could validate that application to the detriment or prejudice of other existing rights. Clearly, Hack's application must stand or fall by its validity, or otherwise on the date it was made. It was a claim for 40 acres, and no more. It included a portion of ground already legally held by Brereton, which being deducted necessarily reduces the area claimed by Hack below 40 acres. This conclusion is without reference to the claims of Thorne and party, and others also encroaching on Hack's claim.

On the 28th December, 1887, Mr. Solicitor Forster on behalf of Thorne and party lodged a protest with the Minister for Lands against Hack's claim, and a telegram was despatched to the Land Board recalling all papers in the case for further consideration and ordering suspension of all action in the meantime.

On

On the 4th January, 1888, the Minister for Lands, after reperusing the papers and the District Surveyor's report, decided to refer the case back to the Land Board for reconsideration.

The case accordingly again came before the Land Board, this time on 20th January, 1888. Voluminous evidence was taken, and the Board recommended the Minister to disallow Hack's application for the conditional purchase, because they considered the portion applied for did not contain 40 acres after deducting the land in occupation for mining purposes.

The Minister for Lands, acting upon this recommendation, finally disallowed the application. I am not in possession of the exact terms of the Minister's minutes, but the papers will be in your possession.

On the 11th February, Hack applied for a rehearing, and that evidence previously taken in the Warden's Court should be produced.

On the 24th February the Minister declined to reopen the case.

On the 27th July the Colonial Secretary (Sir Henry Parkes) granted a rehearing.

The Land Board asked the Minister to reconsider this decision, in view of the conflicting interests of claim-holders which has arisen in the meantime. The Minister refused this request.

In December, 1888, the Land Board did reconsider the case, and reported that, in their opinion, Brereton was in lawful occupation for mining purposes on that part of measured portion of No. 113 embraced in gold lease No. 166 on the date of Hack's application for conditional purchase, and that the land in consequence thereof was not open to, nor available for, conditional purchase on 21st July, 1887.

For all purposes of honest administration it might be fairly supposed that this repeated decision of the Land Board would have been respected, and that the previous decision of the Minister, disallowing Hack's application, would have been upheld accordingly. But the strangest, and I should hope unprecedented, feature of this case has yet to be revealed, and I submit it proves that other influences, certainly irregular and improper, were now at work.

The final decision of the Board was not given until the end of December, 1888. The papers could hardly have been received and considered by the late Minister for Lands until after the New Year's holidays. I find that the late Ministry were defeated on the 9th January, and resigned on the 10th. But on the same day, after the registration, and, I am told, after office hours, the late Minister, whose resignation was actually in the hands of the Governor, wrote a minute overriding the repeated decisions of the Land Board, reversing the final decision of his predecessor in office, and directing the Land Board to confirm Hack's conditional purchase.

Fortunately, however, in the interests of justice and of public policy, before this direction could be quite fulfilled, a new administration was sworn in, and I have to acknowledge not merely the courtesy but the absolute fairness to all parties with which both yourself and your honorable colleague, the Minister for Mines, have promised the fullest investigation before finality in these proceedings is pronounced.

I respectfully submit, on the merely legal aspect of the matter, the Board's repeated decisions are correct, because Hack's application was for 40 acres only, and there is no doubt he included ground already legally held by other persons for mining purposes. There is, I believe, some pretence that the ground he describes measures something more than the 40 acres he applied for, which excess would swamp the deduction of Brereton's area.

But can a man be allotted what he has not applied for? Hack's application is for 40 acres, including Brereton's portion. Surely you cannot legally give other land not applied for to cover an actual deficiency in the application itself. Take the reverse of the position. You have a maximum as well as a minimum area for conditional purchases. If a man applies for the maximum area, and his application is found upon survey to cover a few perches in excess of the maximum, would that invalidate his application altogether; and if not, how can a similar defect validate that which would otherwise be invalid.

Of course I admit that is rather a question for a lawyer than a layman. I only venture to put the case to you as it occurs to me.

But, sir, I do most urgently submit for your consideration that there are other aspects of this case which should not be ignored.

1. The *bonâ fides* or otherwise of Hack's application.
2. The elements of public policy and justice.

As to the first I contend that Hack's action shows *mala fides* throughout. I have personally inspected the *locus in quo*, and can affirm as all evidence will confirm, that the 40 acres does not comprise a perch available for cultivation, or the half of a rood available for a business site. This was certainly known to Hack when he applied for the conditional purchase. It is also a fact that this almost precipitous mountain side does contain gold-bearing reefs. This was known to other persons before Hack's application (to Brereton and Smith and Thorne and party) and can it be doubted it was known to Hack himself. And what does Hack do? Why the moment he thinks his application is to be confirmed, and that he is to get the fee simple of this 40 acres for £40, he applies for permission to mine on it, the only purpose he ever wanted it for. Can it therefore be said that his application for the conditional purchase was *bonâ fide*?

Mr. Abigail, the late Minister for Mines, has within the last few days, publicly denied any complicity in these proceedings, and has stated that the conditional purchase was approved by his colleague, the late Minister for Lands, in opposition to his (Mr. Abigail's) minutes, but the records of the Mines Office will prove whether, before leaving the Ministry, Mr. Abigail sent on to the Executive Council any approval of Mr. Hack's application for permission to mine on the conditional purchase.

As to public policy and justice, I submit that if this *mala fide* claim of Mr. Hack's is to be confirmed, it gives a monopoly of 40 acres of gold-bearing country, valueless and unavailable for any other purpose than gold-mining to one man for £40, to the exclusion of *bonâ fide* claim-holders, who must at least pay to the state £40 per annum in perpetuity, and who are prepared to expend already subscribed capital in its immediate development.

You have already in your possession enclosed in Mr. Solomon's letter of last month's date, copies of letters we hold from the Mines Department, promising that steps will be taken to expedite the issue of leases for two claims Nos. 1,344 and 1,522, for which rent in advance has been received and acknowledged by the Mines Department.

Upon the faith of these official promises and receipts, a public company has been formed to work two of these claims, and the necessary capital has been subscribed and is now available, but lying idle, pending the settlement of this matter.

These claims with others will be obliterated if Hack secures his monopoly of the 40 acres.

I have addressed you at this length, not merely as a director of the Company, to which I refer, but in the interests of all associated with the Hillgrove District, and of justice.

Other testimony than mine will sustain all that I have said.

Awaiting your further consideration any reply,—

I have, &c.,
EBENEZER WARD.

P.S.—As I am now returning to Adelaide, pending your decision, may I ask that you will kindly cause any reply hereto to be addressed to me at Parliament House, Adelaide.—E.W.

The papers in Hack's case, the subject of this letter, were forwarded to the Chairman of the Armidale Board on the 6th instant, with Ministerial authority for a resurvey of the lands in question by a surveyor who has not already been employed on this case.—W.H.C., 11/2/89.

May be forwarded to Chairman to place with other papers.—W.H., 11/2/89. Urged that the survey ordered may be completed without delay.—W.J.L., 11/2/89. The Acting Chairman, Local Land Board, Armidale.—H.C. (for Under Secretary), B.C., 12/2/89. Inform.—W.H.C., 12/2/89. District Surveyor and E. Ward informed, 12/2/89.

To the Honorable the Minister for Lands, Sydney,—

The Petition of the undersigned Residents of Hillgrove and surrounding district,

SHOWETH,—

(1.) That, at a public meeting of residents of Hillgrove and others interested in the development of the mineral resources of the district, the following resolution was unanimously carried:—

(2.) That this meeting indignantly protests against the action of the Minister for Lands in Sir Henry Parkes' Government in granting A. J. Hack's conditional purchase application for 40 acres after the same having been twice refused by the Local Land Board, who had opportunities of personally inspecting the site, which renders the application absolutely valueless for *bonâ fide* purposes, besides the fact of the conditional purchase being situated in the centre of an important and rising gold-field; and that this meeting pledges itself to unite every influence to induce the Government to disallow, and grant the same land for mining purposes, as otherwise it would be a blot and stain on the Ministry, a disgrace to the country, and injustice to the mining community in general and Hillgrove in particular.

(3.) We, the said petitioners, in addition to the foregoing resolution, would respectfully submit the following facts:—

(4.) That a late Minister for Lands refused to allow the application of the said A. J. Hack. Your petitioners have good grounds for requesting that the matter be inquired into.

(5.) That, according to sworn evidence before the Land Board of Armidale, a portion of this ground was held by virtue of miners' rights previous to A. J. Hack's application for selection No. 113.

(6.) That the whole of the said 40 acres have been applied for and surveyed into fifteen blocks, which have been applied for as gold-mining leases.

(7.) In consequence of the decision of the Minister above referred to, many persons have been induced to invest in mining properties held upon the said 40 acres, thereby causing very great inconvenience and heavy losses, unless the prayer of your petitioners be granted.

(8.) That, in conclusion, your petitioners pray that you will be pleased to cause the said 40 acres of land to be disallowed, and granted for mining purposes.

Your Petitioners, as in duty bound, will ever pray.

JOHN O'NEALS, mine-manager, Hillgrove.
R. J. WEBSTER, mining agent, Sydney.
J. M'CARTHY, miner, Armidale.

[Here follow 375 other signatures.]

No. 81.

Office Memorandum.

THE enclosed papers referring to the conditional purchase, noted in the margin, are forwarded to the Chairman of the Local Land Board, Armidale, for resurvey by a surveyor who has not already been employed on this case. *Vide* approval of the Minister, dated 1st instant.

C.P. 87-91; Armidale; Alfred Jas. Hack; 40 acres.

F.H.W.
(For the Under Secretary),
B.C., 6 February, 1889.

No. 82.

Report of Deputation.

Shorthand Notes—11th February, 1889.

Deputation, introduced by Mr. Copeland, from miners of Hillgrove to protest against Hack's non-residential conditional purchase being allowed to stand good.

THE deputation represented that this was a bogus selection from the first. The land embraced a steep precipice, and was unsuitable for any other purpose than mining, and when they saw a man evading the regulations they thought that they were entitled to draw attention to it, as this selection was prejudicial to important mining interests, in support of which statement they presented a petition to the Minister, signed

signed by some 380 miners, residents at Hillgrove, which was one of the most important mining places in New South Wales. They represented some fifteen mineral leases. They advanced the following arguments against Hack being allowed to have this land :—

1. That, in the declaration which accompanied his application for the conditional purchase, Hack had to declare that the land was intended to be used for his sole use and benefit (and until the purchase was confirmed he was still an applicant), whereas it would not be difficult to prove that others were interested with him.
2. That Thorne and party pegged out the land on the 16th under miners' rights, but did not apply for the land before Hack, who tendered his application on the 18th of the month; but, under the 1st section* of the Act 46 Vic. No. 7, of the 21st November, 1882 (an Amending Act to Act 37 Vic. No. 13, Mining Act), it is stated that possession shall be taken and application made, and the land taken possession of shall be deemed to be held as under promise of lease and exempt from sale, and they contended that it would be sufficient to prove possession by the miners on the 16th to debar this land, under section 21, subsection 8, of the Crown Lands Act of 1884, from conditional purchase. With reference to the question of possession, on the 16th they desired that Thorne and party might be given an opportunity of proving this. The Land Board said they were not satisfied on the point, but Thorne and party had not had an opportunity to rebut any evidence on this head, and if necessary could furnish abundant proof of possession; in fact the statement of one of the opposition witnesses (O'Hanlon, they thought was the name) went to prove it.
3. That Hack applied for the land as 40 acres, the minimum under the 47th clause of Crown Lands Act of 1884, whereas it is now found that it was not 40 acres, but there is a difference of 2 roods. This is caused through error in surveying creek. Such being the case, they held the selection was bad, an opinion evidently shared by the District Surveyor and Acting Chairman of Land Board, by the Land Board, and Mr. Garrett. As, when the case came before the Board, they referred it to the Minister, Mr. Garrett, who decided against the conditional purchase, but during Sir Henry Parkes' administration of the Lands Department the case was reopened and sent to the Land Board, who decided that the purchase was not 40 acres and illegal. Mr. Brunker, however, overruled this holding that, under section 52 of Crown Lands Act of 1884, measured portions must be taken as measured.

On the strength of Mr. Garrett's decision above-mentioned some £1,000, or any way £100 had been spent in mining operations, which would all be lost if such decision be reversed. Failing other action, the land might be resumed under the 45th section of the Crown Lands Act of 1884.

The Minister (Mr. Lyne) said that this matter could not be decided now. The case was an intricate one, and he had not had time to carefully go into it. Mr. Proctor had waited upon him, and upon his representations he had stopped further action in the case. Mr. Brunker had directed that the conditional purchase be confirmed, and it would have been if he had not stopped it.

What they had said about the conflicting actions of this and the Mines Department was correct, and in connection with this he had arranged for a conference with the Minister for Mines on this case.

With regard to the area, one surveyor made it 40 acres, others different, and the question arose whether a survey, accepted and approved by the Department, can be touched by a Minister or anyone else, and this point he had submitted for the opinion of the Attorney-General; in his own opinion it was doubtful. In this instance the plan had been sent on by the District Surveyor and approved for 40 acres, and Hack could not know that it was not so. He had sent the papers to the Board (and that was why they were not before him) to have a survey of the land made by a surveyor who had not previously been connected with the case. If the survey could be altered he thought Hack's case was bad, as Brereton's lease would hold good. He could give them no decided answer, but they could rest assured nothing would be done in a hurry, and when anything was done he would communicate with Mr. Copeland.

The point as to Thorne and party pegging out was a comparatively new one, as it did not come out clearly in the papers. If the survey of the portion could not be altered, that settled the case. He would order the new survey to be completed without delay, and, if in doubt, afford Thorne and party an opportunity of showing that they had pegged out the land prior to Hack's selection.

WALTER D. BINGLE,
11/2/89.

No. 83.

The Under Secretary for Lands to E. Ward, Esq.

Sir, Department of Lands, Sydney, New South Wales, 12 February, 1889.

Armidale. C .P. 87-91, 40 acres. 21 July, 1887. A. J. Hack.

I have the honor to acknowledge the receipt of your letter of the 6th instant, respecting the conditional purchase noted in the margin, and to inform you that it has been forwarded to the Chairman of the Local Land Board, to place with other papers in the case.

I have, &c.,
H. CURRY
(For the Under Secretary).

No. 84.

* The exact wording of the section is :—"To obtain a lease for mining purposes of any kind provided for in the Act 37 Vic. No. 13, possession of the land shall be taken, and application to lease made, in the manner, form, and period prescribed by the regulations made under said Act. Every portion of land open to lease of which possession shall have been taken as aforesaid shall be deemed to be held under promise of lease, and to be exempt from sale unless or until default has occurred in making the prescribed application to lease, or until the application has been abandoned, or the Governor has refused the application, and notice of such abandonment or refusal has been published in the *Gazette*."

No. 84.

Extract from *Daily Telegraph*, 12 February, 1889.

IMPORTANT MINING CASE.—DEPUTATION TO THE MINISTER FOR LANDS.

YESTERDAY Mr. Copeland, M.P., and Mr. Proctor, solicitor, introduced to the Minister for Lands a deputation of gentlemen interested in mining at Hillgrove, in the New England District, who protested against the granting of a certain conditional purchase applied for by Mr. Hack.

Mr. Copeland explained that the selection in question was a bogus selection from the very first. The land was taken up under regulations that had no application whatever to mining. It was supposed to be taken up for the purpose of agriculture or grazing, whereas the fact was that the land was situated on a precipice as steep as the wall of a church, and could be of no earthly use other than for any minerals or gold it contained. When they saw a man attempting to evade the proper regulations under which land could be obtained for mining purposes, and resorting to other regulations, he thought that the Department was fairly entitled to look at the case with some suspicion from the very beginning. In addition to that, there was a declaration that had to be made when a conditional purchaser made a selection, to the effect that he held the land for his sole use and benefit. He thought it would not be very difficult to prove that Mr. Hack had others "in" with him in this selection, and that there were people resident in Sydney connected with the speculation. The land had been applied for under mining conditions, and it appeared that before Mr. Hack made his application one mining application had encroached upon that measured portion of 40 acres. An applicant for land for gold-mining purposes had already taken up a small portion of that land, and the argument was, therefore, that there was not the minimum of 40 acres for Mr. Hack to take up. There was considerable feeling in the district on the matter, as it was felt that there had been an attempt to evade the law by taking up a large area of valuable mining land.

Mr. Proctor said the land was originally applied for by Mr. John Moore, of Armidale, as a M.C.P., and it was surveyed as a 40-acre conditional purchase. After that the usual inquiries were made, and Mr. Moore's M.C.P. lapsed. It was then pegged out by Thorne and party on July 16, 1888, under miners' rights. On July 21, 1888, Mr. Hack applied for it as a measured portion of 40 acres. The Local Land Board held an inquiry, but gave no decision. Being doubtful, the Board referred the matter to the Minister for Lands, and Mr. Garrett decided in favour of the miners and against Mr. Hack's application. After a considerable time had elapsed, Sir Henry Parkes, temporarily occupying the position of Minister for Lands, reopened the case on being properly petitioned to do so, and sent it back to the Board, who again decided that there was not 40 acres there, as required by the Land Act provisions under which a conditional purchase could be taken up, and therefore that Mr. Hack's selection was illegal. However Mr. Brunker decided that probably, as one line of the selection was not surveyed, there was sufficient area along that line to make up the deficiency. The land had been taken up by Mr. Hack as a non-residential, selection, but for no purpose could it be used except mining, and mining was not a purpose contemplated under the non-residential clause. If the Minister for Lands would inquire into the whole subject, he would see how absurd it was to deprive so many miners and the public of the advantage of having the land in question kept open for mining purposes. The Mines Department said that the miners were entitled to the land, but at present the Lands Department said that Hack was. Several hundred miners could be employed on the land, and on the faith of Mr. Garrett's decision thousands of pounds had already been spent by different persons as purchase money for the land, and hundreds of pounds had been expended for mining purposes, and all that would be lost if Mr. Garrett's decision remained reversed.

Mr. Lyne, in reply, said the matter could not be decided now. It seemed to him to be a very intricate case. The point in reference to the applications from the miners did not seem to him to come out very clearly in the official papers, and the question of area was a very difficult matter to deal with. The surveyor who surveyed the land first now said that he was aware when he made the survey and sent it to the Department that there were more than 40 acres there, but he stated, and his plan was supposed to show, that there were only 40 acres. Some officer of the Department had run up the lines and they made the land nearly 42 acres altogether. It was a crucial point whether that survey, having been sent in a considerable time ago and accepted by the Department and approved, could now be touched legally by the Minister, or by anybody else, and on this point and on one or two others, he had submitted the matter to the Attorney-General. As far as he (Mr. Lyne) could read the law, it was very doubtful if it could be touched even if it had 10 acres more than it was supposed to have. He had instructed the district surveyor to have another survey made by a surveyor altogether independent of the case, and this would show whether there were more than 40 acres in it or not. There were two parties, as they of course knew, fighting about this land, and he had already arranged for the Minister for Mines to have a conference with him when he received the papers back from the local Board, so that there should be no further clashing between the Mines and the Lands Departments. The Mines Department was evidently acting in one direction, under the Mining Act, and the Lands Department in another, and one Department did not seem to know what the other had done. All he could say about the matter now was this:—There were several points, the principal being whether there was any power to alter a survey once approved of by the Department. The point as to previous occupation by pegging out had not been brought before him previously. Nothing would be done in a hurry, and before anything was done Mr. Copeland would know something about it, for he had been interesting himself in connection with the question, and it was such an important matter that he (Mr. Lyne) must have the Crown law officer's opinion before he took action, particularly as to whether he could touch the 40 acres or not, and if not that would settle the whole thing. If otherwise, other questions would arise, such as the pegging-out by the miners, which seemed to him a very important matter. He would order the survey to be completed without delay, and if in doubt he would give Thorne and party an opportunity of showing that they had pegged out the land before Hack's selection.

Hack's case.—Please see me in regard to newspaper report to effect that Attorney-General has been asked to advise on point as to whether a measured portion, the plan whereof has been duly approved, can be altered or amended.—S.F., 12/2/89. Mr. Capper.

I cannot trace any instruction by the Minister to obtain advice upon the point raised in Hack's case. The principal papers in the matter were forwarded to the Chairman of the Land Board, Armidale,

on

on the 6th instant, with a minute by Mr. Secretary Lyne, to the effect that a surveyor, who has not already been employed on this case, should carry out the resurvey.—W.H.C., 13/2/89. The Under Secretary.

The point raised as to the power of the Department to alter a measurement, plan whereof has been approved, is now being referred to the Attorney-General on separate paper. Place these documents with the bulk of the papers on their return.—S.F., 18/2/82.

No. 85.

Extract from *Daily Telegraph*, 13th February, 1889.

HACK'S SELECTION AT HILLGROVE.

(*To the Editor of the* Daily Telegraph).

Sir,

My attention having been called to a report in your issue of this day of a deputation which waited on the Minister for Lands concerning a selection taken up by one Hack, at Hillgrove, near Armidale, I am constrained to point out the many incorrect statements made on that occasion, and to the electioneering dodge displayed in the whole matter.

And, firstly, I would draw your attention to the fact that Hack's absolute right to this selection was recognized by the late Ministers for Lands and Mines after a very exhaustive inquiry lasting many months, and the confirmation of his selection, with a permit from the Mines Department, was actually awaiting the signature of the Executive Council, when the new Ministry, on the mere receipt of a telegram from one of their partizans (Mr. Copeland), withdrew the papers so carefully considered by their predecessors, and threw the whole matter into confusion.

It was stated by Mr. Copeland at the deputation that this was a bogus selection. This is not so. Hack selected this piece of ground in due form of law, as others had done before him when it was Crown lands open to selection and not within a gold-field.

The nature of the ground is beyond the question, as a matter of fact it was taken up by him for the timber on it, and contracts were ready to be made with him by persons in the neighbourhood for supply of same.

After the land was selected by Hack it was discovered that a small portion had been applied for by Smith and Brereton prior to his selection, but the small piece did not at all interfere with his lot, which had been surveyed by the proper authorities, and found to contain nearly 42 acres; consequently Hack withdrew any objection to these parties who have had their lease granted.

But it was stated at the deputation by Mr. Proctor that Thorne and party had gone on the land prior to Hack's selection. This statement is disposed of by the report of the Chairman of the Land Board, before whom the inquiry as to Hack's claim took place.

It was further stated that many miners were prevented from working the ground. But what are the true facts? They are these: Certain people, in the face of continual warnings, have floated companies in connection with the land, and finding that after much patient investigation the two Departments had arrived at the conclusion that Hack was perfectly in order in his selection, as the ground by all moral and legal rights belonged to him, they are trying by all and every means to escape from the consequences of their rashness, and are being assisted by some who have been unfortunately induced to put their money in these companies.

Yours, &c.,

12th February. ——— ONE WHO KNOWS.

Submitted. The papers in reference to the case are with Mr. Capper.—M.L., 13/2/89.

No. 86.

Mr. District-Surveyor Finley to Mr. Surveyor Laing.

Conditional purchase, 87–91; Armidale; A. J. Hack; 40 acres; parish of Cooney, county of Sandon.

14 February, 1889.

Replied to by my letter, dated 25/2/89, No. 16.—CHARLES W LAING.

MR. SURVEYOR C. W. LAING is requested to make a resurvey of portion 113, parish of Cooney, county of Sandon, which has been applied for by A. J. Hack under conditional purchase 87–91, Armidale, 40 acres.

It will be necessary to make a very careful resurvey of the old measured portion No. 113 of 40 acres. It will also be necessary for him to excise the portion of land known as Brereton and Smith's gold lease, 166, which encroaches upon measured portion 113. The plan should be drawn to a scale of at least 10 chains to an inch, and it should clearly show the area of portion 113, both inclusive and exclusive of Messrs. Brereton and Smith's gold lease.

I think the scale should be 4 chains to an inch.—F.G.F. 19/2/89.

The matter is very urgent, and should receive immediate attention.

F. G. FINLEY,
District Surveyor.

No. 87.

Mr. District-Surveyor Finley to The Under Secretary for Lands.

Sir, District Survey Office, Armidale, 14 February, 1889.

Armidale; C.P. 87-91; 21 July, 1887; 40 acres; A. J. Hack.

In reply to your letter of the 12th instant, requesting me to expedite the resurvey of the conditional purchase noted in the margin, I have the honor to inform you that I have telegraphed to Mr. Surveyor C. W. Laing to proceed to the locality at once, and I anticipate that he will complete the survey next week. Every endeavour will be used to complete the survey immediately.

I have, &c.,
F. G. FINLEY,
District Surveyor.

———

The Under Secretary.—W.H.C., 22/2/89. Submitted for information of Minister.—S.F., 22/2/89. Seen.—W.J.L., 22/2/89.

No. 88.

No. 88.

Memo. by The Under Secretary for Lands.

Upon a certain day in the year 1887 an application was lodged for a mineral lease under the provisions of the Mining Act of 1874. The land described in the application, besides including unmeasured land, embraced, to the extent of about one quarter of an acre, a corner of a measured portion adjoining. A few weeks subsequently an application under section 26 of the Act of 1884, 48 Victoria No. 18, was lodged for a conditional purchase of 40 acres. The land applied for and described was a measured portion, that is, the land had been measured by a Government Surveyor and the plan of such measurement had been approved, as provided in section 13 of the Lands Acts Amendment Act of 1875, 39 Victoria No. 13, as 40 acres. Upon the Local Land Board considering the application for the conditional purchase it was found that the land described was already covered to a small extent—about one quarter of an acre—by the description given in the mineral lease application previously applied for. It was, however, shown upon calculation of the lines of the measured portion, given upon the improved plan, that the area therein embraced 42 acres, which is sufficient to satisfy both the application for the mineral lease and the application for the conditional purchase. I understand the Minister for Lands to now desire advice as to whether or not the Crown Lands Act of 1884, 48 Victoria No. 18, gives him or the Land Board power to authorize a resurvey of a measured portion under such circumstances as are here stated.

The sections of the Crown Lands Act of 1884, 48 Victoria No. 18, bearing upon the question of measurement and unmeasurement are from 55th to the 60th.

S.F., 16/2/89.

Perhaps the Honorable the Attorney-General may be asked to advise.—S.F., 18/2/89. Approved.—W.J.L., 18/2/89. The Crown Solicitor.—F.H.W. (for Under Secretary), B.C, 18/2/89.

No. 89.

Memo. by The Under Secretary for Lands.

Hack's Conditional Purchase.

In connection with the above case Mr. Secretary Lyne wishes to ascertain whether holders of miners' rights who mark out claims on gold-fields, by pegging out in the usual manner, require a legal holding title thereto at once, and to the exclusion of other persons, irrespective of whether they mine continuously thereafter. Mr. Capper to inquire at Mines Department.

S.F., 18/2/89.

I waited upon the Under Secretary for Mines this morning, and after reading the above to him he answered that a good title would be made, but it would always be open to attack if subsequent default occurred.—W.H.C., 19/2/89. The Under Secretary. Put with papers.—W.J.L., 19/2/89.

No. 90.

Mr. W. E. Myring to The Under Secretary for Lands.

Sir, 98, Pitt-street, Sydney, 20 February, 1889.

With reference to Hack's conditional purchase noted in the margin, I have the honor, as agent for Thorne and party, and without prejudice to their claim as first occupiers or other considerations in their favour, to protest against one action in the case, which I would ask should be submitted to the Attorney-General for his opinion as to its legality or otherwise.

A. J. Hack's C. P. 87-91; 40 acres; Hillgrove, Armidale.

On the 20th January the Local Land Board at Armidale disallowed the application for the selection, and the Minister (Mr. Garrett) confirmed this action; but, on the 27th July, Sir Henry Parkes, acting as Minister for Lands, reopened the case.

I would respectfully submit that under whatever section the disallowance was made, the action was final (subject only to the right of appeal), and that the Colonial Secretary, Sir Henry Parkes (at the time acting Minister), had no power to reopen the case.

I make this submission with all due respect, but it appears to me a strong point in favour of my clients.

I have not copies of papers, and am not well acquainted with the sections of the Act under which the respective actions of the Board and Ministers were taken, but it seems to me that if the selection was disallowed by the Minister following a minute by the Board to the effect that the selection should be disallowed, the case was probably referred to the Board under section 14, sub-section VII, for decision by the Minister. I submit that then his finding or (in terms of the Act, as quoted) decision was final. But should the Department not recognize the Minister's decision given under the before-mentioned clause of the Act as a Ministerial decision, it must then be equivalent to a Land Board decision, and, if so, the applicant Hack should have appealed in the usual way within twenty-eight days.

Briefly, the points I would like submitted to the Attorney-General are as follows:—

1. Is the action of a Minister in disallowing a selection after it has been referred to the Board under section 14 sub-section VII, deemed a Ministerial decision; if so, is it not final, and can it be legally reopened in the Lands Department?
2. If a disallowance of a selection, as shown by the Minister, is not a Ministerial decision, does it then become equivalent to a Land Board decision; and, if so, should not the applicant Hack have appealed against same in the usual way.

I have, &c.,
W. E. MYRING.

Papers (89-346 Cor.), B.C. to Land Board, Armidale, 6/2/89. For resurvey, *vide* Minister's approval.—J.A.J. (*pro* J.P.M.), 26/2/89. The Under-Secretary.—W.H.C., 26/2/89. Inform that the case will be dealt with in the ordinary way.—W.J.L., 26/2/89. W. E. Myring informed, 8/3/89.

No. 91.

No. 91.

Messrs. McNamara and Norton to The Secretary for Lands.

Re Hack's conditional purchase.

Sir, Waltham Buildings, Bond-street, Sydney, 22 February, 1889.

Our client has drawn our attention to the deputation which waited on you on the 11th instant, relative to this conditional purchase, and we have the honor to point out that there are many inaccuracies and mis-statements in the statements made by the deputation. The land was Crown land open to conditional purchase at the time of Hack's application, and was not within a gold-field. It was proved clearly before the Land Board that there was within the boundaries of the portion in question more than sufficient to satisfy Hack's application for the 40 acres. The statement of the pegging out by Thorne and party was clearly disproved to the satisfaction of the Land Board, and the evidence shows that the pegging out as alleged by Mr. Proctor did not take place.

We would point out that the late Minister for Lands, Mr. Brunker, after carefully going into the evidence and the papers, recommended that Hack's application be confirmed, and we feel sure that your predecessor's decision will not be interfered with by you unless some facts, which were not brought under his notice, are brought before you. As you were good enough to say that before dealing with the matter that you would give our Mr. McNamara an opportunity of seeing you, we shall be glad if you will give him an early appointment, that he may go fully into the statements made by the deputation, and point out to you in what respects they are inaccurate.

We have, &c.,
McNAMARA AND NORTON.

No. 92.

Mr. District-Surveyor Finley to The Under Secretary for Lands.

Resurvey of portion, No. 113, parish of Cooney, county of Sandon.

Sir, District Survey Office, Armidale, 6 March, 1889.

Original plans, S. 2,354, and 2,406-1,660, and Mr. Surveyor Laing's plan forwarded under separate cover, in roll form.

In accordance with the Honorable the Minister's instructions, dated 1st February, 1889, papers C.S. 89-346, I now have the honor to forward a plan and report showing a resurvey by Mr. Surveyor C. W. Laing, of measured portion No. 113, in the parish of Cooney, county of Sandon.

Mr. Surveyor C. W. Laing has had no previous connection with this case in any way.

According to Mr. Laing's resurvey the total area of portion 113 is 41 acres 1 rood 6 perches, and the area of the portion, exclusive of Brereton and Smith's gold lease, is 41 acres and 39 perches.

Attention is drawn to the fact that the western boundary of the portion has been fixed by scale only from Mr. Licensed-Surveyor Evelyn Manning's plan of the survey of the portion adjoining, being portion 59; there being no other way of determining it, as it follows no natural feature.

The whole of the papers in this case are forwarded herewith, as also the original plans of measured portions Nos. 59 and 113, catalogued S. 2,354-1,660, and S. 2,406-1,660.

I have, &c.,
F. G. FINLEY,
District Surveyor.

[*Enclosure.*]

Resurvey.—Surveyor Charles W. Laing to the District Surveyor, transmitting plan of portion 113, parish of Cooney, county of Sandon, showing resurvey of original measurement. Plan and instructions herewith.

Sir, Armidale, 25 January, 1889.

I have the honor, in accordance with your instructions, dated 14th February, 1889, No. 4, to transmit herewith the plan of portion No. 113, parish of Cooney, county of Sandon, showing resurvey of original measurement.

Owing to the nature of the country, which is a mass of broken rocks, and very steep, I found it impossible to measure along the north or south boundary of portion 113, but traversed a connection from A to D, and checked it by triangulation from transverse line 10, with satisfactory results, then calculated the length of AD-BC.

I found all corners, and the reference to corner B should read as shown by me.

I have, &c.,
CHARLES W. LAING.

The District Surveyor, Armidale.

Forward to the Under Secretary for Lands, with my letter of this date.—F. G. FINLEY, District Surveyor, 6/3/89.

No. 93.

The Under Secretary for Lands to Mr. W. E. Myring.

Sir, Department of Lands, Sydney, 8 March, 1889.

Armidale. C.P. 87-91, 40 acres. A. J. Hack.

Referring to your letter of the 20th ultimo, on the subject of the conditional purchase, noted in the margin, I am directed by the Secretary for Lands to inform you that the case will be dealt with in the ordinary manner.

I have, &c.,
H. CURRY
(For the Under Secretary).

No. 94.

Office Memorandum.

Alfred J. Hack, Armidale.—Conditional Purchase 87-91, 47th section, 40 acres, portion 113.

Mr. Secretary Lyne, on the 1st February last (89-346 Corr.), directed as follows:—Instruct District Surveyor to have another survey made by a surveyor not already employed in connection with this.

In accordance with those instructions a resurvey has been made by Mr. Surveyor C. W. Laing, who finds that the area of portion 113 is 41 acres 1 rood 6 perches, and the area of the portion, exclusive of Brereton and Smith's gold lease, is 41 acres and 39 perches. On

On the 19th February the opinion of the Attorney-General was sought as to whether the Minister had power to order a re-survey of a measured portion, the plan of which had been approved, but as such opinion has not yet been given, the case may perhaps remain in abeyance pending its receipt.

W.H.C., 11/3/89.

The Under Secretary.

Pending the receipt of the opinion of the Attorney-General this case may stand over.—J.N.B., 12/3/89. Opinion herewith.—J.P.M. (*per* T.B.), 15/3/89. Mr. Capper. Opinion by Mr. Attorney-General Simpson now enclosed (*Vide* 89-6,898, Departmental).—W.H.C., 15/3/89. The Under Secretary. Submitted.—S.F., 16/3/89.

No. 95.

The Crown Solicitor to The Under Secretary for Lands.

Subject :—Sections 55 to 60 of the Crown Lands Act of 1884, 44 Vic. No. 18, as to the power of the Minister to resurvey land under certain circumstances.

Sir, Crown Solicitor's Office, Sydney, 14 March, 1889.

I have the honor to return herewith the papers relating to the above matter, which were forwarded to me from your department on the 20th February, 1889, and to state that I have submitted them to Mr. Attorney-General Simpson, a copy of whose advising thereon will be found upon the * other side of this letter. *See below.

I have, &c.,
JOHN WILLIAMS,
Crown Solicitor.

[*Enclosure.*]

COPY OPINION OF THE ATTORNEY-GENERAL.

I DO do not see any power given in the Land Act of 1884 either to the Minister for Lands or to the Land Board to authorize a resurvey of a *measured* portion.

Section 55 says that land upon being conditionally purchased under the Act of 1884 shall be taken in portions as measured; but if the area applied for be less than a measured portion, such portion may, on approval of the Land Board, be subdivided. But in the present case the portion applied for is *not less* than a *measured* portion, viz., 40 acres, if it is considered that the approval under the Land Acts Amendment Act, 39 Victoria No. 13, section 13, constitutes the land a measured portion *after the passing of the Lands Act of* 1884. Section 56 of that Act states that no land shall be considered to be measured until the plan shall have been approved of by the district surveyor, or an officer duly authorized in that behalf, &c.

If the approval under the *Act* 39 *Victoria No.* 13 has ceased to have any effect (and this is a question upon which I express no opinion), the 42 acres may be considered as an *unmeasured portion* under the Act of 1884; and 40 acres of it, if sufficiently described, may be selected, *excluding the land included* in the mineral lease application. If the approval under the Act of 1875 still constitutes the land as described in the plan a measured portion, I don't see any certain way out of the difficulty which has arisen; but perhaps the *best* thing to do would be for the Minister to direct a resurvey, and let the legality of the proceedings be tested by those whose interest it may be to dispute it.

G.B.S., 13/3/89.

No. 96.

The Under Secretary for Mines to The Under Secretary for Lands.

Sir, Department of Lands, Sydney, 25 March, 1889.

Referring to the matter of the conditional purchase noted in the margin, I have, by the direction of the Secretary for Mines, to request that you will be good enough to inform me as soon as possible whether further consideration has been given to the objections to such conditional purchase; and, if so, with what result.

Armidale, C.P. 87-91; 40 acres, portion 113, parish Cooney, County Sandon; A. J. Hack.

I have, &c.,
HARRIE WOOD,
Under Secretary.

No. 97.

The Under Secretary for Mines to The Under Secretary for Lands.

Sir, Department of Mines, Sydney, 30 April, 1889.

I have the honor to invite your attention to my letter of the 25th March, and to request the favour of a prompt reply.

I have, &c.,
GERARD E. HERRING
(For the Under Secretary).

Subject :—*Re* conditional purchase 87-91 at Armidale, 40 acres, portion 113, parish Cooney, county Sandon; A. J. Hack.

No. 98.

Messrs. Brett and Coghlan to The Minister for Mines.

Sir, 19, Macquarie-place, Sydney, 13 May, 1889.

Under instruction from Mr. A. J. Hack, we have the honor to request that you will cause the conditional purchase noted in the margin to be approved at the earliest moment possible, as owing to the long delay which has already taken place, our client has been unable to complete arrangements which he had entered into, and has been, and still is, suffering severe and, to him, ruinous loss. He is, and always has been, ready to comply with all the provisions of the Act.

C. P. 87-9 40 acres, Armidale, A. J. Hack

The anxiety and mental strain brought upon him by the lengthy delay occasioned by the action of interested parties is proving too much for him, and his bodily health is suffering.

Under these circumstances, and in order that justice may be done, we trust that you will at once cause the necessary certificate to issue.

We have, &c.,
BRETT AND COGHLAN.

No. 99.

No. 99.

Messrs. Abbott and Allen to The Under Secretary for Lands.

Sir, Wentworth Court, Sydney, 28 May, 1889.

I have the honor to forward to you the copy of a letter received by me from Mr. A. J. Hack, in reference to his C.P. 87–91 of 40 acres, made at Armidale, I need hardly point out to you how grossly unfair it is to Mr. Hack that this matter should be tied up in the manner in which it has been, simply because Mr. Chanter chooses to place upon the Business Paper of the Legislative Assembly a Notice of Motion which he makes no effort to have disposed of.

The interests involved in this conditional purchase are so great, and of such vital consequences to Mr. Hack, that there should be no delay in dealing with the matter one way or the other.

I would most respectfully urge that the Minister should give his decision in this case in such a way as to enable the parties to the dispute to fight out their contentions in the Supreme Court, if they think proper. The facts of the case are, I think, admitted, the points of law involved are intricate, and can only be finally decided in a satisfactory way by a Court of Justice. Under these circumstances, I would ask the Minister, without delay, to take a course which will enable all parties to have the disputes settled at the earliest possible date

I have, &c.,
ABBOTT AND ALLEN.

[*Enclosure.*]

J. P. Abbott, Esq., M.L.A., Elizabeth-street, Sydney,— Armidale, 22 May, 1889.

Sir,

I shall esteem it a favour if you could inform me if it is Mr. Chanter's intention to apply for the Select Committee to inquire into the matter of my conditional purchase. It is now so long since the time fixed for it to come before the House, and as nothing has been done, I thought that perhaps Mr. Chanter had abandoned it. Could you induce Mr. Chanter either to proceed with this matter at once or withdraw his motion, or in any way hurry my case at the Lands Department, so as to get the certificate of approval issued, as I find that I am not able to bear the heavy expenses that I am continually being put to and have been put to for the past two years over this case.

If you can further assist me in this matter you will confer a great favour on me.

Yours truly,
A. J. HACK.

[Three plans.]

Sydney: Charles Potter, Government Printer.—1889.

[*s. 9d.*]

Cat No. S2406 1660
Con. Sales No. 82.1809

APPENDIX. I.

PLAN OF PORTION 113 ARMIDALE

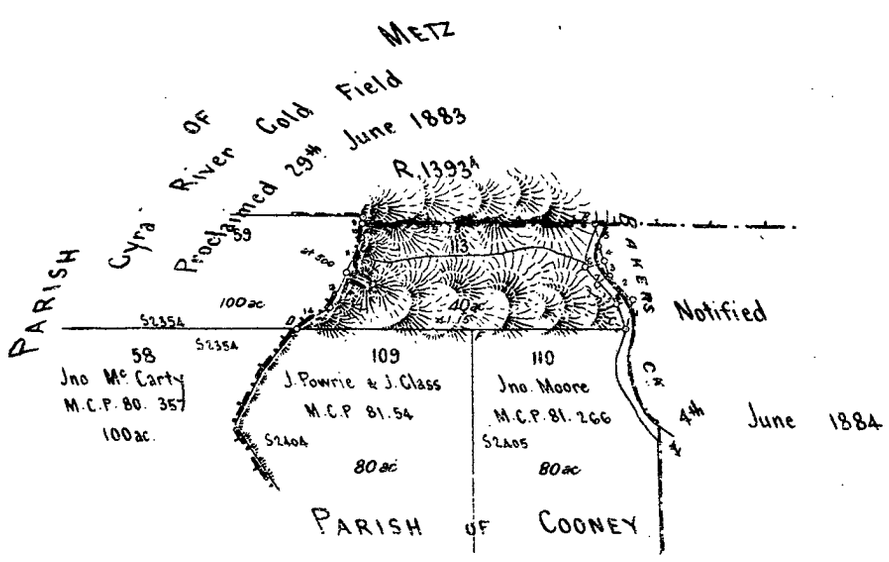
County of Sandon Parish of ~~Metz~~ Cooney

Applied for under the 19th clause of the Crown Lands Alienation Act of 1861 by

John Moore

For Re-survey vide S2939

M.C.P 81.274 13th Octr. Lapsed vide Gazette 30th June 1885
C.P 87.91 21st July A.J. Hack. Disallowed 7th Feby. 88
Within Ex. to Gyra River Gold Field and R.4186 from C.P. Proclaimed 30th Augt. 87



Examd. & charted on Co. Map 28th Oct. 82 (sd) H.C. Herring

Approved (sd) D.H. Chisholm 23 Octr. 84

Account No. 82.7
Passed 24 Sepr. 85
Con. and Plan (sd)
B 145 folio 17

NOTE:- Writing in red on original plan is shewn on this copy ..... thus A.B.C. and a.b.c.d. 1.2.3
Reserve bound blue shewn by green edging on orig. plan is shewn on this copy ..... "

For alteration in Parish name see cover to 82.1807 Sur

Reference to Corners

Cor.	bearing	from	links	No. on tree
A	345° 35'	St. bark	28½	113
B	Oak at corner			113
C	173° 20'	apple	43	110-113
D	Stake (dd cor tree destroyed)			
E	1° 00'	Peppt.	60	59
F	inacessible			

Value of Improvements Nil
Situated in the "Gara Run"

Reference to Traverse

Line	bearing	Dist.
1	16° 35'	4.08
2	315° 25'	4.18
3	340° 21'	2.00
4	340° 21'	2.08
5	348° 13'	2.65
6	250° 21'	2.50
7	230° 00'	2.00
8	256° 00'	2.25
9	187° 37'	.92
10	183° 03'	177
11	204° 34'	4.77
12	114° 34'	3.70
13	204° 34'	5.00
14	237° 07'	4.92
	Offsets	
Creek	2.25	- 4.75 ac
Falls	2.50	

I hereby certify that I in person made and on the 1st Feby 1882 completed the survey represented on the plan on which are shewn the bearings & lengths of the lines measured by me, that I used a Theodolite in accurate adjustment & a chain adapted to the standard of the Sydney Observatory, that I commenced the survey at the point D on this plan and used as the basis of bearings the line D.C thereon, and that the whole of the survey has been executed in accordance with the practice of this Departt. and the regulations published for the guidance of Surveyors. I declare that the above certificate is true in every particular

(sd) John. G. Martyn
Lic. Surveyor

Traced for D.S.O
(sd) E.L.S 28.4.87

— Scale 20 Chains to an Inch —

Transmd. to the Sur. General with my letter of the 11th March No. 82.14

Traced by J.P. Gr. Examined H.J. Mitchell

(Sig. 444-)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

Enclosure to N°92.

Departmental 89. 6058

Division
Resumed Area N°
Pastoral Holding

PLAN OF PORTION 113

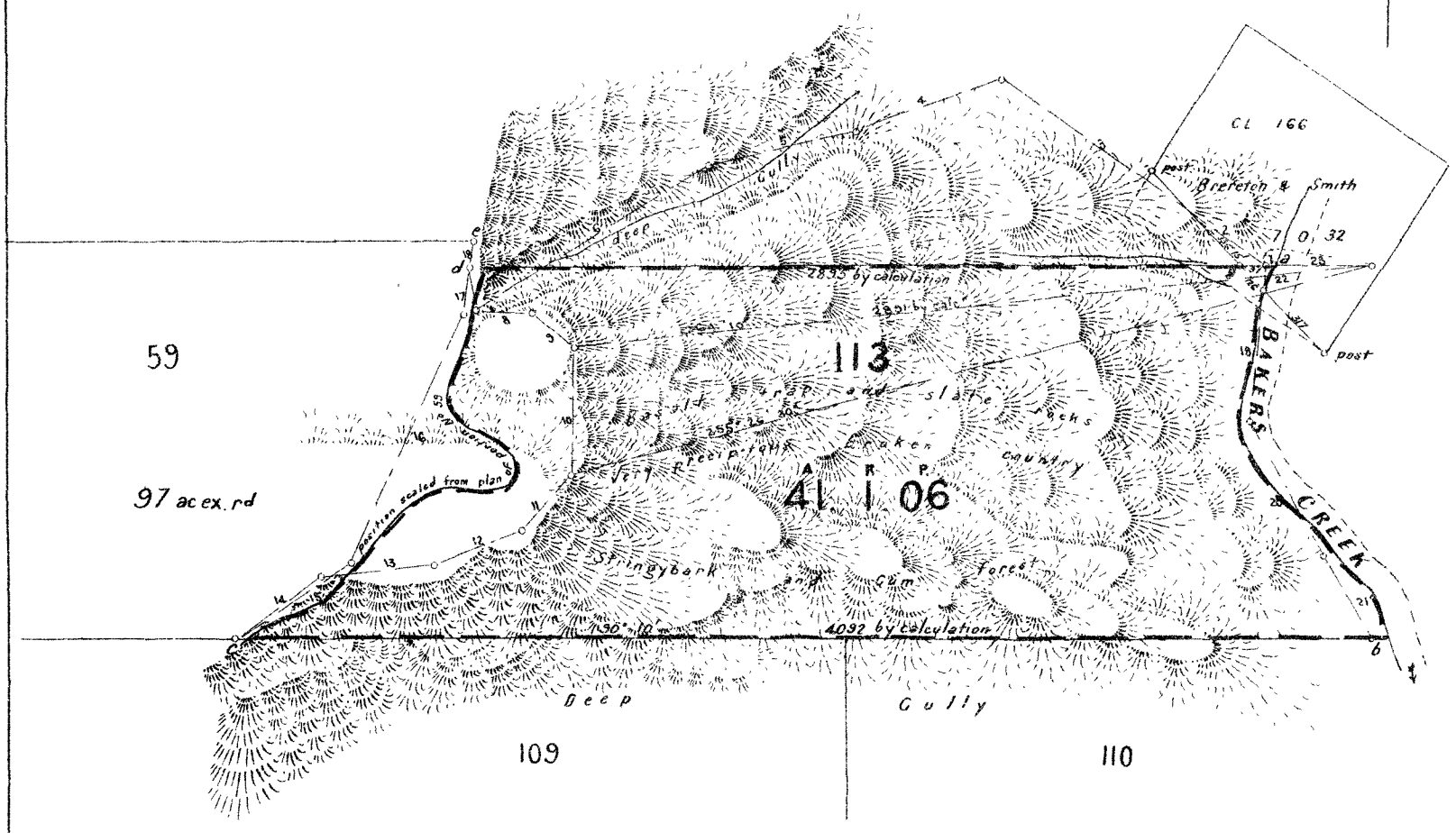
County of Sandon Parish of Cooney

LAND DISTRICT OF ARMIDALE LAND BOARD DISTRICT OF ARMIDALE

Applied for under the 47th Section of the Crown Lands Act of 1884 by A J. Hack

Por N° *C.P N°8*
" " *C.L N°8*

Shewing resurvey of original measurement



NOTE

Area of portion 113 — 41 1. 6
Area less part of CL 166 — 41 0 39
Fall from d to a by Barometer 1250 ft

— Note —

Portion tinted pink on original plan is shewn on this copy..... thus
figures in blue " " " are " " " " " 12345
Lines " " " " "

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

Azimuth taken from a d
Field Book Vol. Folio

Reference to Corners

Corner	Bearing	From	links	N° on Tree
a		Oak at corner		113 CL 166
b	353° 49'	Apple	43½	110 113
c	42 35	Box	18¾	CL 240 237 also Tree down
d	345 48	Stringybark	28¼	113
e	1 40	"	60⅓	59
f	187 18	Oak	43½	C.L 166
g		Stake		

Reference to Traverse

Line	Bearing		Distance
1	265°	00'	23.2
2 "	304	41	402.6
3	304	49	762
4	250	13	543.4
5	257	20	542.9
6	238	43	985.3
7	350	08	155
8	93	33	200
9	130	23	196
10	181	11	455.6
11	221	44	263
12	249	02	342
13	264	54	403
14	234	41	381
15	57	14	432
16	24	41	977
17	6	34	170
18	8	19	92
19	185	59	564
20	151	11	548
21	149	39	341
22	185	50	90¾
23	90	02	373.6

I hereby certify that I in person made and on the 23rd Feby 1889 completed the survey represented on this plan, on which are written the bearings and the lengths of the lines measured by me and I declare that the Survey has been executed in accordance with the regulations published for the guidance of Licensed Surveyors and the practice of the Surveyor General's Department

(sd) Charles W Laing Surveyor

Transmitted to the District Surveyor with my letter of 25th Feby N° 89.16

Situated in the
Value of Improvements

(S 2939)

— Scale of Chains —

0 1 2 3 4 5 6 7 8 9 10 20 30 40

Voucher N° Passed
Calculation Book N°1306 Folios 25 & 26
Checked & Charted (sd) Holroyd 4th March 1889
Examined

Plan Approved 188

District Surveyor

Traced by [illegible] Examined [illegible]

444

Enclosure to No. 55.

J.W.W.
9.7.89

PLAN

showing 15 Leases

which encroach upon

Porn. No. 113

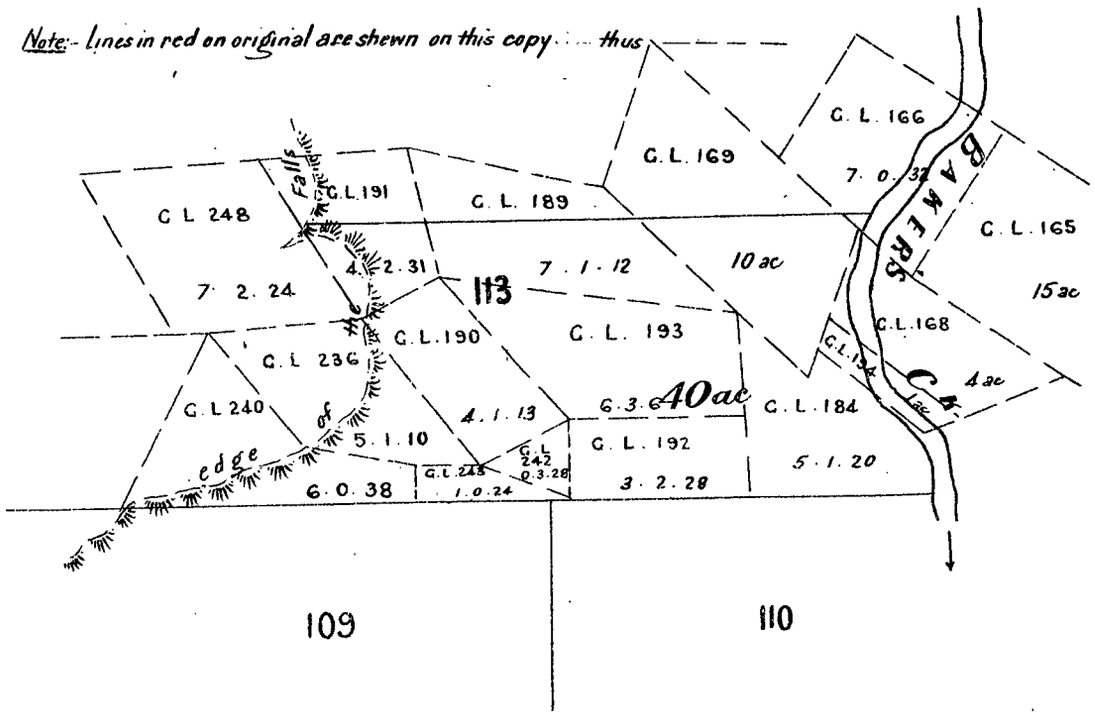
Parish of Metz County of Sandon

— Gold Leases shewn in Red —

G.L. 166	Brereton & Co
168	Hanlan . . .
169	Thorne . . .
184	Dewar . . .
189	Bauer . . .
190	Leslie . . .
191	Anderson . . .
192	Solomons . . .
193	Everett . . .
194	Brislame . . .
236	Kenny . . .
240	Westren . . .
242	Wheeler . . .
243	Claffy . . .
248	Bauer . . .

Traced by J.S. Ex
Examined H.H. Mitchell 1.7.89.

Note:- Lines in red on original are shewn on this copy . . . thus



(Sig 444)

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

MINING.

(CORRESPONDENCE, &c., RELATING TO THE CASE OF THE BLUE JACKET MINING LEASE, CANOWINDRA.)

Ordered by the Legislative Assembly to be printed, 9 *July*, 1889.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 8th May, 1889, That there be laid upon the Table of this House,—

"Copies of all letters, papers, minutes, reports, and other documents "relating to the case of the Blue Jacket Mining Lease, 56, at Canowindra, "in the County of Ashburnham."

(Dr. Ross.)

SCHEDULE.

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3.	Messrs. G. W. H. Dry, John Charnock, and others to the Secretary for Mines. 22 October, 1887	2
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5.	Mr. G. W. H. Dry to Mr. Warden Sharpe. 3 November, 1887	3
6.	The Warden's Clerk, Canowindra, to Mr. Warden Sharpe. 13 November, 1887	3
7.	Mr. John Boyd to same. 17 November, 1887	3
8.	The Under Secretary for Mines in reply to letter of the 22nd ultimo. 23 December, 1887	3
9.	Mr. W. Croucher to Mr. Thomas Forsyth. 7 May, 1888	3
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11.	Mr. F. W. Smith to the Under Secretary for Mines (minute). 29 May, 1888	4
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13.	Gazette Notice of Cancellation, G.L. 54. 28 July, 1888	4
14.	The Under Secretary for Mines to Messrs. John Boyd and others, informing them of cancellation. 28 July, 1888	4
15.	Dr. A. Ross, M.P., to the Under Secretary for Mines (enclosures). 1 August, 1888	4
16.	Application for G.L. No. 77, at Canowindra, by William Croucher and others (forms attached). 3 August, 1888	5
17.	Messrs. G. W. H. Dry to the Under Secretary for Mines (minute). 6 August, 1888	6
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19.	Mr. G. W. H. Dry to the Under Secretary for Mines. 18 August, 1888	7
20.	Dr. A. Ross, M.P., to the Secretary for Mines (minute and enclosure). 1 September, 1888	7
21.	The Under Secretary for Mines in reply to above. 6 October, 1888	7
22.	The Chief Mining Surveyor to Mr. Surveyor Curtis, notice to survey. 23 November, 1888	7
23.	Mr. Surveyor Curtis, forwarding plan, &c. (enclosure). 29 January, 1889	8
24.	Mr. T. De Courcy Browne to the Secretary for Mines. 3 May, 1889	8

449—A

[870 copies—Approximate Cost of Printing (labour and material), £7 7s. 4d.]

MINING.

No. 1.

Messrs. G. W. H. Dry and John Charnock to The Secretary for Mines.

Sir, Belmore, Canowindra, 8 October, 1887.

We, the undersigned, lessees of gold-mining lease No. 54, comprising 2 acres, known as the old prospecting claim, situate at the Blue Jacket Reef, Belmore, near Canowindra, parish Collett, county of Ashburnham, do hereby, in accordance with the Gold-fields Mining Act, respectfully request that a suspension of work may be granted us thereon for the period of three months, for the following reason :—That the workings, now at a depth of 240 feet upon the main reef, are flooded with water for a considerable distance along the course of the workings, and within a distance of 100 feet from the surface, necessitating machinery to be obtained and employed to combat with it and enable us to clear the workings and get at the stone, which is now under water. We therefore request this protection while we obtain and erect the necessary machinery. Awaiting favour of your esteemed reply,

We, are, &c.,
G. W. H. DRY.
JOHN CHARNOCK.

N.B.—The Warden (Mr. Connolly) for the Carcoar and Bathurst district, who attends here as P.M., informs me he cannot deal with the matter, as this is in the Forbes District, and the Warden there seldom having occasion to come here necessitates our application to you.—G.W.H.D. and others.

G.L. 214, Lachlan, J. Boyd and others.—The writer should probably be informed that he must apply to the Warden of the district for suspension on the above lease.—E.F. Submitted.—17/10/87. Approved.—H.W., 18/10/87.

No. 2.

Mr. W. E. Croucher to The Secretary for Mines.

Sir, Canowindra, 12 October, 1887.

I beg to draw your attention to the following facts:—A party of three, named John Boyd, George Dry, and John Charnock, have a gold lease of 2 acres at Belmore, Canowindra. The lease has been signed by them, but they are not doing any work. I beg that you will make inquiries and have the lease cancelled for non-working and give me the privilege of taking possession of it, as I am prepared to go into it and give it a fair trial, and not let it lie idle, as the present party are doing, waiting for others to strike something. I beg to ask that there will be no delay in having it cancelled.

I have, &c.,
W. E. CROUCHER.

Referred to Mr. Warden Sharpe for report as to application for suspension by Dry and party.—E. FARR, for the Under Secretary, 5/11/87. Mr. Warden Sharpe, B.C., 5th November, 1887.

It appears from the annexed report of the Warden's Clerk at Canowindra, as also from a letter I have received from one of the shareholders, that the labour conditions have not been complied with on the lease in question. Attention is drawn to report and correspondence.—ERNEST A. E. SHARPE, Warden, B.C., 29/11/87. The Under Secretary for Mines.

As the nature of the several reports are conflicting, probably the usual course may be adopted, and the applicants for suspension be informed that they must apply to the Warden (Mr. Sharpe) in open Court for the concession they ask.—E.F., 15/12/87.

The writers may be informed that they must apply to the Warden in open Court. There is no other way of dealing with such applications. It was a waste of time to refer to the Warden.—H.W., 20/12/87.

No. 3.

Messrs. G. W. H. Dry, John Charnock, and others to The Secretary for Mines.

Sir, Canowindra, 22 October, 1887.

We respectfully invite your attention to application for registration of gold-mining lease No. 56*, on Blue Jacket Reef, Belmore, Canowindra, county Ashburnham, parish Collett, for the period of three months, pending erection and completion of plant, to enable us to get the water out of the workings, that we may drain the ground to get at the reef. The application is dated about the 15th instant. Your reply per return granting same will oblige, as we are anxious to forward the mine.

* Should be No. 54.

We are, &c.,
G. W. H. DRY,
JOHN CHARNOCK,
And Others.

How does this stand?—H.W., 24/10/87. The writers have been instructed to apply to the Warden of the district. Seen.—G.E.H. (for U.S.)

No. 4.

The Under Secretary for Mines to Messrs. G. W. H. Dry and John Charnock.

Gentlemen, Department of Mines, Sydney, 25 October, 1887.

Referring to your letter of the 8th instant, in which you apply for suspension of the labour conditions of gold-mining lease No. 214 in the Lachlan Mining District for the period of three months, I have the honor to inform you that application should be made to the Warden of the district for suspension of the labour conditions of the lease.

I have, &c.,
GERARD E. HERRING
(for the Under Secretary).

No. 5.

No. 5.

Mr. G. W. H. Dry to Mr. Warden Sharpe.

Dear Sir, Canowindra, 3 November, 1887.

We have applied to Mr. Connolly, P.M. here, who is also Warden for the Carcoar and Cowra districts, and he informs us he thinks it would be necessary for the application to be made to you. This would mean 90 miles of journey, unless you accepted a declaration from us setting forth the facts which I can forward upon receipt of reply.

Yours, &c.,
G. W. H. DRY.

Will Mr. Cook be good enough to inform me if the labour conditions have been complied with on this lease, and inquire from lessees on what grounds they ask for suspension of labour. See conditions of labour below?—ERNEST E. SHARPE, Warden, B.C., 5 November, 1887. The Warden's Clerk, Canowindra.

The labour conditions on G.L. No. 214 are :—That fourteen days after delivery two men are to be employed continuously the ordinary working hours. The lease was delivered on the 22nd June last.

No. 6.

The Warden's Clerk, Canowindra, to The Warden, Forbes.

Sir, Warden's Office, Canowindra, 13 November, 1887.

Re the attached papers, I have the honor to state for your information that Mr. Dry, one of the applicants, states that the ground on which he asks for a suspension of the labour conditions is that they wish to erect machinery to test the deep ground. Mr. Boyd, another of the applicants, does not wish for a suspension, as he wishes the ground to be worked, and states that there is no intention of erecting machinery. Mr. Charnock has not been spoken to about the matter, as he lives some distance from Canowindra. The labour conditions have not been carried out. Two men were employed for six weeks after the granting of the lease, but since that time no work of any sort has been carried on in connection with the lease.

I have, &c.,
WM. COOK,
Warden's Clerk.

No. 7.

Mr. John Boyd to Mr. Warden Sharpe.

Sir, Canowindra, 17 November, 1887.

The Warden's Clerk here called on me the other day to ask on what grounds we asked for suspension of work on our lease at Belmore, and I now beg to state that I, as one of the shareholders, was never a party to it. Dry asked me some time ago, and I told him then that I didn't want suspension of work, as we had made a start, and I would like to see it tested, and if it was no good throw it up. But it appears he took it on himself to write. Charnock didn't even sign the letter, although I believe his name appears on it. We have worked it for about six weeks ; and, on account of Dry not paying his share of working expenses, we have not worked it for about six or eight weeks, as what was done Charnock and myself had to pay for it. I would sooner see it cancelled than to be humbugged any more, as I believe it is a good claim. I would like to see it properly worked. I say if we cannot work it let somebody else do it, although it will be hard for Charnock and myself to lose it, as we have been out of pocket now.

I thought I had better drop you a line in case you might be misled.

I am, &c.,
JOHN BOYD.

No. 8.

The Under Secretary for Mines to Messrs. G. W. H. Dry, John Charnock, and another.

Gentlemen, Department of Mines, Sydney, 23 December, 1887.

Referring to your letter of the 22nd October last, in which you apply for permission to register gold-mining lease No. 56, Blue Jacket Reef, Belmore, Canowindra, for suspension from labour, I have the honor to inform you that your application should be made to the Warden in open Court.

I have, &c.,
GERARD E. HERRING
(for the Under Secretary).

No. 9.

Mr. W. Croucher to Mr. Thomas Forsyth.

Sir, Canowindra, 7 May, 1888.

Some months ago I wrote to the Minister for Mines, giving notice that the labour conditions were not being complied with on gold-lease No. 214, Canowindra, and though for months I have purposely refrained from leaving the field for fear of missing the notice of cancellation, I have come to the conclusion now that it will be necessary for me to get someone in the city to push the matter through for me. I am unable to hang about any longer; and, if you can get the notice addressed to your care, I will keep you posted with any change of address. I presume this letter will be sufficient authority for you to show to the Minister. If you can push the matter through, you will do me a great favour.

I am, &c.,
WILLIAM CROUCHER.

Send notice to Mr. Forsyth.—H.W., 14/5/88.

No. 10.

No. 10.

Minute for Executive Council.

Recommending the Cancellation of Gold-mining Lease.

Department of Mines, Sydney, 15 May, 1888.

It is recommended to His Excellency the Governor and the Executive Council that the gold-mining lease of Crown lands specified in the annexed schedule be cancelled, the lessees having failed to fulfil the labour conditions contained therein.

FRANCIS ABIGAIL.

The Executive Council advise that the recommendation herein set forth be approved, and the necessary notices issued.—Alex. C. Budge, Clerk of the Council. Minute 88/23, 22/5/88. Approved. —Carrington, 22/5/88. Confirmed, 29/5/88.

[*Enclosure.*]

Schedule alluded to.
Lachlan Mining District.

No. 214; John Boyd and others; G.L. 54; county Ashburnham, parish Collett; 2 acres; Canowindra; Application No. 14.

No. 11.

Mr. F. W. Smith to The Under Secretary for Mines.

Sir,

Belmore Mills, Canowindra, 29 May, 1888.

When I was in your office last August I called your attention to a quartz lease held by J. Boyd, J. Charnock, and G. W. H. Dry (2 acres). They have held it now for, I think, over two years (the lease was issued last June, 1887), and not more than £10 worth of work done on the lease, and that in September, 1887. The reefs are showing on the surface, so that they know where to start. I have twelve miners at work within 70 yards of them raising payable stone on the same line, and if this ground was cancelled there are any number of miners would be glad to take it to work.

How long are these men to hold it without working according to their lease? They should have been at work continuously since the 29th June, 1887.

Yours, &c.,

F. W. SMITH.

Inform that steps are being taken for cancellation of the lease on a prior complaint.—E.F., 6/6/88. Yes.—G.E.H. (for U.S.), 7/6/88.

No. 12.

The Under Secretary for Mines to Mr. F. W. Smith.

Sir,

Department of Mines, Sydney, 13 June, 1888.

Referring to your letter of the 29th ultimo, in which you lodge a complaint for the nonfulfilment of the labour conditions of gold-mining lease 214, Boyd and party, Canowindra, I have the honor to inform you that steps are being taken for the cancellation of the lease on a prior complaint.

I have, &c.,

GERARD E. HERRING

(for the Under Secretary).

No. 13.

Gazette Notice.

Department of Mines, Sydney, 28 July, 1888.

Notice to Applicants for Gold-mining Leases.

Notice is hereby given that the undermentioned gold-mining lease has been cancelled for non-fulfilment of the labour conditions contained therein.

[88–12,930.]

FRANCIS ABIGAIL.

Lachlan Mining District.

No.	Name.	Portion No.	Locality.	Area.	Application No.
214	John Boyd and others	GL 54	County Ashburnham, parish Collett...	a. r. p. 2 0 0	Canowindra 14

No. 14.

The Under Secretary for Mines to Messrs. John Boyd and others.

Sir,

Department of Mines, 28 July, 1888.

Lachlan District, No. 214.

I am directed by the Secretary for Mines to inform you that the gold lease noted in the margin has been cancelled for non-fulfilment of the labour conditions contained therein.

I have, &c.,

GERARD E. HERRING

(for the Under Secretary for Mines).

No. 15.

A. Ross, Esq., M.D., M.P., to The Under Secretary for Mines.

Sir,

Molong, 1 August, 1888.

Herewith I enclose letters from Mr. G. W. H. Dry, of Canowindra, in which he complains of some gross injustice having taken place in regard to the Blue Jacket gold-mining lease, No. 56,* at Canowindra, in which he is interested.

*Should be No. 54.

I

I regret, too, exceedingly, of the unsatisfactory answers furnished to me on the matter by the department, and which are marked in red in Mr. Dry's letter. Let me beg of you to furnish the fullest information to Mr. Dry (by writing to him direct) explaining how the Blue Jacket Reef now stands, so that I may be relieved of the odium of having supplied false and incorrect information to Mr. Dry, as was supplied to me by the Mines Department.

The matter, it is self-evident, is serious, and I trust it will receive your immediate attention, and an answer written to Mr. Dry at once, so that he may know exactly how the case and matter stand. Let me beg of you to give the matter your prompt attention.

Yours, &c.,
DR. A. ROSS.

[*Enclosure A.*]

Mr. G. W. H. Dry to A. Ross, Esq., M.D., M.P.

Dear Sir,

Canowindra, 28 July, 1888.

I omitted in my last when referring to my lease to mention particulars for your identification, so now subjoin them :—"Gold-mining lease, No. 56,* 2 acres, Blue Jacket Reef, Belmore, near Canowindra, Lachlan District; Messrs. Boyd, Dry, and Charnock, lessees." So please don't neglect to inform me at the first intimation of its being cancelled; also of any other on the same line of reef.

*Should be No. 54.

G. W. H. DRY.

[*Enclosure B.*]

Mr. G. W. H. Dry to A. Ross, Esq., M.D., M.P.

Dear Sir,

Canowindra, 30 July, 1888.

I am informed that a notification of the cancellation of my lease on the Blue Jacket Reef, referred to in my last, has been gazetted, although I can find no one who has seen it; however, one of the original shareholders, John Boyd, with another stranger, has marked it out on the strength of it. In yours of the 4th instant you informed me that no steps had been taken to have it cancelled, hence I remained in false security. My inquiries elicit that applications for it have been made some time ago, hence the replies to your queries at the office have not been correctly given. Boyd held the deed on trust on behalf of himself, Charnock, and myself, and acts surreptitiously in obtaining a cancellation by collusion with a stranger to oust the *bona fide* shareholders (the partners therein). The term of the rental has not expired, and under the circumstances is it not possible to get this cancellation revoked. Will you look this up, as it is a perfect swindle upon myself and the other shareholders by this Boyd? I applied some time past to the Under Secretary for Mines for suspension of labour pending the erection of machinery, &c., as there was a great difference between the shareholders regarding the employment of labour required. I may mention that neither of the latter has received any notice whatever regarding any default therein.

Mr. Clyburn is a shareholder with Mr. Charnock, and unites with me in requesting that you will do your level best to upset this nefarious transaction.

G. W. H. DRY.

[*Enclosure C.*]

[Later.]

31 July, 1888.

I am informed now the term of rent due is past. If such is the case it is confirmation of Boyd the shareholder's underhandedness, as he, holding the deeds, should acquaint us of any notice received from the department referring thereto, whereas we have received no notice either from the department, as is usual, or from him, the holder of the deeds. If such is the case, could we not send the lease money to the Treasury and demand the acceptance, the department not having noticed us, as is usual and requisite. Mr. Clyburn and myself anxiously await your reply.

G. W. H. DRY.

No. 16.

Application No. 77, at Canowindra, for a Gold-mining Lease.

1. By whom application was received? The Warden's Clerk.
2. At what place? Canowindra.
3. Date and hour when received? 3rd August, 1888, at 12 noon.
4. Receipt for first year's rent, No. 75. Date—3rd August, 1888.
5. To whom receipt was issued? William Croucher.
6. Date when notice to survey was sent to surveyor?
7. Date when report and plan were received from the surveyor?
8. Names of objectors, and dates on which they lodged their objections?
9. Dates of inquiry?
10. Are the applicants holders of miners' rights? Yes.
11. Is the land applied for exempted from leasing under the 34th section of the Mining Act, 1874? No.
12. Is the time proposed for commencing work reasonable?
13. Is the number of men proposed to be employed reasonable?

Gold-mining Lease Regulations—Schedule 2—Application for Gold-mining Lease.

To the Honorable the Secretary for Mines, Sydney,—

Sir,

Canowindra, 3 August, 1888.

We hereby make application for a gold-mining lease of that piece or parcel of land situated at Blue Jacket Hill, Belmore, containing 2 acres, of which we took possession on the 30th day of July, 1888, at the hour of 12·30 o'clock in the forenoon, for the purpose of mining thereon and therein for gold, for a period of fifteen years, by erecting posts and cutting trenches at each angle thereof. The datum post is on the north-west corner of the Blue Jacket gold lease.

Notice of our intention to make this application has been given in accordance with the regulations in that behalf, and we hand herewith a list of the persons who occupy or claim a right to the land aforesaid, or any part thereof, together with such contents as we have obtained. We also hand herewith the sum of two pounds, being the first year's rent in advance of the said land, and one pound ten shillings to cover the cost of survey. And we hereby request that survey may forthwith be made of the said piece or parcel of land.

We hereby acknowledge that this application is made upon the distinct understanding and condition that if we shall abandon or fail to proceed with it, or if it is refused, the Secretary for Mines for the time being may deduct from the sum of two pounds, deposited as aforesaid, any cost to which in his opinion the Crown may have been put in or about or in respect of this application; and this application shall thereupon become and be void, and the possession aforesaid shall cease and determine. And if the lease shall be granted we shall and will commence mining operations upon or in connection with the

demised

demised land within fourteen days from and after the granting thereof, and shall and will employ upon such land not less than two men during the whole of the term thereby created, and not less than——— men during the remainder of such term. And shall and will at any time when called upon, in terms of the regulations relating to gold-mining leases, to do so, execute and take delivery of such lease, or failing therein for a period of fourteen days after being so called upon, we shall and will forfeit the said sum of two pounds and all right, title, or interest in and to the said land and the possession thereof, and the said lease shall be forthwith cancelled.

We have, &c.,
WILLIAM CROUCHER.
JOHN BOYD.
ALFRED A. GALLAGHER
(by his agent, JOHN BOYD).

Miners' Rights.

No. 22; date—1st January, 1888. William Croucher, miner, Canowindra.
No. 27; date—1st January, 1888. John Boyd, storekeeper, Canowindra.
No. 148; date—25th January, 1888. Alfred A. Gallagher, mining agent, Sydney.

This application was received by me this 3rd day of August, 1888, at the hour of 12 o'clock in the forenoon, and is numbered 77.—WILLIAM COOK, Warden's Clerk.

Questions to be answered by Applicants to Lease.

WHEN receiving an application to lease land for mining purposes, the Warden, Warden's Clerk, or an agent, as the case may be, shall require the applicant or applicants, or his or their agent, to answer the following questions, and shall take down such answers in writing. The statement, when complete, to be read over to, and signed by, the person furnishing the answers:—

1. Were you or each of you (applicants) the holder of a miner's right in force at the date of taking possession of the land referred to in application No. 77. Do you produce them? Yes.
3. What was the date and hour of the day when you took possession of the land referred to in application No. 77? 30 July, 1888, 12·30 a.m.
4. Did you take possession by erecting posts and cutting trenches at each angle of the land? Yes.
5. What was the diameter of the posts? 3 inches.
6. How high did they project above the surface when fixed in the ground? 3 feet.
7. What was the length of each arm of each trench, and what was the depth of each trench? 6 feet in length and 9 inches in depth.
9. At which angle of the land is the datum post fixed? North-east.
10. Did you affix a board or metal plate to the datum post? A board.
11. What was written or painted on each board or plate? Applied for gold-mining lease by William Croucher and party.
12. Where did you post the notices, schedule 1? Post office and Warden's office, Canowindra.
13. When did you post such notices? 30 July, 1888.
14. Did anybody claim or appear to be in possession of the land applied for, or any portion of it? No.

I, William Croucher, on behalf of self and party, declare that the foregoing questions have been answered by me truthfully in every particular, and the answers thereto have been read over to me, and are correctly taken down in writing.

Witness to signature,—
——— WILLIAM COOK, Warden's Clerk.

WILLIAM CROUCHER.

Gold-mining Lease Regulations, Schedule 6.—Notice of Application and Deposit.

Sir,

Canowindra, 3 August, 1888.

I have the honor to inform you that I have this day deposited with the Warden's Clerk at Canowindra the sum of two pounds, being the first year's rent in advance of 2 acres of land at Canowindra (Belmore), for the purpose of gold-mining, and the sum of one pound ten shillings, being the fees for survey of the said land. The number of my application is 77.

I have, &c.,
WILLIAM CROUCHER.

The Under Secretary for Mines, Sydney.

No. 17.

Mr. G. W. H. Dry to The Under Secretary for Mines.

Sir,

Canowindra, 6 August, 1888.

I have the honor to invite your attention to the collusion practised by one shareholder, and the lack of notice being forwarded to the other shareholders, whereby they are ousted from their legitimate holding, as follows:—Messrs. Boyd, Dry, and Charnock occupied a gold-mining lease of 2 acres, No. 56,* on the Blue Jacket Reef, Belmore, parish of Collett, county of Ashburnham. They worked it for some time by hired labour. A disagreement arose between the shareholders, one of whom demanded the work be let out on contract; the other, a business man, wished it continued on the weekly-wage system, which was proving a loss to the non-business shareholders. The storekeeper held the lease deed, and his name, John Boyd, being the first, received all notices, &c., that might be sent. He then enters into collusion with other men to get the lease cancelled, which is ultimately done, and marks the ground out on the 31st July, 1888, which is two days prior to the notice in *Gazette* appearing. The shareholders have never received any notification of any complaint of non-fulfilment of conditions, which is usual to forward, otherwise any person holding a lease may have it cancelled over them and not know it is done. Thinking that some underhand dealing was afoot, I requested Dr. Ross, M.P., to inquire, and he was informed that nothing was done in the matter, yet the foregoing results. Surely something is very wrong.

* Should be No. 54.

Yours, &c.,
G. W. H. DRY,

Kindly

Kindly have this matter investigated. The property is now of value, and John Boyd, the shareholder complained of, by his collusion, now holds the interest which by right should belong to his previous co-partners, Dry and Charnock, as you will see by previous memo. forwarded you through Dr. Ross. If this practice is permitted it will be a premium to dishonestly inclined persons, and destroy the integrity of the mining interests.—G.W.H.D.

The lease was cancelled for non-work. More than one complaint was lodged, and the Warden's Clerk's report was to the effect that the labour conditions had not been complied with. Mr. Dry may be so informed.—G.E.H., for U.S., 11/8/88. Submitted. Approved.—F.A., 14/8/88.

No. 18.

The Under Secretary for Mines to Mr. G. W. H. Dry.

Sir, Department of Mines, Sydney, 17 August, 1888.

Referring to your letter, dated 6th instant, *re* gold-mining lease No. 56,* on the Blue Jacket Reef, Belmore, parish Collett, county Ashburnham, I have the honor to inform you that this lease was cancelled for non-work. More than one complaint was lodged, and the Warden's Clerk's report was to the effect that the labour conditions had not been complied with.

*Should be G.L. 54.

I have, &c.,
HARRIE WOOD,
Under Secretary.

No. 19.

Mr. G. W. H. Dry to The Under Secretary for Mines.

Sir, Canowindra, 18 August, 1888.

Re gold-mining lease, 2 acres, Blue Jacket Reef, Belmore, Canowindra, Boyd and others, referred to in mine of 6th instant, I beg to inform you that the number of same should be 54, not 56, as stated therein. Boyd, the shareholder, was the custodian of the lease deed, and doubtless furnished the wrong number intentionally. The other shareholders, Charnock and Dry, as stated previously, never received any notice, either from the Mines Department or from Mr. Boyd, of any complaint or negligence tending to forfeiture, yet Boyd re-occupies the lease in his own right to oust them. Awaiting the favour of your reply,

I am, &c.,
G. W. H. DRY.

No. 20.

A. Ross, Esq., M.D., M.P., to The Secretary for Mines.

Sir, Molong, 1 September, 1888.

There is something evidently not right in the case of Mr. Dry, as his letter explains. (Letter enclosed.) The case has been for some time before your department for consideration, and I will be glad if you will cause a searching inquiry to be made. There is something wrong somewhere, otherwise Mr. Dry would not have complained in the manner he does. Give the case your usual prompt attention and consideration, and oblige. I have always found Mr. Dry a decent straightforward man.

Yours, &c.,
DR. A. ROSS.

Dr. Ross, M.P., may be informed of the circumstances under which the lease was cancelled.—H.W., 24/9/88. Submitted. Approved.—F.A., 24/9/88.

[*Enclosure.*]

Mr. G. W. H. Dry to Dr. A. Ross, M.P.

Dear Sir, Canowindra, 27 August, 1888.

Enclosed please find memo. *re* lease; and I would certainly like the Minister for Mines' attention directed to the injustice committed. As you will perceive, ground may be worked and some one interested may represent that it is not, and get it cancelled without the knowledge of the other shareholders, whom no notice of complaint is made to that they may defend their case. Under these circumstances any person could perpetrate a swindle. You will please to do your best to get the cancellation rescinded.

I am, &c.,
G. W. H. DRY.

No. 21.

The Under Secretary for Mines to A. Ross, Esq., M.D., M.P.

Sir, Department of Mines, Sydney, 6 October, 1888.

Referring to your letter of the 1st ultimo, with regard to gold-mining lease No. 56,† at Canowindra, I have the honor to inform you that the above-mentioned lease was cancelled for non-work. Not only was complaint of non-work lodged, but the Warden's Clerk's report upon a written application for permission to suspend work was to the effect that the labour conditions had not been complied with for a considerable time.

†Should be G.L. 54.

I have, &c.,
HARRIE WOOD,
Under Secretary.

No. 22.

The Chief Mining Surveyor to Mr. Mining-surveyor L. A. Curtis.

Notice to make Survey.

Sir, Department of Mines, Sydney, 23 November, 1888.

An application for a gold-mining lease, particulars as per margin, having been lodged in this office, I request you will be good enough to survey, in accordance with the regulations relating to gold-mining leases, the area so applied for, and to furnish me at your earliest convenience with a plan and report.

No. 77, Canowindra, 2 acres, applied for by W. Croucher, Canowindra, J. Boyd, Canowindra, A. A. Gallagher, Sydney.

Your

Your attention is particularly directed to the regulations for mineral leases, numbered respectively 2, 3, 12, 13, and 14, or to the regulations relating to gold-mining leases, numbered respectively 1, 2, 3, 4, 5, 14, and 15.

I have, &c.,
EDWD. F. PITTMAN,
Chief Mining Surveyor.

Copy of description of the land as given in the application:—Situated at Blue Jacket Hill, Belmore. The datum point is on the north-west corner of the Blue Jacket gold lease. Two of the applicants reside on the ground, and can point out the pegs. Date of application, 3rd August; date of possession, 30th July, 1888.

No. 23.

Mr. Mining-surveyor Curtis to The Chief Mining Surveyor.

Sir,

Orange, 29 January, 1889.

I have the honor to transmit herewith plan of one portion of land, containing 2 acres, numbered G.L. 111, in the parish of Collett, county of Ashburnham, applied for under Division 2 of the Mining Act of 1874, by William Croucher and party, and surveyed in accordance with instructions dated 23rd November, 1888, No. 88–77.

W. Croucher was present at time of survey and pointed out the pegs.

I have, &c.,
LOUIS A. CURTIS, M.S.

The portion was renumbered, because, not having any tracing, I did not know which numbers on the pegs applied to this land.

L.A.C.

[*Enclosure.*]

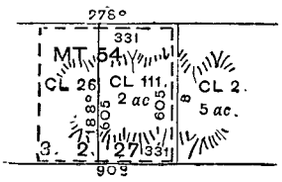
TRACING of Portion No. G.L. 111.

Parish of Collett, county of Ashburnham. Applied for under the Mining Act of 1874 by W. Croucher & Co. Forwarded to Mr. District-surveyor Crouch on the 4th day of February, 1889.

Application No. 88–77.

Within the Canowindra gold-field; proclaimed 21st March, 1879; reserved from C.P. Within the Canowindra temporary common and reserve 220 from lease; notified 12th March, 1883. Within the leasehold area of Mogong and Tilga Run. Embraced within M.T. 54, of 3 acres 2 roods 27 perches. Otherwise apparently available.

H. A. CROUCH.



Azimuth from G.L. 2.—Stakes at corners.
Date of survey, 17th January.

No. 24.

Mr. T. F. De Courcy Browne to The Secretary for Mines.

Sir,

Beresford Chambers, 52, Castlereagh-street, Sydney, 3 May, 1889.

Gold lease, 214, Lachlan; now G.L. 88–77, Canowindra.

On behalf of two of the former lessees (Dry and Charnock) of the gold lease noted in the margin, I beg to lay before you the loss and injustice they will suffer if they are deprived of the land.

Messrs. Dry and Charnock's statement to me, summarised, is as follows:—G.L. 214, Lachlan, was held by Messrs. Dry, Charnock, and Boyd. A considerable quantity of work was done on the lease. Suspension of labour was applied for, owing to heavy water necessitating the procuring and erection of steam machinery. Not receiving any reply from the department (which had not the power to grant suspension, the lease being a gold one), the kind offices of Dr. Ross, the Member for the district, were invoked, and, after inquiry at the department, informed Mr. Dry, in July, 1888, that nothing was being done in the matter, and so far the lease had not been interfered with. On the 30th July, to the surprise of Dry and Charnock, they found that the lease had been repegged by Boyd (one of the lessees), Croucher, and Gallagher. Further inquiries revealed that the lease had been cancelled for non-working.

Neither Dry nor Charnock had ever received any notice to show cause, and that if any had been sent them it was received by Boyd, who kept it secret. He also had possession of the lease. Boyd was also advised by telegraph of the date of cancellation; hence he being able to repeg the land on the night of the 30th July, and take in as partners Croucher and Gallagher.

As the cancellation of the lease was obtained by Boyd, and possession taken of it again by him, to the loss of his former partners, I think I am not making an unreasonable request if I ask that Boyd, Croucher, and Gallagher's application—No. 88–77, Canowindra—be refused, and Dry and Charnock given an opportunity to revive the old title, so that they may not be deprived of all profit for the money and labour expended by them in developing the lease, or that substantial justice may be done them in any other way pleasing the Minister.

No work has been done on the land by the new applicants.

I have, &c.,
T. F. DE COURCY BROWNE
(Agent for DRY and CHARNOCK).

Please let me have the papers.—S.S., 6/5/89.

Sydney: Charles Potter, Government Printer.—1889.

[6*d.*]

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

MINING.

(MESSAGE No. 60.)

Ordered by the Legislative Assembly to be printed, 27 September, 1889.

CARRINGTON,
Governor.

Message No. 60.

In accordance with the provisions contained in the 54th section of the Constitution Act, the Governor recommends, for the consideration of the Legislative Assembly, the expediency of making provision to meet the requisite expenses in connection with a Bill to authorize the search for minerals on lands sold conditionally or otherwise, or leased conditionally, and to cancel the sale or lease of such lands when they are found to contain minerals, and for the purpose of mining upon such lands after cancellation of the sale or lease, and for other purposes connected therewith.

Government House,
Sydney, 27th September, 1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

COAL MINES REGULATION BILL.

(MESSAGE No. 45.)

Ordered by the Legislative Assembly to be printed, 7 August, 1889.

CARRINGTON,
Governor.

Message No. 45.

In accordance with the provisions contained in the 54th section of the Constitution Act, the Governor recommends, for the consideration of the Legislative Assembly, the expediency of making provision to meet the requisite expenses in connection with a Bill to make better provision for the regulation of Coal Mines and Collieries, and for other purposes connected therewith.

Government House,
Sydney, 7th August, 1889.

[3*d.*] 539—

1889.

NEW SOUTH WALES.

DEPARTMENT OF MINES.

(ANNUAL REPORT OF THE STOCK AND BRANDS BRANCH.)

Presented to Parliament by Command.

To the Honorable Sydney Smith, Esq., M.P., Minister for Mines, &c., &c.

Sir,

I have the honor herewith to submit the Report of the Chief Inspector of Stock for the year 1888.

The Report shows a creditable amount of work performed by the officers of this branch.

The inspection of stock at saleyards and slaughter-yards has, no doubt, been of great public utility. It is, however, in the interest of the public health, to be regretted that all slaughter-houses and dairies are not regularly inspected.

In the matter of diseases of stock the Chief Inspector of Stock and the Government Veterinarian have rendered valuable services during the year.

In view of the recent severe drought the number of stock is, I venture to think, very satisfactory. Horses and cattle show a considerable increase upon the previous year, and the decrease in sheep is not so great as, under the circumstances, might have been expected. The cast of fat sheep is sufficient to provide for our home consumption and leave some two and a half millions for export; the cast of store sheep is good, and with a high percentage of lambs should, if the season continue favourable, bring up the number above that of any previous year.

It is worthy of note that last year the proportion of the wool clip shipped from Sydney is larger than in 1887, and that the proportion which passed through the ports of the adjoining Colonies respectively was less.

The appendices to the Report contain most valuable information.

I have, &c.,

HARRIE WOOD,

Under Secretary for Mines.

Department of Mines, 14th June, 1889.

[2,153 copies—Approximate Cost of Printing (labour and material), £21 1s. 7d.]

The

The Chief Inspector of Stock to The Under Secretary for Mines.

Sir, Department of Mines, Stock Branch, Sydney, 1st June, 1889.

On the 1st February last I submitted a Progress Report for the year ending 31st December, 1888, giving the approximate number of the horses, cattle, and sheep then in the Colony; and I have now the honor to submit for your consideration my complete Report for that year on the working of this Branch, which is as usual based very much upon Inspectors' estimates—owners still showing very little inclination to furnish data. It will be seen that the actual number of horses, cattle, and sheep in this Report exceed those in the Progress Report.

I have, &c.,
ALEX. BRUCE,
Chief Inspector of Stock.

I.—INSPECTORS AND THEIR WORK.

1. *The Inspectors.*

There are now forty-eight inspectors, having charge of sixty Sheep Districts.

2. *The Inspections made.*

The inspections made during the year were as follows:—

Of Stock	16,421
„ Reserves	4,501
„ Pounds	405
„ Noxious animals	5,471
„ Dogs	712
„ Pigs	150
Total	27,660

This would give an average of 576 inspections made by each of the forty-eight inspectors.

3. *Horses, Cattle, and Sheep inspected.*

Horses.—The number of horses inspected during the year was 77,753, by forty-seven inspectors.
Cattle.—The number of cattle inspected during the year was 926,522.
Sheep.—The number of sheep inspected during the year was 25,394,567. This is an increase of 3,373,447 on last year's inspection.

4. *Inspections at Homebush Sale-yards.*

During the year bi-weekly visits to the Homebush yards have been made by the Sydney inspector, with the view to inspecting the stock yarded. The total number of stock submitted to auction was as follows:—Cattle, 93,065 head; sheep, 1,311,030, or a weekly average of 1,790 cattle and 25,212 sheep, being an increase of 28 cattle and a decrease of 2,363 sheep on the weekly average, as compared with previous year. These inspections are called for not only for the prevention of disease but also to check stock stealing, and with that view the inspector sees that the brands and marks of the stock correspond with those in the permits or travelling statements accompanying the stock, which are collected and filed in this office for future reference, should, as it at times happens, inquiry be made with respect to stock suspected of having been stolen.

5. *Distance travelled by Inspectors during the year on duty.*

The total number of miles travelled by forty-eight inspectors was 193,392, or an average of 4,029 each per annum, being an increase of 136 miles for each inspector over that of last year.

6. *Prosecutions and Convictions.*

The prosecutions instituted during the past year were as follows:—

Under Sheep Act	177
„ Imported Stock Act	5
„ Brands Act	20
„ Pastures Act	208
„ Public Watering Places Act	9
Total	419

This shows a decrease in the prosecutions under the Pastures Acts, and is accounted for by stock-owners becoming better acquainted with the provisions of the Act and its enforcement by inspectors.

The number of convictions were:—

Under Sheep Act	157
„ Imported Stock Act	2
„ Brands Act	18
„ Pastures Act	204
„ Public Watering Places Act	7
Total	388

II.—

II.—HORSES.

1. *The Number.*

The number of horses in the Colony during the twenty-eight years previous to and including 1888 was as follows:—

Year.	No.	Year.	No.	Year.	No.
1861	251,497	1871	337,597	1881	398,577
1862	233,220	1872	304,100	1882	328,026
1863	273,389	1873	328,408	1883	326,964
1864	262,554	1874	334,462	1884	337,172
1865	284,567	1875	357,697	1885	344,697
1866	282,587	1876	366,703	1886	361,663
1867	278,437	1877	328,150	1887	390,609
1868	280,201	1878	336,468	1888	411,368
1869	280,818	1879	360,038		
1870	280,304	1880	395,984		

This shows an increase of 20,759 during the year, and is due principally to the returns being more complete.

The number of horses in each Sheep District will be found in Appendix A.

2. *The different Breeds.*

Draught.—The numbers returned under this head are—Ordinary, 116,197; thoroughbred, 19,141; total, 135,338.

Light Harness.—The number returned as ordinary is 92,516; thoroughbred, 13,495; total, 106,011.

Saddle.—The numbers of ordinary are given as 146,767; thoroughbred, 23,252; total, 170,019.

3. *Horses introduced.*

From other districts.—The number of stud horses introduced were 108, and stud mares, 374; ordinary mares, 2,089; and horses, 2,658.

From other Colonies.—The number introduced by sea was—Stud horses, 4; and ordinary horses and mares, 335.

The number introduced overland was 97 stud mares and 61 stud horses; and ordinary, 337 mares and 367 horses.

From England and other Countries.—The number introduced under this head were, 1 stud mare, 5 stud horses, and ordinary horses, 1.

4. *Horses fit for sale.*

The numbers returned as being fit for market during the coming year are 20,439 draught, 20,853 light harness, and 29,473 saddle.

Of this number it is estimated that 15,504 are suited for the India and China markets.

There were sent from five districts 605 horses to be shipped from Sydney, and from six districts 800 horses to Melbourne for foreign countries.

5. *Improvement.*

In forty-three districts the horses are said to be improving. The principal reasons given are—Introduction of superior stud horses, breeding from good mares, more attention to the rules of breeding, and better prices obtainable; and in fifteen districts there is no improvement. In two districts they are deteriorating,—the reasons given being too much light blood introduced, breeding from weedy mares for racing purposes.

6. *Diseases in Horses.*

This year has been unusually free from epizootic diseases in horses.

Horse Fever.—This equine contagious disease, which was so prevalent in the Barrier Ranges and in South Australia last year, has not been reported this year.

Australian Stringhalt.—This ailment has not appeared in the Colony during the year.

Rheumatism and Pneumonia.—Have not been reported.

Strangles.—Has during the year been of a mild character. This points to the climatic conditions exercising a powerful influence on the health of animals.

Prurigo.—The Queensland horse mange having spread into this Colony, Mr. Government Veterinarian Stanley was sent in the beginning of the year to Brisbane and the Richmond River District to inspect and report on this disease. His report will be found as Appendix B.

As he predicted, the disease disappeared on the advent of winter, and has broken out again with the summer heat in the Richmond, Clarence, and Manning River Districts.

The treatment to keep it in check amongst working horses is to wash them from head to foot once or twice a week with M'Dougal's sheep-wash, one part of dip to twenty parts of cold water, and cleanse the harness and stable at the same time. Many other anti-parasitic dressings will be found to answer the same purpose.

7. *Losses in Horses through Accidents, &c.*

The losses in horses from wire in chaff and other accidents, as reported amount to 2,207.

8. *Wild Horses.*

The number of wild horses in the Colony is estimated at 5,481, which shows a decrease on the previous year of 739.

9. *Tax on Entire Horses.*

A large majority of owners are still in favour of a special tax being placed on entires.

III.—CATTLE.

1. *Number.*

The returns of cattle in the Colony during the twenty-eight years ending 31st December, 1888, stand as follows :—

Year.	No.	Year.	No.
1861	2,271,923	1875	3,134,086
1862	2,620,383	1876	3,131,013
1863	2,032,522	1877	2,746,385
1864	1,924,119	1878	2,771,583
1865	1,961,905	1879	2,914,210
1866	1,771,809	1880	2,580,040
1867	1,728,427	1881	2,597,348
1868	1,761,411	1882	1,859,985
1869	1,795,904	1883	1,640,753
1870	2,195,096	1884	1,425,130
1871	2,014,888	1885	1,317,315
1872	2,287,660	1886	1,367,844
1873	3,794,327	1887	1,575,487
1874	2,856,699	1888	1,622,907

This shows an increase during the year of 47,420, and a decrease as compared with the year 1878 of 1,148,676.

The number of cattle in the several Sheep Districts will be found in Appendix A.

The number of cattle introduced from Queensland was 176,600, and the number sent from this Colony into that, 11,100.

2. *Different Breeds.*

Shorthorns.—The number of pure-bred and stud Shorthorns is estimated at 40,935; and ordinary 603,966; total, 644,901.

Hereford.—Pure and stud, 20,692; ordinary, 197,587; total, 218,279.

Devon.—Pure and stud, 8,042; ordinary, 54,051; total, 62,093.

Black-polled.—Pure and stud, 319; ordinary, 1,169; total, 1,488.

Ayrshire.—Pure and stud, 1,776; ordinary, 3,882; total, 5,658.

Alderneys.—Pure and stud, 431; ordinary, 449; total, 880.

Friezan Holstein.—Pure and stud. 7.

Crosses.—First crosses, 3,671; ordinary, 685,930; total, 689,601. The crosses are estimated as follows :—Shorthorn and Hereford, 226,555; Shorthorn and Devon, 71,398; Hereford and Devon, 42,332; Shorthorn and Black-polled, 2,724; Black-polled and Devon, 100; Ayrshire and Shorthorn, 4,932; Alderney and Shorthorn, 150; the balance, 341,410, being unrecognizable.

There is a comparatively large increase in the milking breeds of cattle. This arises through many of our cattle-owners in the coast districts having turned their attention to dairying instead of fattening for market; and it is believed that this change will continue and increase.

3. *Stock introduced.*

From other Districts.—Stud bulls, 202; stud cows, 343; total, 545; ordinary cattle, 65,057.

From other Colonies by Sea.—Stud bulls, 15; stud cows, 19; total, 34; ordinary cattle, 360.

Overland.—Stud bulls, 91; stud cows, 240; ordinary cattle, 105,175; total, 105,506.

From Countries outside the Australian Colonies.—Bulls, 34; cows, 13; total, 47. Of these 8 were Shorthorn; 10 Devon; 20 Hereford; 8 Black-polled; and 1 Jersey.

4. *Increase and decrease of Cattle.*

In thirty-seven districts the cattle are reported to be increasing, for which the following reasons are given :—(1.) The good season. (2.) Fewer sales, owners holding back for better prices. (3.) Increase in number of owners. (4.) Considerable numbers of store cattle have been introduced from Queensland. (5.) More owners have taken to breeding cattle, and are selling off their sheep to replace them with cattle. In the remaining districts they are decreasing on account of large sales through drought and not breeding.

5. *The "Cast" of Fat and Store Cattle.*

The estimated "cast" of fat cattle to be sent to market during the coming year is 225,333, and store cattle, 185,103. From twelve districts the fat cattle are principally sent to Melbourne; from two districts they are principally sent to Adelaide; and the remaining districts supply the markets of Sydney, Maitland, Mudgee, Bathurst, Orange, Goulburn, Tamworth, and Albury.

6. *How kept.*

The number of cattle kept wholly in paddocks is returned as 1,230,987; on open runs, 224,000; and the balance, 167,920, are depastured both ways.

7. *Improvement and deterioration.*

In thirty-five districts the cattle are said to be improving, in twenty-two districts they are stationary, and in two districts deteriorating. The principal reasons given for the improvement are—Introduction of good stud stock; more attention and care in selection; also, in culling and keeping in paddocks. The reason given for deterioration is inattention to breeding, many owners breeding from all sorts without respect to breed or quality.

8. *Their Diseases and Ailments.*

Pleuro-Pneumonia.—In thirty-two districts, on 286 runs, the cattle were reported as affected with pleuro-pneumonia; and in twenty-eight districts the cattle are reported as being free from that disease.

In thirty-one of the infected districts the disease was caused by contagion from without, principally from infected travelling stock from Queensland; in two districts supposed to be latent in herds, and in one district the cause not known.

From

From twenty-eight districts it is reported that the inoculation was successful on the whole of the 343 holdings or stations on which it was performed.

In every case the result was satisfactory, the disease leaving the herds without further loss.

The number of owners in favour of inoculation is given as 6,585; against, 651; undecided, 2,269; and 8,834 opinions not known.

The number of owners in favour of compulsory inoculation in the case of infected herds is given as 5,335; against it, 1,703; undecided, 2,315; and 8,997 opinions not known.

This shows a very large majority of owners in favour of the compulsory inoculation of all herds in which the disease appears; and it is hoped that legislation in this direction will soon be obtained.

Tuberculosis.—Although power is given under the Imported Stock Acts to deal with and destroy imported stock affected with this deadly and dangerous disease there is no law in force which empowers an inspector of stock to interfere with any of our own cattle so affected. It is true that the meat of such cattle can be seized and destroyed by inspectors of slaughter-houses, but to do this effectually all the slaughter-houses in the colony would have to be regularly inspected, and this cannot be done.

It is also the case that under the Dairies Supervision Act tuberculous milch cows can be seized and destroyed, but notwithstanding this it is currently reported by persons competent to judge that there are tuberculous cows now in the dairies in Sydney and the suburbs.

Several cases of this disease have been detected in the Homebush and Maitland sale-yards during the year, and agents have notified sellers that they will not receive cattle affected in this way at the sale-yards.

Notwithstanding this, cattle affected with the disease are still met with at the public abattoirs. They are of course condemned and destroyed. It is to be hoped that in the interests of the public health local authorities will prohibit the slaughter for food of tuberculous cattle in the country townships.

A tuberculous dairy cow arrived in the s. s. "Manapouri" from New Zealand. She was not allowed to be landed.

Cumberland Disease.—The number of cattle reported to have died from this disease is 1,216, being 565 less than last year.

Blackleg is reported to have carried off 328, being an increase of 241 on last year.

Cancer.—Cattle to the number of 1,905 are reported to have died of tubercular swellings in the throat, being an increase of 307 on last year.

Red Water.—Only 15 deaths are recorded, but the disease is very prevalent in certain localities in the coast country.

Hydatids claiming 8 victims are reported.

Ophthalmia occasionally assumes an epidemic form, and the losses are often considerable. 365 deaths are recorded from this cause.

Blaine has not been reported this year.

Noxious Plants are reported to have killed 60 cattle.

IV.—SHEEP.

1. *The number.*

The number of sheep in the Colony during the twenty-eight years ending 31st December, 1888, stands as follows:—

1861	6,119,169	1875	25,353,924
1862	6,558,896	1876	25,269,755
1863	7,169,126	1877	21,521,662
1864	9,082,463	1878	25,479,484
1865	9,650,106	1879	30,062,910
1866	11,644,593	1880	35,398,121
1867	15,066,377	1881	36,591,946
1868	16,000,090	1882	36,114,814
1869	16,848,217	1883	37,915,510
1870	16,218,825	1884	31,660,321
1871	16,766,012	1885	37,820,906
1872	17,873,696	1886	39,169,304
1873	18,990,595	1887	46,965,152
1874	22,797,416	1888	46,503,469

The number of sheep in the several Sheep Districts will be found in Appendix A.

Increase and Decrease.

This shows a decrease of 461,683, besides the usual increase in lambs, and is attributable to the severe drought from which the colony suffered. During the year about as many sheep left this Colony (231,000) for Queensland as were brought from that Colony into this (242,000).

2. *The different Breeds.*

(1.) *Merino.*

Combing.

	Rams.	Ewes.	Wethers.	Lambs.	Total.
Pure and stud—Superfine ...	46,755	573,657	135,258	263,155	1,018,825
Ordinary	89,192	2,128,233	1,449,331	1,149,274	4,816,030
					5,834,855
Pure and stud—Medium ...	79,559	1,207,765	478,137	595,203	2,360,664
Ordinary	166,689	6,586,123	3,938,508	2,887,870	13,579,190
					15,939,854
Pure and stud—Strong ...	50,333	893,902	512,086	422,147	1,878,468
Ordinary	91,971	4,395,539	2,472,674	1,608,867	8,569,051
					10,447,519
Total, Combing					32,222,228

Clothing.

			Clothing.			
Pure and stud—Superfine ...	12,168	252,316	124,517	131,102	520,103	
Ordinary	25,994	655,037	533,573	309,243	1,523,847	
					2,043,950	
Pure and stud—Medium ...	24,087	331,637	217,104	176,946	749,774	
Ordinary	62,862	3,253,122	1,740,470	1,305,355	6,361,809	
					7,111,583	
Pure and stud—Strong ...	24,033	376,091	220,258	168,986	789,368	
Ordinary	44,393	1,617,892	1,091,573	649,718	3,403,576	
					4,192,944	
		Total, Clothing			13,348,477	
		Total number of Merino Sheep				45,570,705
		(2.) *Long-woolled and cross-bred Sheep.*				
Pure and stud—Lincoln ...	3,090	31,460	25,836	21,247	81,633	
Ordinary	3,878	66,350	45,838	31,248	147,314	
		Total, Lincoln			228,947	
Pure and stud—Leicester ...	3,387	26,244	24,393	17,010	71,034	
Ordinary	2,403	27,407	19,565	17,413	66,788	
		Total, Leicester			137,822	
Pure and stud—Downs ...	778	4,530	2,149	2,833	10,290	
Ordinary	1,045	7,251	7,546	4,361	20,203	
		Total, Downs			30,493	
Pure and stud—Romney Marsh	118	2,007	90	523	2,738	
Ordinary	400	2,000	3,400	1,939	7,739	
		Total, Romney Marsh			10,477	
		Total number, Long-woolled Sheep				407,739
		(3.) *Crosses.*				
Crosses of the above breeds (long-woolled) with Merino principally.	1,607	202,447	188,039	132,932	525,025	
		Total, crosses				525,025
		Grand Total				46,503,469

Sexes and Classes.

Rams	734,742
Ewes	22,641,010
Wethers	13,230,345
Lambs...	9,897,372
	46,503,469

3. *Sheep introduced and imported.*

(1.) From other districts in this Colony—Stud, 14,625; ordinary, 2,114,659; total, 2,129,284.
(2.) Overland from other Colonies—Stud, 1,054; ordinary, 196,116; total, 197,170.
(3.) By sea from other Colonies—Stud, 3,285; ordinary, 692; total, 3,977.
(4.) From England and Countries and Colonies other than Australian—497; of these 456 were American Merino, 29 French Merino, and 12 English South Downs.

Out of 1,997 sheep which passed through quarantine, the total deaths reported by the district inspectors amounted to eleven rams and two ewes, and they were most probably due to confinement and want of air and water on board ship,—to exposure with wet fleeces on during long railway journeys, at an inclement season of the year,—and not to the mode in which the dipping was given. Besides the imported sheep, some 300 from the inland districts were also dipped. [*For particulars of sales see Appendix* C.]

4. *Long-woolled and cross-bred Sheep.*

Amongst the long-woolled sheep the Lincoln is said, in a large majority of the districts, to give the best returns in wool and in weight of mutton, the cross-bred sheep being second.

5. *The "Cast" of Fat and Store Sheep.*

The annual "cast" of fat sheep for the ensuing season is estimated at 4,477,239, and store sheep, 6,296,187.

6. *How Sheep are kept.*

Paddocked	44,747,383
Shepherded	1,108,774
Both ways	647,312
	46,503,469

7. *Condition of the Flocks.*

In thirty-eight districts the sheep are said to be improving; the principal reasons given being—more attention to breeding, paddocking, introduction of high-class rams and ewes, more careful classing and culling.

In fourteen districts they are said to be stationary, and in eight districts they are deteriorating. The reasons given are—effects of bad seasons, breeding from inferior ewes, bad management, and bad selection of rams.

8. *Lambing.*

The general average for the whole of the Colony of the paddocked sheep is returned by inspectors at 54½ per cent., and shepherded sheep at 39½ per cent. In eighteen districts the lambing was high, in thirty-three districts medium to fair, and in eight districts very low. The reason given for the high percentage is the favourable season and runs not overstocked, while the fair and low percentages are attributable to unfavourable season, poverty of ewes, want of feed and water, and bad season after lambing.

The paddocked sheep show a higher percentage that the shepherded sheep by 15 per cent.

The percentage for both is very low.

9. *The Clip.*

Average per sheep.

Lambs.—The number of lambs shorn in the grease was 6,053,509; the number washed, 23,756; total lambs shorn, 6,077,265.

Sheep.—The number of sheep shorn in the grease was 35,426,832; creek-washed, 416,779; and scoured, 875,280.

The average weights of the clip are estimated as follows:—

	Lambs.		Sheep.	
	lb.	oz.	lb.	oz.
Grease...	1	11	5	6⅓
Creek-washed...	1	7	3	1⅓
Scoured	.....		2	9½

Total Clip.

The total clip in the Colony for the year 1888, according to the number of sheep, would be 35,426,832 shorn in the grease, average clip, 5 lb. 6½ oz. per sheep = 191,526,310 lb.; 416,779 sheep, creek-washed, average clip, 3 lb. 1⅓ oz. per sheep = 1,285,068 lb.; 875,280 sheep scoured, average clip, 2 lb. 9½ oz. = 2,270,257 lb. Lambs—6,053,509 lambs shorn in the grease, average clip, 1 lb. 11 oz. per lamb = 10,215,296 lb.; 23,756 lambs washed, average clip per lamb, 1 lb. 7 oz. = 34,149 lb.; total clip, 205,331,080 lb.

Condition of Clip.

In twenty-two districts the clip is reported as sound and containing fair amount of yolk; in twenty-eight districts, sound, but light in yolk; and in the ten remaining districts light and unsound. On the whole the clip was clean, but in a few districts dusty, and the value of the wool was affected by grass-seed and burrs.

Exportation of Clip.

The clip grown in the Colony of New South Wales is shipped to England, America, France Germany, and other countries, from the principal ports of the three neighbouring Colonies, as well as from Sydney. The portion of our clip thus shipped from the other Colonies is often mistaken as the produce of those Colonies, more particularly for that of Victoria and South Australia.

The following is an estimate of the clip sent to Sydney, and also the proportion sent across the Borders and to Melbourne, Adelaide, and Brisbane, for the years 1887 and 1888:—

Port of Shipment.	1887.			1888.		
	Greasy.	Washed.	Total.	Greasy.	Washed.	Total.
	lb.	lb.	lb.	lb,	lb,	lb.
Sydney	132,855,099	2,983,730	135,838,829	148,681,473	3,410,500	152,091,973
Melbourne	45,922,914	1,090,073	47,012,987	38,421,221	163,327	38,584,548
Adelaide	16,054,563	.....	16,054,563	14,369,559	.. ..	14,369,559
Brisbane	330,189	18,667	348,856	269,352	15,648	285,000
	195,162,765	4,092,470	199,255,235	201,741,605	3,589,475	205,331,080

This shows an increase of 6,075,845 lb. on last year's clip, and is accounted for by a greater number of sheep having been shorn in the grease this year than in 1887.

Classing the Clip.

In thirty-one districts the clip is reported as having been well classed, and in the other districts it is not considered to have been so; the reasons being—owners do not think it pays, want of convenience, sheds not large enough to warrant expense, and the difficulty of obtaining competent woolsorters.

Wool-presses.

Wool-presses.

A great number of different kinds of presses are used ; those most in favour are Ferrier's Patent and Williams' and Robinsons' ; rack screw and pinion presses are used. There is still room for improvement in the mode of pressing, especially by small owners.

Woolpacks.

The woolpacks used are mostly Calcutta and Dundee, of various sizes, from 4 ft. 6 in. x 2 ft. 2 in. to 5 ft. 3 in., and the weight from 10 to 12 lb.

On forty-eight stations the wool is dumped before leaving.

10. *Sheep-brands and marks.*

Ear-marking.

In most districts the system of ear-marking sheep is properly carried out, and may now be said to be approved by all the Boards.

Tattoo-marking.

This system of marking is mostly used by owners of stud-sheep, not, as yet to any great extent in the case of ordinary flock sheep, but where tried it has been found to be a good preventive to sheep-stealing.

V.—DISEASES IN SHEEP.

1. *Scab.*

The flocks in this Colony and in the Colonies of Queensland, Victoria, South Australia, and Tasmania are free from scab. It exists, but to a very slight extent, in New Zealand and Western Australia, and it is hoped they will soon be declared clean. The importation of sheep into this Colony from New Zealand and Western Australia is prohibited.

2. *Anthrax—Splenic Apoplexy.*

The course indicated in my last report in regard to this fell disease was acted on, and on the arrival of M. Pasteur's representatives, Dr. Germont and M. Loir, in this colony a cablegram was sent to M. Pasteur to ascertain whether he would allow them to teach some one to be named by the Government of this Colony the cultivation and use of his "Vaccine of Anthrax." He offered to do so on certain terms, and instructed Dr. Germont and M. Loir to demonstrate its efficacy.

They did so at Junee in October last. The demonstration, which was given in the presence of a Board appointed by the Government (consisting of Mr. J. de V. Lamb, the Chairman of the Metropolitan Board ; Mr. W. Hamlet, Government Analyst ; Mr. E. Stanley, Government Veterinarian ; and myself) of delegates from the Pasture Boards of this Colony, the Chief Inspectors and Veterinarians from the other Colonies, and large numbers of owners, proved a complete success. A report of the demonstration has been published by the Board, together with valuable information in regard to the nature, symptoms, and treatment of the disease, in the form of a pamphlet which will be of great value to our stock-owners. So convincing were the experiments then carried out, and so explicit was the information given by Dr. Germont and M. Loir, that the owners present in whose flocks the disease had appeared were anxious that these gentlemen would operate on their sheep, and in the course of a few weeks about 100,000 sheep were offered for vaccination at M. Pasteur's own terms. If this large number of sheep had been vaccinated the protective powers of the vaccine would have been put to a thorough test—but in consequence of some misunderstanding between M. Pasteur's representatives and the members of the Royal Rabbit Commission, he refused to allow Dr. Germont and M. Loir to operate on the sheep, and nothing further has as yet been done in the matter. It is hoped however that some definite arrangement will be come to before the end of October, when the dangerous season will set in with the hot weather, and the stock if they are not moved from the infected country will die,—or that M. Pasteur will appoint an accredited agent in the Colonies who will deal directly with owners and vaccinate their sheep at a reasonable rate per sheep.

3. *Foot-rot.*

In fifteen districts the sheep have been more or less affected with foot-rot during the year ; the reasons given being—wet in the early part of the year, and running on low rich pasture. The principal remedies tried were careful paring, butter of antimony and bluestone, bluestone and kerosene, arsenic, arsenic and lime, blue vitriol, sulphate of copper, carbolic acid, and nitric acid—with satisfactory results.

4. *Fluke.*

In thirteen districts, especially Armidale, the sheep were affected with fluke, through depasturing on low swampy ground, unsound country, and rank pasture. The remedies used were—arsenic, salt, tar, and turps, sulphate of iron, and Liverpool salt and sulphur—with good results.

5. *Parasitic Worms.*

In twenty-two districts the sheep are reported as having been infested with worms, to an extent of (say) 8½ per cent., attributed to,—rain in the early part of year,—to being affected from previous year,—to rankness in the grass,—and to unsound country.

Of these worms the most common and most injurious to the sheep have been the tœnia (the tape-worm), the anchytostonum (the thread stomach worm), and the filaria (the lung worm).

It is during the first year, immediately after weaning, that worms are most likely to do harm ; therefore that is the time to avoid their invasion, and to adopt preventive measures, such as keeping the sheep well supplied with Liverpool salt, and drenching, where necessary, with arsenic, which has proved the most effective drench, and for which the prescription has already been published in the various country papers. Some owners have used turpentine and linseed oil successfully. Turpentine, sulphur and salt, and an infusion of tobacco, have also been tried with fair results as regards efficacy and safety.

In the month of April last circulars were forwarded to the local stock inspectors for distribution amongst the various sheep owners in their districts asking for information on this subject, more particularly with respect to the use and effect of the arsenic and other drenches on sheep infested with worms.

In all some 170 owners returned the circulars sent. Of these sixty were returned blank, while nineteen stated they had no experience in the use of drenches. For the opinions of the remaining ninety-one as expressed see tabulated statement which forms Appendix D to this Report.

VI.—PIGS.

The number of pigs in the Colony, as returned at 31st December, 1888, is 248,683, being a decrease of 15,217 as compared with the returns for the previous year.

From the other Colonies 44 have been introduced by sea.

Foreign pigs are prohibited.

Diseases in Pigs.

No disease whatever has been reported amongst pigs.

VII.—DOGS.

Twenty-two foreign dogs, *i.e.*, dogs from England, America, France, Germany, Russia, China, and Japan, and other places outside the Australasian Colonies, passed through quarantine during the year, and 660 Colonial dogs were inspected at the port of Sydney.

Diseases in Dogs.

Rabies has been very prevalent in Europe, and was only checked in London by the wholesale slaughter of stray dogs, and the confinement of others.

Pasteur's method of treatment of hydrophobia is gaining in favour, and patients from almost every part of the world are sent to his Institute for treatment.

Rigorous quarantine regulations are absolutely necessary to prevent the introduction of this disease in these Colonies.

VIII.—DISEASES IN RABBITS AND RABBIT POISONING.

As it was contemplated to introduce rabbit scab from Europe, and to cultivate and spread what was termed the Tintinalogy rabbit disease with the view to their destruction, it was deemed advisable before allowing such a course to be taken to have a reliable opinion as to whether or not these ailments if generally introduced would affect other animals. Mr. Government Veterinarian Stanley was directed to visit Adelaide and the Darling and report on these diseases, with the view to settling important points raised. His report will be found under Appendix E.

IX.—TRAVELLING STOCK.

1. *Trespass on Reserves.*

In thirty-five districts the driftways and reserves for travelling stock are reported as having been trespassed upon, more or less, by neighbouring lessees' and selectors' stock. In some instances the stripping of the reserves of pasture arises through their not being withdrawn from lease, and being used by the lessees of the run. In twenty-five districts they are reported as being entirely free from trespass. Inspectors suggest, in order to enable them to exercise proper supervision over them, that the boundaries should be properly marked. I am glad to be able to report that Mr. Brunker, the Minister for Lands, has approved of the systematic marking of the reserves, and it is hoped that this work which has been so long asked for and which is so urgently required will be soon carried out. Some of the importers also suggest fencing in the reserves and appointing caretakers.

2. *Grass on Reserves and Driftways.*

In eleven districts the inspectors report that there is not sufficient grass on the reserves and driftways in their districts to enable fat stock to reach market in good condition; in twenty-eight districts that there is only sufficient in fair to good seasons; and in twenty-one districts that, as a rule, there is sufficient grass on these reservations.

From 34 districts it is reported that sheep to the number of 8,847,418 have passed through during the year in search of grass and water. From seven districts the number of loafing sheep is given at 201,970.

3. *Ringbarking Driftways and Reserves.*

Although the feed on the driftways and reserves is not during good seasons far short of the requirements of the stock traffic, it is again urged that as the ringbarking of the driftways and reserves used by travelling stock would everywhere largely increase and improve the pasture upon them—in some cases to the extent of even 400 and 500 per cent.—that this work be undertaken. It would give employment to a large number of the men now idle, and could be carried out by contract at reasonable rates.

4. *New Roads for Travelling Stock.*

In eleven districts new roads are required for travelling stock, and in forty-eight districts no new droving roads are recommended.

5. *New Reserves for Travelling Stock.*

In eighteen districts new reserves and alterations of existing ones for travelling stock are required; in forty-two districts there are sufficient reserves.

6. *New Wells, Tanks, or Dams.*

In twenty-four districts the inspectors report that new wells, tanks, or dams should be constructed by the Government at places which they indicate.

7. *Travelling Charges for Stock.*

In thirteen districts travelling charges for stock have been collected on twenty separate occasions, the total amount collected being £1,574 1s. 1d., most of which has been refunded to date on appeal to the Boards.

8. *Laws relating to Travelling.*

In all the districts the inspectors report that the provisions of the amended Sheep Acts relating to travelling stock are working fairly well.

X.—

X.—REGISTRATION OF HORSE AND CATTLE BRANDS.

1. *Brands registered.*

The number of horse and cattle brands registered up to 31st December, 1888, was 59,366. The number of brands registered during the year 1888 was—horse brands (alone), 540; cattle brands (alone), 449; and horse and cattle brands, 1,323; making a total of 2,312, being an increase of 307 applications on the previous year.

This large increase is accounted for by the increase of settlement in the outlying portions of the Colony. The total number of registrations is larger than that of any previous year for twelve years back. There is also a large increase in the number of brands transferred, and changes of addresses recorded.

2. *Brands transferred.*

The brands recorded during the year 1888 as transferred were—horse brands, 35; cattle brands, 45; horse and cattle brands, 213; total, 293.

3. *Brands cancelled.*

The brands cancelled (horse and cattle) in 1888 were 122.

4. *Addresses changed.*

The number of addresses of owners changed in 1888 was 80.

5. *Compliance with the Act.*

In fifty-one districts the provisions relating to registration and the other requirements of the Act are reported as being duly carried out, and in the remaining nine districts fairly so.

6. *Benefits of the Act.*

The inspectors, in alluding to the benefits of the Act, report that it prevents duffing, stock-stealing, facilitates identification, assists in recovering lost stock, and otherwise is a great convenience and protection to stock-owners.

XI.—POUNDS.

1. *Number and inspection.*

There are 345 pounds in the Colony, some of which are at present closed for want of pound-keepers. The whole of the pounds are inspected periodically by the various inspectors of stock.

2. *State of Yards.*

Forty-seven of the pound-yards are reported to be old; several require renewing, being unfit for the safe custody of stock; and the remainder are said to be in a fair and good condition.

3. *Keeping and depasturing Pound stock.*

The provision made for the proper sustenance of impounded stock, according to the reports received, is satisfactory. As a rule, poundkeepers have now paddocks for the stock.

4. *Management of Pounds.*

The poundkeepers are reported to be performing their duties, upon the whole, in a satisfactory manner, and the appointment of inspectors of stock as inspectors of pounds has had a very beneficial effect.

XII.—NOXIOUS ANIMALS.

1. *The Districts in which the Pastures and Stock Protection Act is in force.*

The Act has been brought into operation in all the districts. [*See* Appendix F 1 and 2.]

2. *Receipts and Expenditure under the Act.*

The amount of assessment paid by stock-owners during the year 1887 was £32,651 13s. 8d., and the amount expended, £37,354 11s. 1d. The amount of assessment paid by stock-owners in 1888 was £24,938 4s. 6d., and the amount expended, £52,121 9s. 6d., the difference being accounted for by the subsidy granted by the Government to the Boards, and large amount to credit of some of the Boards at commencement of the year. Three districts are reported to be in debt to the amount of £1,488 5s. 5d.

In eleven districts full rates were levied, in thirty-two districts less than full rates, while in seventeen districts no rates whatever were levied.

During the year the bonuses paid by the Boards for scalps ranged as follows:—For kangaroos, from 1d. to 1s.; wallaroo, 4d. to 1s.; wallaby, from 1d. to 1s.; paddymelon, from 2d. to 6d.; hares, from 2d. to 1s.; kangaroo rats, 3d. to 6d.; native dogs, from 10s. to 80s.; pups, 2s. 6d. to 10s.; opossum, 1d.; wombats, 2s. 6d.; wild pigs, 1s.; bilbees, 2s. 6d. to 5s.; eagle-hawks, 2s. 6d. to 10s. 6d.; and emus, 3d. to 2s.

3. *Estimated number of Noxious Animals.*

The aggregate of the returns by inspectors of the estimated numbers of noxious animals in their districts shows that there are supposed to be 1,338,880 kangaroos, 3,184,700 wallabies, 31,405 native dogs, 2,044,430 hares, and 3,480 wild pigs in the Colony.

4. *Increase and Decrease.*

Kangaroos are reported to be increasing in six districts, wallabies in three districts, native dogs in seven districts, hares in twenty-six districts, and wild pigs in seven districts. In thirty-four districts kangaroos are reported to be decreasing, wallabies and native dogs in twenty-five districts, hares in two districts, wild pigs in three districts, and in the remaining districts they are said to be stationary.

5. *Number destroyed.*

The number of kangaroos destroyed during the past year was 657,319; of wallabies, 653,585; of kangaroo rats, 31,033; of paddamelons, 14,181; of wild pigs, 9,938; of hares, 167,115; of native dogs, 9,824; of eagle-hawks, 1,144.

6. *Steps taken for their destruction.*

In the majority of the districts hunting with dogs, drives, shooting, and trapping have been adopted with satisfactory results. In thirty-six districts poison has been used with fair to best results, and only from one district has it been reported as not satisfactory.

7. Amendments suggested in the Act.

It is suggested that the Amended Stock and Pastures Bill become law. That all owners of stock, irrespective of number, should be liable to an assessment, as also owners of 1 acre of land and over; that hares be included in a list of noxious animals; that the Boards be empowered to cope with the rabbit nuisance; that the Government should grant larger subsidy; that uniform rates be levied; that the rate of bonus be the same throughout the Colony; and that all returns of stock be made on the same day.

8. Losses from Tame and Native Dogs.

The losses in stock for the past year from the ravages of native dogs are estimated at 65,488 sheep, valued at £17,410; and from tame dogs, 52,332 sheep, valued at £16,638, making the loss from tame and native dogs together £34,048.

Appendix F. shows the work which has been done under the Pastures and Stock Protection Acts since they were passed, and how far the objects for which they were so have been attained.

A proposal has been made to discontinue the bonus for kangaroos; but if this is done the hunters will not kill the small kangaroos, and the number will increase rather than diminish.

XIII.—COMMONS.

1. Number and extent.

The number of permanent Commons in the Colony is 94, with an average extent of about 1,250 acres each. The number of temporary Commons is 230, with an average extent of 2,000 acres each.

2. Number of Commoners, Stock, &c.

The average number of Commoners to each Common is estimated at 99, and the average number of stock kept on each Common is 114.

In twenty districts the Commons are reported to be used for other purposes than that of grazing Commoners' stock.

XIV.—MISCELLANEOUS.

1. Artificial Grasses.

In twenty-four districts artificial grasses have been sown for pasture during the year to a small extent, in four districts to a large extent, and in remaining districts none; the most successful being lucerne, prairie, and rye.

2. Number and Division of Runs.

The number open or unenclosed runs in the Colony is 6,302; the number enclosed is 32,630; the number partially subdivided is 12,479; and the number properly subdivided is 20,311.

3. Improvements, Fencing, Dams, Tanks, and Wells.

The number of miles of fencing throughout the Colony is estimated at 1,310,420, at an average cost of (say) £43 10s. per mile, amounting to £56,996,312.

The number of dams used for stock purposes is estimated at 23,330, at an average cost of (say) £87 10s.; number of tanks, 24,741; average cost of each, £189 5s.; and the number of wells used is estimated at 3,131, at an average cost of £199 5s. 6d. each.

Cost of fencing, £56,996,312; cost of dams, £2,041,144; cost of tanks, £4,682,830; cost of wells, £623,941; making a total of £64,344,227 as representing the amount expended by way of improvements, &c.

4. Plants and Weeds.

In thirteen districts *trefoil burr* grows to a slight extent; in twenty-four districts to a large extent, and in twenty-three districts there is none reported.

In twenty-seven districts *variegated thistle* is reported to a slight extent, in fifteen to a considerable extent, and eighteen districts are reported as free from it.

In twenty-five districts *black thistle* is reported to a slight extent, in nineteen to a great extent, and sixteen districts are reported to be free from it.

In twenty-seven districts the land is reported as being slightly infested with *Bathurst burr*, in twenty-one to a large extent, and in twelve the land is not infested.

Darling pea, Roley-poley, "*Yellow Boy,*" and *Sweet briar* are reported to be growing in a few districts.

Euphorbia Drummondii.—Although this plant has been carefully experimented with, and shown so far to be non-poisonous, and put to a practical test by owners (see Mr. Stanley's report, Appendix J to Report for 1887), reports still continue to be received of its causing the death of sheep.

5. Cost of clearing Commons, Reserves, &c., of Weeds.

The cost of clearing the permanent Commons of noxious weeds throughout the Colony is estimated at £29,658; the temporary commons, £17,997; the police paddocks, £2,152; the travelling stock reserves, £126,169; and the droving roads at £70,280; amounting in all to (say) £246,556.

6. Examination of intending Applicants for appointment of Inspector.

During the past year one examination was held by the Stock Board of Examiners. The following table shows the result:—

Date of Examination.	Number of Candidates.	Names of successful Candidates.	Nature of Certificate issued.
1888.			
A i 23rd	9	J. W. Boultbee	2nd class.
		J. L. Henderson	2nd ,,
		A. H. Farrand	2nd ,,
Total	9		

It will thus be seen that nine candidates were examined, three of whom received 2nd class certificates.

7. The Stock and Pastures Bill.

This measure has not yet been brought before Parliament, but it is hoped that the Government business will at an early date in the coming session of Parliament be in such a state as to admit of its being introduced.

8. The Fresh Meat Trade.

It is satisfactory to be able to report that the arrangements for this trade are now nearly completed, and there is a good prospect of its being shortly commenced.

This will not be a day too soon, for with sheep in the Colony, and the prospect of another favourable season in 1889, it is of the highest importance to owners that the stock should be killed as near as possible to their pastures, and thus save the very serious waste and deterioration in the meat which the live stock trade entails. The best outlet for our surplus stock is in the exportation of frozen meat, and that again will never be put on a payable footing until we can place our meat in prime condition (which the fresh trade will enable us to do) in the London market. It is only courting disappointment and loss to offer inferior or wasted meat in that market.

APPENDIX A.

RETURN of Stock in the several Sheep Districts.

Districts	Year 1887.					Year 1888.				
	Acreage.	Horses.	Cattle.	Sheep.	Pigs.	Acreage.	Horses.	Cattle.	Sheep.	
Albury	854,473	6,050	13,088	580,903	.....	865,284	6,888	15,037	696,486	.....
Armidale	3,122,590	10,441	60,955	1,347,470	.....	3,320,604	10,472	63,508	1,244,651	.....
Balranald	5,103,673	2,548	4,881	1,175,201	.....	5,125,777	2,690	4,431	1,076,105	.....
Bathurst	1,275,531	13,773	30,234	483,049	.....	1,331,873	14,826	36,287	533,986	.....
Berrima	185,567¾	3,575	22,443	16,761	.....	227,279¾	3,994	22,239	26,759	.....
Bombala	559,067	3,378	11,352	287,679	.....	544,958	3,538	14,682	361,700	.....
Bourke	11,689,292	6,634	33,032	2,636,519	.....	9,262,820	5,826	30,299	2,253,278	.....
Braidwood	346,008	3,986	29,628	66,571	.....	343,377¾	3,938	28,796	59,114	.....
Brewarrina	3,979,412	3,071	12,588	1,094,974	.....	3,983,172	3,350	14,381	1,187,559	.....
Broulee	219,262	2,467	20,834	2,141	.....	259,765	2,601	20,849	1,488	.....
Cannonbar	3,154,007	2,791	14,596	1,092,272	.....	2,705,647	2,865	16,158	1,050,539	.....
Carcoar	1,074,476	7,503	14,972	619,544	.....	1,064,004	8,047	16,877	704,570	.....
Casino	2,221,951½	15,268	137,093	1,251	.....	2,142,672½	16,264	140,199	704	.....
Cobar	6,027,618	2,058	7,896	1,573,484	.....	6,760,240	2,490	7,927	1,612 447	.....
Condobolin	5,740,902	2,978	8,360	1,762,201	.....	5,589,032	3,239	7,405	1,761,696	.....
Cooma	1,772,453	7,624	22,583	784,202	.....	1,791,172	8,214	26,724	859,136	.....
Coonabarabran	2,353,765¾	3,053	5,678	792,704	.....	2,280,565¾	3,421	8,043	868,905	.....
Coonamble	2,343,044	3,874	10,184	1,368,928	.....	2,765,511½	4,287	11,239	1,442,839	.....
Corowa	1,152,428¼	3,836	6,169	848,857	.....	1,140,620	4,019	5,755	945,028	.....
Deniliquin	2,941,209	4,872	8,417	1,370,006	.....	2,858,574	5,043	7,391	1,392,176	.....
Dubbo	3,148,163	6,596	16,384	1,166,277	.....	3,147,359	7,172	19,720	1,198,672	.....
Eden	350,561	3,772	38,913	2,145	.....	336,584	3,725	40,596	2,132	.....
Forbes	2,563,203¾	5,996	18,502	1,220,200	.....	2,504,671½	7,107	18,607	1,436,438	.....
Glen Innes	2,160,019½	11,494	92,795	623,739	.....	2,056,566	11,551	71,463	573,234	.....
Goulburn	881,237	8,486	37,575	396,222	.....	875,434	8,780	40 861	380,164	.....
Grafton	888,263¾	14,515	55,635	2,558	.....	1,020,901	15,306	56,896	2,579	.....
Gundagai	1,480,746	10,602	46,302	887,258	.....	1,684,173	11,496	57,417	1,135,070	.....
Hay	10,153,622	3,745	5,469	1,485,731	.....	5,018,701	5,614	5,967	1,701,723	.....
Hillston	3,378,275	3,063	6,027	1,258,143	.....	4,737,882	3,000	3,832	1,105,774	.....
Hume	1,269,267½	5,222	20,399	477,443	.....	1,324,922	5,759	22,610	678,113	.....
Ivanhoe	7,872,866	2,219	2,556	1,504,360	.....	6,172,740	1,821	2,142	779,145	.....
Kiama	314,497½	8,182	59,847	3,986	.....	321,912¾	8,814	65,541	4,269	.....
Maitland	466,723	14 597	46,032	4,984	.....	603,556	15,059	56,232	7,247	.....
Menindie	12,097,377½	4,341	3,098	1,781,519	.....	9,770,975	3,658	2,179	1,014,715	.....
Merriwa	751,889	3,081	12,891	354,829	.....	721,840	3,525	13,563	385,984	.....
Molong	1,740,275	7,978	14,850	652,988	.....	1,583,202¼	8,340	16,771	796,881	.....
Moree	2,919,013¼	5,526	38,718	870,611	.....	2,887,242¼	5,856	40,388	850,654	.....
Mudgee	1,130,865½	8,081	25,588	494,150	.....	1,169,477	8,517	25,553	487,986	.....
Murrurundi	779,708	5,730	26,798	406,073	.....	789,218	5,906	26,857	426.228	.....
Narrandera	2,894,589	2,973	11,506	1,245,893	.....	2,906,292	3,078	8,581	1,232,908	.....
Narrabri	1,345,627	3,118	7,362	523,269	.....	1,258,593¾	2,710	5,447	498,655	.....
Picton	259,552¾	3,398	18,417	6,901	.....	247,609¾	3,624	21,017	6,034	.....
Pilliga	1,553,006	1,676	10,691	404,386	.....	1,516,951	1,941	11,598	367,856	.....
Port Macquarie	653,277	9,561	36,069	1,370	.....	660,898	10,385	39,212	1,209	.....
Port Stephens	525,834	7,868	43,375	1,920	.....	632,531	8,057	48,617	1,483	.....
Queanbeyan	950,197	3,861	18,034	443,790	.....	937,886	3,909	19,833	461,613	.....
Singleton	784,331	11,442	72,239	111,871	.....	779,781	11,712	68,120	97,506	.....
Sydney	195,200	23,054	16,008	12,180	.....	197,300	22,170	15,690	10,635	.....
Tamworth	4,090,811	14,948	58,513	1,906,477	.....	4,269,506	17,098	61,215	1,886,392	.....
Tenterfield	1,889,444½	5,770	61,421	138,199	.....	1,800,195½	5,854	58,443	104,169	.....
Urana	1,410,917¾	2,422	5,587	1,049,232	.....	1,407,487¼	2,313	5,475	970,982	.....
Wagga Wagga	2,703,911¼	8,801	24,894	1,661,554	.....	2,753,328	10,554	21,832	1,567,562	.....
Walgett	5,251,378	4,963	25,531	1,571,061	.....	5,316,238	4,064	23,266	1,583,870	.....
Wanaaring	.....	.....	.....	.....	.....	11,399,262	3,121	12,497	1,119,304	.....
Warialda	3,469,243	9,234	49,586	886,940	.....	3,354,647¼	10,157	48,949	792,894	.....
Wentworth	6,903,311	1,588	1,524	683,863	.....	6,881,747	1,779	1,670	665,903	.....
Wilcannia	20,427,734	7,202	18,811	2,792,946	.....	12,608,725	5,944	5,714	1,812,063	.....
Windsor	231,406	8,355	14,642	7,025	.....	192,075	7,736	15,297	6,420	.....
Yass	819,025	5,204	13,973	475,199	.....	804.112	5,122	16,320	483,899	.....
Young	1,952,376¼	12,165	23,937	1,543,139	.....	2,091,181¼	12,992	28,662	1,785,938	.....
Total	168,813,675	390,609	1,575,487	46,965,152	263,900	163,109,652¾	411,368	1,622,907	46,503,469	248,683

APPENDIX B.

Report on a Contagious Animal Skin Disease, Prurigo.

Sir, Department of Mines, Stock Branch, Sydney, 19 March, 1888.

I have the honor to report that, acting on instructions from the Hon. the Minister for Mines, I examined animals suffering with the skin disease in the neighbourhoods of Brisbane and Ipswich, then proceeded to the Richmond and Clarence River districts, where I found the disease identically the same as I had seen in Queensland.

This disease appears to have been known in the North of Queensland for several years, and to have attracted attention early in 1887, in consequence of spreading throughout that Colony; this was during the prevalence of heavy rains, and the disease disappeared with the cold weather.

Last summer it reappeared, and extended principally through the coast districts, extending into New South Wales, so that now it is more widely spread and more severe in character than was ever remembered before. It is a disease of the skin, that would be better named prurigo, meaning "to itch." The term mange is applied to another disease in horses and dogs, caused by acari, to which it bears a close resemblance.

This prurigo is characterized by an eruption of small scattered itching nodules, loss of hair from the withers, back, loins, and croup; later on the head, the mane, and tail are also involved.

It is of a contagious nature, and its progress depends very much on the surroundings and susceptibility of the animal exposed to attack. In some places not one horse escapes, in others the disease spreads slowly, and a large percentage enjoy immunity—two horses may work together, one suffers and the other escapes; one attack does not prevent a recurrence of the disease.

Cattle appear to be attacked by the same disease, but suffer less irritation; it is shown by a rising scurf and partial shedding of hair; the remaining hairs are erect from the withers to the tail, and it may extend along the neck to the head, surrounding the eyes, covering the ears with scurf, and the skin thickens with exudation, itching so much that the beast will rub against trees and make bleeding sores. Only a small percentage of the cattle I have seen are at present attacked. Fat cattle do not appear to lose flesh, and so far the disease is restricted to the skin, and the flesh is not contaminated. The only sheep I heard of being attacked were at Fessifer, in Queensland. I examined one of these sent into Brisbane for treatment, and it certainly had the appearance of suffering from the same disease, having lost most of the wool in patches, from the shoulders, back, and rump; this has been the result of rubbing, caused by itching irritation of the skin.

The sheep had been repeatedly dressed when I saw it, but the itching had not altogether subsided; 60 per cent. of the mob were said to be affected. Should this disease appear in New South Wales sheep, local quarantine and effectual dipping would be the measures to arrest it.

This disease is not caused by the horse mite, *Acari psoroptes*, but is apparently due to the presence of a vegetoid parasite, of a microscopic fungi order, which finds proper nourishment on the skin; and by rapid spore formation and growth penetrates the hair follicles and perspiratory ducts and epidemic cells. Being a foreign material it sets up irritation in the periphery nerves, interrupting and perverting the functions of the skin, exciting itching and inflammation, with an extraordinary accumulation of scurf and effete products.

The heavy rains no doubt altered the herbage, making it rank and watery, so that vegetation has not elaborated its various chemical elements to the same extent as in ordinary seasons; this food has affected the horses, depriving their blood of the salts necessary to balance the acid secretions of the sebaceous glands, and the alkaline secretions of the perspiratory glands; exposure of the skin to continued wet weather has had a detrimental effect on their constitutions, and may explain the immunity from this disease enjoyed by horses that are strictly stable-fed and sheltered; foals also rarely take the disease, although mares suffer very severely. The food in these cases is much richer in nitrogenous and saline elements than is found in squashy grasses.

The symptoms are, first, a rash extending along the neck, withers, and back, to the tail, for about 18 in. on each side of the spine (not unlike mosquito bites). The spots are the size of a threepenny-piece, the hair is slightly raised, and the little swellings can be felt by passing the hand carefully over the parts. A day or two later, on the centre of some of these a little pimple is felt and a small scab, with five or six hairs adhering; it is readily detached. The horse likes manipulation and moves his lips sympathetically. The itching is seen by a sore or two as large as a shilling on the back, where the horse has rubbed the skin sore with his teeth. Soon the hair stands erect on the withers and top of the spine, the skin begins to wrinkle, it is thickened by interstitial effusion. A large amount of scurf and loose hair accumulate, the sores (caused by horses rubbing and biting each other) extend, vesicles form and break and their secretions make horny scales, which accumulate with the cuticular debris. The hair of the mane and tail is destroyed by rubbing, the skin of both thickens and corrugates; the hair soon falls in quantities from the wither and back, in consequence of the animal rolling; in a week or two after the attack the parts are more or less bare of hair, and covered with a thick scaly scurf, with patchy sores, coated with exudation, blood, and dirt.

The progress and termination of this disease is variable. Some entirely recover without treatment; change of feed, such as stabling grass horses, has a good effect; change of season, from warm moist summer weather to cold dry winter, appears sufficient to check the development of the *parasitic fungus*; it disappears in the winter months, and may, or may not, reappear on the same horse the following year.

In its early stages and milder forms it is arrested by various applications, but when allowed to become chronic, intense pathological changes proceed; sore ears, ulcerations, and serous abscesses beneath the skin, reduce the animal's condition, and make him unserviceable. The disease is not of itself fatal, but deaths have resulted from the injudicious use of irritating poisonous applications.

To distinguish this disease from others is not easy, as it bears a remarkable resemblance to the itch or horse mange; it differs, however it being much less contagious, and it does not attack the skin in isolated patches, or extend from the margins outwards to become confluent. Recoveries are spontaneous, without treatment; and last, the insect is absent.

Exposure to sun and rain sometimes causes scald, which is something like it, but the hair is lost rapidly, as if from a blister, leaving the skin bare but sound; there is no itching, pimples, or scurvy sores; the skin is not corrugated, and the mane and tail remain intact.

Erythema is an eruptive itching skin disease, frequently seen in horses, often due to an acid condition of the excretions of the skin, originated by improper stable feeding. It occurs in isolated cases, and is not contagious.

Ringworm

Ringworm is perhaps the most familiar example of a contagious skin disease, caused by *vegetoid parasities*. It can thrive equally well on the skins of various animals and mankind. There are several diseases that are known to be caused by vegetoid organisms; they attack mankind, animals, fishes, and insects as well as vegetation.

This prurigo is distinctly contagious, the medium being probably the fungoid parasitic cells or spores. These are so minute that they readily float in the air, and are easily conveyed by one horse biting another, by the saddle-cloths, harness, brushes, &c. The ears and head become infected by an animal biting his own back, and the reason of the upper surface of the body being first infected is that the spores settle as dust and fall through between the hairs on to the skin, being more likely to fall off the sides or limbs; or may be the excretions and accumulated debris on the skin in those parts is a more suitable soil for their growth, which once established soon penetrates the orifices and fissures of the skin. Such fungoid parasities are extremely minute, measuring from 1-3000 to 1-7000 of an inch, and are rapidly reproduced by proliferating cell growth called spores, or by thread-like bodies called mycelium; these invade the skin and produce the morbid changes so disastrous to its structure. Susceptible horses show the disease about a week after contagion; in some it finds a suitable soil and makes rapid progress; in others it is altogether as slow, and it takes several months to run its course.

Prevention.—Avoid every source of infection; keep the horse in health by cleanliness and good food, and wash with soap and water, or some simple dressing that is antiparasitic, and sprinkle sulphur on the skin from time to time.

Curative remedies will consist of anti-parasitic agents that will not injure the skin, so as to leave permanent blemishes. The skin of the horse is very sensitive to the action of turpentine and the mineral caustics; these should be avoided as too irritating. In all cases cleanse the skin by thorough washing with soap and water, or soda and water, then apply agents containing sulphur, such as potassa sulphurata, one pound to 5 gallons of water, luke warm, or lime and sulphur, or hyposulphite of soda, combined with water. Powdered sulphur mixed with grease as an ointment is a good dressing; also one part sulphur iodide to ten parts of glycerine and fat. Preparations of tar, such as watery solutions of carbolic acid, known as Little's dipping mixture, and Jey's carbolic fluid, are very convenient for use. There are several other agents that may be equally useful, such as prussic acid or sulphurous acid, mixed with glycerine and water, also iodine and mercury; these require to be used cautiously. More important is the method of application than the agent that is used. The wash is to be diligently and thoroughly applied from the horse's nose to his tail; in fact it would be best to swim him in the medicated bath.

The clothing, saddles, harness, brushes, and even the stables will require fumigating with burning sulphur, or immersion in the dressing used for the horses. And as reinfection is liable to occur a repetition of the application will be required twice or thrice a week in order to effect a cure.

Constitutional treatment must not be lost sight of; change of feed, rock salt, and mineral tonics that act specially upon the skin, as antimony, arsenic, iron, &c., are most suitable. It is important to remember that one infected animal is a constant source of danger to others, so that isolation and segregation should be attended to; and although it may be almost impossible to treat unbroken horses and cattle, still it will be necessary to check if not to eradicate the disease in working animals, as we cannot foresee the disastrous extent to which the disease may reach.

I have, &c.,
EDWARD STANLEY, F.R.C.V.S.

SUGGESTIONS OF THE CHIEF INSPECTOR OF STOCK.

Mr. A. Bruce, Chief Inspector of Stock, makes the following suggestions in a minute submitted to the Minister for Mines regarding the mode of dressing horses for this ailment:—

"The most effectual mode of dressing horses for this ailment would be to dip and swim them, for in that way it would be certain that none of the infected portions of the horse would escape being dressed; and it may be when there is a large number of horses on a station to dress that dipping will be resorted to, the dip being made with a gentle smooth slope inwards, and the same slope, but well battened, outwards. It might, too, in some cases, be arranged, as horses can be readily moved from one place to another, that several neighbours would join in the construction of a dip and yards in a central position, and drive their horses there to be dipped.

Where dipping cannot be carried out the next best method of dressing would, I think, be—after saturating the infected and suspected parts of the horse well with the mixture—to put a blanket or cloth thoroughly saturated with the mixture over the infected and suspected parts of the horse for (say) 4 or 5 minutes, during which time additional mixture might be poured upon the blanket or cloth, particularly where the ailment is worst.

Supposing that a good many horses have to be dressed, that a liquid application has to be used as a cure, and that the horse is not to be dipped, he should be made to stand on a drip so constructed and sloped as to lead the mixture which drops from him into a tub (to be placed outside, in the ground at the corner of the drip nearest the boiler), to which it should be returned to be heated and used again,

To keep the horse steady (the quietest horses would otherwise plunge about) and expedite the work, a proper pen or crush of good stout round stuff should (if not already erected) be constructed over the drip, and if there were many horses to dress, the drip and pen could be made three or four panels long. This would enable both broken and unbroken horses to be quickly and safely dressed, and one drip and pen could be made to answer several owners, as suggested in regard to dipping.

In this way horses could be nearly as thoroughly dressed as if they were dipped, and with little trouble and but slight waste of mixture, and to make the dressing with the saturated cloth more effective, that might be shaped into something like the cover and hood used for racehorses, but, of course, coming only a short way down the sides."

APPENDIX C.

APPENDIX C.

The following lots of sheep, bred by the several New South Wales, Queensland, and Tasmanian owners, were disposed of at the annual stud sales held in July, 1888.

Name of Breeders.	Address.	Number of Rams.	Number of Ewes.	Total. Rams.	Total. Ewes
Sold by Messrs. Goldsborough, Mort, and Co. (Limited), on account of					
NEW SOUTH WALES.					
A. L. Faithfull, Esq.	Springfield, Goulburn	11			
H. R. F. Hume, Esq.	Everton, Rye Park	2	1		
Exors. late Thomas Armstrong	Noorang, Denilquin	12			
J. MacVean, Esq.	Mooloomoon, Deniliquin	5			
Geo. Bruce, Esq.	Loombah, Molong	7			
QUEENSLAND.					
George Clark, Esq.	East Talgai, Hendon	9	3		
Messrs. Marshall and Slade	Glengallon, Warwick	7	2		
TASMANIA.					
James Gibson, Esq.	Bellevue, Epping	55			
David Taylor, Esq.	St. Johnston, Campbelltown	59			
W. H. Gibson, Esq.	Fairfield, Epping	60	12		
Thos. Parramore, Esq.	Beaufront, Ross	82			
George Parramore, Esq.	Wetmore, Ross	61			
Estate late Robt. Jones	Riccarton, Campbelltown	72	38		
J. B. Gibson, Esq.	Perth	43	12		
G. W. Keach, Esq.	Chiswick, Ross	93			
Chas. Field, Esq.	Woodfield, Cressy	26	12		
W. H. Gatenby, Esq.	Woodburn, Cressy	38	16		
Messrs. A. and G. Finlay	Douglas Park, Campbelltown	27			
W. H. Bennett, Esq.	Bloomfield, Ross	61	20		
P. W. Archer, Esq.	Panshanger, Longford	60	8		
D. M'Kinnon, Esq.	Dalness, Evandale	36			
James Cox, Esq.	Clarendon, Evandale	105			
E. Dowling, Esq.	Quorn Hall, Campbelltown	31			
Hy. S. Smith, Esq.	Harland Rise, Evandale	17	8		
Thos. Gatenby, Esq.	Pisa, Lake River	66	16		
W. A. Gatenby, Esq.	Glasslough, Epping	22			
A. Gatenby, Esq.	Lemon Springs, Oatlands	48			
W. H. Ralston, Esq.	Woolmer's, Longford	20			
R. C. Gatenby, Esq.	Stewarton, Epping	12			
R. Kermode, Esq.	Mona Vale, Ross	54			
Thos. Riggall, Esq.	Somercotes, Ross	38			
J. F. Rigney, Esq.	Buona Vista, Avoca	6			
G. A. Jones, Esq.	Moorville		2	645	150
Sold by Messrs. Brunker and Wolfe on account of					
NEW SOUTH WALES.					
H. C. White, Esq.	Havilah	1			
TASMANIA.					
Messrs. Wm. Gibson and Son	Scone	274	13		
Thos. Gibson, Esq.	Esk Vale	46	21		
R. Taylor, Esq.	Valleyfield	31			
R. Viney, Esq.	Fernhill	28			
C. B. Grubb, Esq.	Strathroy	48			
H. C. Gatenby, Esq.	Rhodes	135			
B. Archer, Esq.	Woodside, Cressy	44			
F. W. Grubb, Esq.	Bengio	43			
A. M. M'Kinnon, Esq.	Mountford	42			
G. F. Thirken, Esq.	Darlington Park	2			
F. E. Laurence, Esq.	Tasmania	11			
C. A. Parker, Esq.	Selina	11			
S. Grueber, Esq.	Tasmania	10		726	39
Sold by Messrs. Griffiths and Wexver on account of					
NEW SOUTH WALES.					
H. C. White, Esq.	Havilah	21			
James Lee, Esq.	Larras Lake	53	10		
Hon. Geo. Lee	Leeholm	5			
Hon. G. H. Cox	Burrundulla	1			
H. R. F. Hume, Esq.	Everton	6			
George Rouse, Esq.	Biragambil	6	5		
J. D. Cox, Esq.	Cullenbone	10	5		
F. R. White, Esq.	Harben Vale	10			
Messrs. Lackey, Wallace, and Mills	Nubba	6			
J. M. L. M'Donald, Esq.	Wallabadah	4			
Messrs. Cox Bros.	Rawden	14		136	20
				1,507	204

APPENDIX D.

APPENDIX D.

STATEMENT showing drenches used for worms in Sheep, and results.

Drench used.	Number of times used.	Total number of Sheep drenched.	Result.	
			Favourable.	Against.
Pottie's drench	3	119,596	2	
Salt and sulphate of iron	4	3,110	3	
Turpentine in different mediums.	26	89,683	15	
Arsenic and soda	116	550,029	71	
	6	61,867		4

APPENDIX E.

1. *Rabbit Scab.*

Scabies cuniculi.—This disease, which was introduced from Europe by Dr. Watson, of Adelaide, is caused by acari, but is not sufficiently severe to prove fatal to any appreciable extent amongst rabbits. Cats also contracted the disease, but experiments made by him to infect sheep were unsuccessful. Mr. Stanley advised the Government not to permit the introduction of the disease into this colony, on the grounds that while it is ineffective for killing rabbits its introduction would not be entirely free from risk to other animals.

2. *Tintinallogy Disease.*

This ailment, which was attempted to be propagated by Drs. Butcher and Ellis, he reported to be of native origin, its pathology was not known, its effects were uncertain and variable, and he was not satisfied of its being communicated by contagion, or of its fatal effects on rabbits. He inoculated horses, cattle, and sheep without their showing any indication whatever of contracting the disease, and he left the inoculated animals with several others introduced to the infected enclosure from a healthy paddock for three months under the observation of the local inspector of stock, who ultimately reported that no animal had contracted the disease from the rabbits.

3. *Poisoning.*

Experiments were made at Randwick by feeding rabbits on food saturated with the juice of a poisonous bulb, said to have been received from Germany. The rabbits avoided the bulb itself, but after being fasted for forty-eight hours devoured the food, and three out of five died within 24 hours after.

The symptoms were indifference to surrounding objects, not attempting to escape from being caught, followed by paralysis of the fore extremities, convulsions, and death. Two recovered after being fed on green food. Practically the bulb is of less value than ordinary mineral poison for the purpose of rabbit destruction.

During the *post-mortem* examination of rabbits Mr. Stanley found the common bladder worm *coenurus cuniculi* and another hydatid, about the size of large shot, situated in the kidneys. He also found *coccidium oviform* in the livers of rabbits that had died from emaciation caused by these parasites.

APPENDIX F 1.

STATEMENT of the Operations of the Pastures and Stock Protection Boards during the year 1888.

	Amount of Assessment collected.	Amount Expended.	Kangaroo	Wallabies	Native Dogs	P.-melons	Hares.	Kangaroo Rats.	Hawks	Wallaroo	Opossums	Emus	Bilbees	Pigs.
	£ s d	£ s d												
Albury	715 7 0	810 15 8	6,430		4	314	12,867	798						
Armidale	918 19 10	1,619 6 10		16,182	787			7,462						
Balranald	93 5 6	376 8 10	6,789		230									
Bathurst	819 4 3	1,729 4 1	55,217	9,808	44									
Berrima	343 18 5	356 14 4	24	1,438	123	3,634				16				
Bombala		417 19 3	102	45	191				167					
Bourke		1,124 14 4	11,807	10	36									601
Braidwood	272 2 10	298 2 5		11,649	102		303							
Brewarrina		149 13 0	459		3									1,364
Broulee	286 3 6	152 17 3	1	1,490	89		121	348			4,161			
Cannonbar		583 14 2	15,127		58				100					400
Carcoar	496 13 8	823 11 9	1,104	10,269	9		26,733							
Casino		202 4 3	3,033	19	530	2,105								
Cobar	486 1 1	662 6 4	10,169	747	6							253		
Condobolin	589 17 8	1,555 1 6	19,656	452	100				51					
Cooma	230 15 6	269 13 0	515	2,418	95							14		4,438
Coonabarabran	856 0 4	1,371 5 4	181	37,539	185									
Coonamble	142 19 3	955 4 3	13,729		33	323								
Corowa		404 12 2	1,521				2,430							
Deniliquin	54 0 3	397 14 8	9,341											
Dubbo		467 12 2	8,216		179									
Eden	171 3 11	224 9 4	1,304	921	173									
Forbes		716 5 11	8,811	3,460	140		5,548							
Glen Innes		1,105 3 3	7,046	10,843	487		10,018	207						
Goulburn	1,326 11 11	1,783 19 3	235	76,004	44		47,035							
Grafton		177 16 1	2,065	431	154	57								
Gundagai	531 13 9	2,432 4 3	1,714	27,675	81		19,168							
Hay	128 0 6	122 0 6	804											
Hillston	85 13 10	374 3 2	2,241	70	59									
Hume	339 8 9	940 9 0	8,190	4,159	70		10,082							
Ivanhoe		509 11 5	9,709		127									
Kiama	50 0 0													
Maitland	246 18 4	254 4 9	89	3,179	252									
Menindie		1,069 18 0			837									
Merriwa		167 19 5	1,407	184	6									

APPENDIX F 1—*continued.*

	Amount of Assessment collected	Amount Expended	Kangaroo	Wallabies	Native Dogs	P melons	Hares	Kangaroo Rats	Hawks	Wal laroo	Opos sums	Emus.	Bil-bees	Pigs
	£ s d	£ s d												
Molong	1,530 18 9	1,629 12 10	55,012	1,464	120									
Moree	2,341 11 10	3,016 14 5	31,242	75,264	243									
Mudgee	991 10 7	1,164 13 11	50,189		128		29,979							
Murrurundi .		263 1 3	.	14,760	78		45							
Narandera	762 4 0	1,181 13 0	4,391	92	82							847	853	
Narrabri	936 10 11	1,113 1 9	246	32,964	124	2,926		1,208						
Picton	122 18 3	172 6 4	44	199	113									
Pilliga	210 3 0	449 9 7	4,350	5,009	51									
Port Macquarie	171 7 8	91 11 6	65	72	23	46								
Port Stephens	188 10 0	188 10 0	.		446	325								
Queanbeyan		535 19 11	2,969	20,695	87				136					
Singleton		612 2 7	2,947	4,666	380		3,305		..					
Sydney	201 18 0	398 6 6			18		5,563		..					
Tamworth		2,931 15 9	90,217	41,132	384									2,804
Tenterfield	1,102 18 4	2,631 14 5	45,633	60,480	407				..					
Urana	73 3 6	371 12 2	3,505											
Wagga Wagga	305 11 4	388 6 5	3,936		25	545		5,845	36					
Walgett	228 5 3	345 8 1	1,202	642	1	93			..	79			.	2,434
Wanaaring	232 6 4	883 8 3	11,430		215				..			8,722	.	
Warialda	2,555 11 10	4,454 17 5	37,130	163,627	306	6,208			.				.	
Wentworth	368 12 2	1,000 10 6			421				..	.				
Wilcannia	1,435 5 2	5,311 18 0	113,369	7,359	684				.	..				
Windsor	224 19 5	243 13 9			2		3,535							
Yass	183 7 6	145 7 7	416	2,328	29				7					
Young	.	349 17 1	2,107	3,540	18							.	..	
Totals	23,352 13 11	54,992 12 11	667,436	653,285	9,619	16,576	176,732	15,918	497	95	4,161	9,836	853	12,041

APPENDIX F 2.

STATEMENT of the estimated number of noxious animals in the Colony at 31st December in the years 1880 to 1888 inclusive; the number of the different kinds of noxious animals killed during these years; the amount of assessment collected; the amount of Government subsidy received, and the total expenditure for each of these years.

Year	Kangaroos		Wallabies		Native Dogs		Rabbits		Hares.		Wild Pigs		Amount of Assessment collected.	Amount of Government subsidy paid	Amount of Expenditure.
	Estimated number	Number killed.	Estimated number	Number killed	Estimated number	Number killed	Estimated number	Number killed	Estimated number.	Number killed	Estimated number	Number killed			
													£ s. d	£ s d	£ s d.
1880	5,484,000		3,317,000		30,000		762300		.			.			
1881	6,057,000	581,703	4,242,200	43,724	30,500	2 250	5092000	3,999	.				17,648 19 10	749 11 2	15,517 5 4
1882	4 833,000	1,452,329	3,628,000	347,842	30,800	6,980	2500000	188,257	.				45,772 12 8	25,299 19 2	61,191 14 3
1883	3,822,200	750,846	2,916,500	330,109	24,600	7,195			.				32,781 14 2	16,381 19 6	58,132 7 1
1884	3,007,000	1,403,233	2,765,700	473,609	23,300	7,336			.				48,069 15 8	21,606 10 6	62,121 0 0
1885	2,500,000	855,676	2,300,000	506 372	20,000	8,474			..	5,878		922	61,754 15 4	23,753 3 8	64,672 8 2
1886	2,226,700	1,106,478	2,952,600	594,603	33,600	9,560			301,500	28,623	2,400	562	41,585 0 0	16,168 3 0	67,783 6 6
1887	1,881,500	476,438	2,742,500	388,088	32,700	7,739	..	.	429,600	56,628	2,400	664	32,651 13 8	9,589 9 5	37,354 11 1
1888	1,338,880	667,436	3,184,700	653,285	31,405	9,619	..	..	2,044,430	176,732	3,480	12,041	24,938 4 6	6,711 2 8	52,121 9 6
	....	7,294,689	....	3,337,633	....	59,153	..	192,256	..	267,361	..	14,189	305,202 15 10	120,259 19 1	418,894 1 11

N B —The whole of the accounts of expenditure for 1888 are not yet to hand.

Sydney Charles Potter, Government Printer —1889

[1s. 3d.] 319—C

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

BERRIMA PASTURES AND STOCK PROTECTION BOARD.

(CORRESPONDENCE, &c., IN REFERENCE TO APPOINTMENT OF MR. E. CARTER AS A MEMBER OF.)

Ordered by the Legislative Assembly to be printed, 21 *June*, 1889.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 9th May, 1889, That there be laid upon the Table of this House,—

"Copies of all papers, minutes, or other documents having reference to "the appointment of the Board at Berrima under the Stock and Pastures "Protection Act, or the appointment of Mr. E. Carter as one of the "members of the Board for the years 1888 and 1889."

(*Mr. McCourt.*)

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[870 copies—Approximate Cost of Printing (labour and material), £9 6s. 6d.]

BERRIMA PASTURES AND STOCK PROTECTION BOARD.

No. 1.

Mr. Inspector Yeo to The Chairman of the Sheep and Pastures Board, Berrima.

Moss Vale, 24 February, 1888.

Sir,

Would you be good enough to inform me if any nominations by persons eligible to be elected as directors for the Berrima sheep district, have been made to you; and, if not, would the present directors be willing to act again for the ensuing year. (Please find list of present directors names attached.)

I have, &c.,
JAMES YEO,
Inspector of Stock.

[*Enclosure.*]

SHEEP DIRECTORS.

W. J. Cordeaux, Esq., Bendooley, Berrima; M. Butler, Esq., Woodlands; D. Morrice, Esq., Ealing Forest, Sutton Forest; A. D. Badgery, Esq., Sutton Forest; E. Carter, Esq., Golden Grove, Sutton Forest.

LARGE STOCK DIRECTORS.

J. A. Badgery, Esq., Ivy Hall, Sutton Forest; W. Morrice, Esq., Browley, Moss Vale; H. E. Kater, Esq., Mount Broughton, Moss Vale.

No. 2.

The Secretary, Board of Sheep Directors, Berrima, to Mr. Inspector Yeo.

Berrima, 28 February, 1888.

Sir,

In reply to your letter of the 24th instant, to the Chairman of this Board, who is at present away, I have the honor to inform you that no nominations for the election of directors were made.

The directors who form the present Board are, I believe, quite willing to be reappointed as such for the ensuing year.

Not having had notice of the date of the election, as on previous occasions, the Chairman has I suppose forgotten about it.

I have, &c.,
P. C. CORDEAUX,
Secretary.

No. 3.

Mr. Inspector Yeo to The Chief Inspector of Stock.

Moss Vale, 1 March, 1888.

Sir,

I have the honor to inform you that I am in receipt of a letter from the secretary of the Berrima Pastures and Stock Protection Board, on behalf of the Chairman, W. J. Cordeaux, Esq., stating that no nominations of either sheep or large stock were received, consequently there was no election.

Attached I beg to submit a list of owners' names, who are willing to act, if approved of by you.

I have, &c.,
JAMES YEO,
Inspector of Stock.

[*Enclosure.*]

SHEEP DIRECTORS.

W. J. Cordeaux, Esq., Bendooley, Berrima; M. Butler, Esq., Woodlands, Berrima; D. Morrice, Esq., Ealing Forest, Sutton Forest; A. D. Badgery, Esq., Sutton Forest; C. L. Nicholson, Esq., Sutton Forest.

LARGE STOCK DIRECTORS.

J. A. Badgery, Esq., Ivy Hall, Sutton Forest; W. Morrice, Esq., Browley, Moss Vale; H. E. Kater, Esq., Mount Broughton, Moss Vale.

Mr. Inspector Yeo,—Please say why the name of C. L. Nicholson is proposed in place of Mr. Carter, last year's director.—A.B., B.C., 5/3/88. By request of Messrs. A. D. Badgery and Walter Morrice, also Mr. C. L. Nicholson stating his willingness to act if appointed.—J. YEO, 6/3/88. I beg to nominate the gentlemen herein named as sheep and large stock directors for the sheep district of Berrima.—A.B., 7/3/88. The Under Secretary for Mines. Submitted.—H.W., 8/3/88. Approved.—F.A., 9/3/88.

No. 4.

Gazette Notice, 13th March, 1888.

Department of Mines, Stock Branch, Sydney, 13 March, 1888.

DISEASES IN SHEEP ACTS AMENDMENT ACT OF 1882, AND THE PASTURES AND STOCK PROTECTION ACTS.

NOTICE is hereby given, for public information, that the undermentioned gentlemen have, on the nomination of the Chief Inspector of Stock, been appointed directors for the several sheep districts named:—

BERRIMA.

Sheep Directors.

W. J. Cordeaux, Esq., Bendooley, Berrima.
M. Butler, Esq., Woodlands, Berrima.
D. Morrice, Esq., Ealing Forest, Sutton Forest.
A. D. Badgery, Esq., Sutton Forest.
C. L. Nicholson, Esq., Sutton Forest.

Pasture Directors.

J. A. Badgery, Esq., Ivy Hall, Sutton Forest.
W. Morrice, Esq., Browley, Moss Vale.
H. E. Kater, Esq., Mount Broughton, Moss Vale.

No. 5.

No. 5.

The Chairman of the Sheep Board, Berrima, to The Secretary for Mines.

Sir, Berrima, 14 May, 1888.

I beg respectfully to draw your attention to the enclosed letter from Mr. Yeo, Inspector of Stock for this district, and also a copy of the reply to it by the secretary of our Board.

The list of directors attached to Mr. Yeo's letter composed the Board for 1887. I find by the *Government Gazette*, No. 168, of 12 March, 1888, that Mr. C. L. Nicholson's name has been substituted for Mr. E. Carter's, who was one of the oldest and most energetic members of the Board, and also one of the largest stock-owners in the district.

When no election has taken place, I, as Chairman, have always been asked to recommend names for appointment. Mr. Carter being very much annoyed that his name was taken off the list without cause, I feel it my duty to ask that an inquiry be made into the matter.

At a meeting held in Berrima, on Friday, the 11th instant, it was decided by a majority of one to remove the office of the Board to Moss Vale, caused by the alteration referred to above, which will entail considerable more expense.

I have, &c.,
W. J. CORDEAUX,
Chairman.

No. 6.

Mr. E. Carter to The Secretary for Mines.

Sir, Golden Vale, Sutton Forest, 15 May, 1888.

I desire to bring under your notice the treatment that I have received from Mr. Yeo, the Inspector of Stock, Moss Vale, who has taken it upon himself, without any cause whatever, to remove me from the Board of the Pastoral Stock Protection Act.

I may here state for your information that I am the oldest resident in this district, and my father before me was the owner of sheep in 1838, when scab was so prevalent amongst them in this district, and I had every opportunity of becoming thoroughly acquainted with the management of sheep and other stock. I may add that I am at present the largest stock-holder in the district. and have always taken great interest in all kinds of stock.

I may further add that I have been a sheep director, I believe, since the Act first passed, and have always given my best attention to the duties required of a director; and now to be removed from the Board, after so many years' service, without any cause whatever, or any complaint of my neglecting to perform the duties connected with these appointments.

I may add that I was under the impression that the power of removing a director from a Board could only be exercised by the Honorable the Minister for Mines, and the very fact of my being removed by the Stock Inspector, Mr. Yeo, has usurped a power that belonged to you only, and I pray you will take this matter into your consideration, and grant me such relief from this painful insult as you may be pleased to direct.

I have, &c.
EDWARD CARTER.

No. 7.

The Chief Inspector of Stock to The Chairman of the Board of Sheep Directors, Berrima.

Sir, Stock Branch, Department of Mines, Sydney, 16 May, 1888.

In reply to your letter of the 14th instant, I have the honor to inform you that Mr. Nicholson was appointed a sheep director for the Berrima District, instead of Mr. Carter, at the suggestion of two members of the Board.

I have, &c.,
ALEXANDER BRUCE,
Chief Inspector of Stock.

No. 8.

Mr. E. Carter to W. McCourt, Esq., M.P.

Sir, Golden Vale, Sutton Forest, 18 May, 1888.

As you are aware, I was a member of the Board of the Pastoral Stock Protection Act for the district of Berrima, which position I have held for a number of years, and I now have been removed from that position. And, as I have been informed that through some advice or complaint, which has been made to the Inspector of Stock at Moss Vale, by Mr. Walter Morrice, of Browley, and Mr. A. D. Badgery, of Sutton Forest, I would be glad if you would obtain from the Honorable the Minister for Mines a copy of the letters (if any), or the verbal statement made by the above gentlemen to the Inspector of Stock at Moss Vale, which was the cause of my being removed from the Board of Directors.

I further wish to know if any complaint has been made of my not attending to the duties, or for what reason, if any was given, for my removal, as I feel a great injustice has been done me. No notice was given to me that there was any intention of removing me from the Board, and I also wish to know by what authority or power Messrs. Morrice and Badgery were entitled to exercise in removing my name.

I hope the Honorable the Minister for Mines will see his way to restore me to the position I held.

Yours, &c.,
EDWARD CARTER.

I beg to forward these letters from Mr. Carter. It appears to me to be a case requiring a thorough investigation; by some behind-back work Mr. Carter has been removed from his position on the Board without his knowledge, and without any reason whatever being assigned for the change. I trust therefore the Minister will see that Mr. Carter is reinstated. I certainly think if any objections were taken to Mr. Carter the inspector at Moss Vale should have communicated such objections to that gentleman, in order that he might have an opportunity to reply to them.—W. McCourt.

Report the facts of this case to me as soon as possible.—F.A., 21/5/88. Mr. Yeo, for report and explanation.—A.B., 21/5/88.

No. 9.

No. 9.

Mr. Inspector Yeo to The Chief Inspector of Stock.

Sir, Stock Office, Moss Vale, 25 May, 1888.

Referring to your blank cover of the 21st instant, for report and explanation, I beg to state that I wrote to W. J. Cordeaux, Esquire, Chairman of the Berrima Pastures and Stock Board, on the 24th February, 1888, asking if any nominations of directors had been made to him for the ensuing year, and not having received a reply, on the 29th February, 1888, I made a special journey to Berrima to see Mr. Cordeaux, who was away from home; consequently I deemed it advisable to see some of the other directors on the matter; I saw Messrs. A. D. Badgery and W. Morrice, who, on the suggestion of Mr. A. D. Badgery, were, I considered at the time, both agreeable that Mr. Nicholson should be nominated in lieu of Mr. Carter, which I submitted for approval, in the absence of the Chairman. I might also mention that if it is necessary Mr. A. D. Badgery is quite willing to give his reasons in writing for recommending Mr. Nicholson in lieu of Mr. Carter.

I have, &c.,
JAMES YEO,
Inspector of Stock.

Submitted.—A.B., 26/5/88. The Under Secretary for Mines. This explanation may be supplied to Mr. McCourt, M.P., and he may be informed that if he desires it Mr. Badgery will be asked to furnish his reasons for recommending Mr. Nicholson in lieu of Mr. Carter.—H.W., 29/5/88. Submitted. Approved.—F.A., 2/6/88.

No. 10.

The Chief Inspector of Stock to The Chairman of the Pastures and Stock Board, Berrima.

Dear sir, Moss Vale, 26 May, 1888.

Having seen an advertisement in the *Scrutineer*, calling for tenders for the secretaryship of the Berrima Pastures and Stock Protection Board for the ensuing year, I most respectfully beg to offer myself as a candidate for the appointment, at the salary of £50 per annum, and supply an office for the use of the Board, free of charge. I might mention that I held a similar appointment under the Ivanhoe Pastures and Stock Protection Board for two and a half years to the satisfaction of the Board, and which appointment I resigned of my own accord, prior to my leaving the district.

Enclosed you will please find testimonials from Directors of the Ivanhoe Board, testifying to my fitness for the appointment.

I can only say should the Board do me the honor of appointing me, I shall do my utmost to give every satisfaction.

I have, &c.,
JAMES YEO.

No. 11.

Mr. W. G. Massingham to The Chairman, Pastures and Stock Board.

Sir, Alymerton, Mittagong, 31 May, 1888.

In reference to your advertisement in the *Southern Mail* of the 26th instant, *re* the secretaryship of the above Board;—if the duties are of such a nature as would admit of the work being done at my own house, and only requiring partial attendance at the office, I have the honor to tender my services in the above capacity for one year for the sum of £35, and furnish fidelity guarantee for £100.

I remain, &c.,
W. G. MASSINGHAM.

No. 12.

Mr. E. Carter to W. McCourt, Esq., M.P.

Sir, Golden Vale, Sutton Forest, 2 June, 1888.

I addressed a letter to the Honorable the Minister for Mines, dated the 15th May, 1888, calling his attention to the treatment I have received from the Inspector of Stock at Moss Vale, by removing me from the Board of Sheep Directors for this district, without any just cause or reason, unless it be the action I took in reference to a letter received by the Chairman of the Board from the Inspector of Stock at Moss Vale, asking if the Board would pay half the expense of an office and furniture for Moss Vale, and this letter was brought before the Board at its next meeting for consideration, and I opposed the removing of the office to Moss Vale on the following grounds:—

Firstly,—The Stock Board had an office in Berrima, for which they paid no rent.
Secondly,—There was sufficient furniture for their requirements.
Thirdly,—The Board had no funds at the time in hand.

I thought it undesirable that the Board should go to this unnecessary expense, and my opposing this matter, I have every reason to believe, has been the cause of the action taken by Mr. Yeo, Inspector of Stock, in removing my name from the Board of Directors.

At a meeting of the Board held in Berrima, a resolution was carried by a majority of one, that the office should be removed from Berrima to Moss Vale.

The Honorable the Minister for Mines will see that by the removal of my name from the Board, and the appointment of Mr. Nicholson in my place, enabled the inspector to carry out the intentions of his letter referred to above.

Knowing that the Government was desirous of keeping down unnecessary expenditure, I considered it my duty, as a colonist, to assist them in their efforts to do so.

I remain, &c.,
EDWARD CARTER.

I beg to forward above letter together with two copies of letters, one from Mr. Carter to Mr. Morrice, and one from latter gentleman, denying that he ever recommended Mr. Carter's removal from the Board, as stated in a minute to you by the Inspector of Stock at Moss Vale. The action of the Inspector of Stock throughout this business requires thorough investigation. It seems clear that Mr. Carter has been removed from the Board without his knowledge, and without the consent of his Co-directors being obtained.—W. McCourt. The Honorable the Minister for Mines.

Let me know how this matter stands, I have an impression it was dealt with last week.—F.A., 5/6/88.

[*Enclosures.*]

My dear Mr. Morrice, Golden Vale, Sutton Forest, 2 June, 1888.

You are aware that I have been removed from the Board of sheep directors, Berrima, I have made enquiry from the Chief Inspector of Stock why I was removed, and he informed me that the Inspector at Moss Vale said it was by the request of Mr. A. D. Badgery and Mr. Walter Morrice.

I cannot believe that you made such a recommendation. Would you be kind enough to say whether you did so or not.

Yours, &c.,
EDWARD CARTER.

My dear Mr. Carter, Browley, 3 June, 1888.

In reply to yours of yesterday's date, *re* your removal from the Board of sheep directors for the District of Berrima, I can only say that I never recommended the same, and that I knew nothing of it until the meeting of the Board at Berrima.

I am, &c.,
WALTER MORRICE.

No. 13.

Minute by The Secretary for Mines.

5 June, 1888.

I have to-day seen a letter from Mr. Walter Morrice, dated 3rd June, 1888, in which he states he never recommended the removal of Mr. Carter, and that he knew nothing of it until the meeting of the Board.

This case appears a very strange one, I cannot understand why Mr. Inspector Yeo should have gone out of his way to secure the removal of Mr. Carter, who it appears has always attended to the duties of the position ever since the Board has been established.

I require a very clear report upon this matter, and an explanation from Mr. Inspector Yeo.

F.A.

Referred for Mr. Inspector Yeo's full report and explanation, more especially in regard to Mr. Morrice's contradiction of your statement that he was agreeable that Mr. Nicholson should be nominated in lieu of Mr. Carter.—A.B., B.C., 5/6/88.

No. 14.

Mr. A. D. Badgery to The Secretary for Mines.

Sir, Sutton Forest, 6 June, 1888.

I am given to understand that Mr. Carter feels hurt at his name having been omitted from the list of sheep directors for the Berrima District, and that Mr. Yeo has incurred his displeasure over the matter. I feel it but due to Mr. Yeo to say that that gentleman is not in any way to blame for Mr. Nicholson's name having been substituted for Mr. Carter's.

I met Mr. Yeo at Moss Vale, and he told me that there had been no election of members, consequently the Board was defunct, and that it was his duty to submit the names of gentlemen who would fill the appointments.

As Mr. Yeo was a perfect stranger in the district, I gave him the names of several gentlemen whom I knew would work in the interest of the public, and not study individual interest. On the same day, I told Mr. Yeo to submit the list to Mr. Walter Morrice, who has since told me that he approved of the names thereon. My sole reason for leaving Mr. Carter's name out, is that he has not worked in the interest of the public, but for his own individual benefit.

For a number of years Mr. Carter has openly stated that he did not wish the native dogs to be destroyed on his runs, and has stated as a reason for protecting native dogs that it prevented men of small means from selecting on his runs, for from the dry nature of the country, it would not pay to keep cattle on small holdings, and the dogs prevented them from keeping sheep.

During part of the last four years, I leased a block of country from Mr. A. W. Holt, it adjoined Mr. Carter's run. I paid £1,100 per annum rent, besides as much as £100 in one year as taxes under the Rabbit Diseases in Sheep, and Stock and Pastures Protection Acts.

Notwithstanding a heavy outlay for poison, steeltraps, &c., I lost over £400 worth of sheep in the time, and many of my neighbours suffered in a more or less degree. I mention their names, Thomas Loseby, M. W. Hillas, Conrad Seiler, Badgery Bros., Mr. Jamieson, and a number of smaller holders. All these parties trace their trouble and loss to the vast tract of mountainous country held by Mr. Carter, and on which the native dogs are protected.

A few weeks ago a hunter brought me some marsupial scalps, also the scalp of a native dog. He asserted that he had shot them on the outskirts of Mr. Carter's run, and although native dogs were plentiful round his camp, Mr. Carter had forbidden him to use poison. Even many miles from the head station, and where there was not a remote chance of poisoning a tame dog.

Mr. Carter will surely remember telling me only a few weeks back, that he intended to make a charge on hunters who were shooting marsupials on his run. Surely that does not look like studying the public interests. If you look at the minutes of our various meetings held at Berrima, you will see how Mr. Carter always voted.

Messrs. Carter and Cordeaux hold a long strip of country along the Wollondilly, and their interests are identical.

For

For some time it has been evident that, in a little while, the marsupials will be almost extinct. The prices paid for skins are inducing many to shoot them, therefore I feel that it is not necessary to offer large bonuses for their scalps, but rather to give a price that will secure the destruction of the native dogs entirely.

I am not now a sheepholder in this district, therefore my efforts are not in my own interest.

I have also been accused by some of the Berrima people of wishing to take everything from that town by proposing to remove the Stock Board to Moss Vale.

Well, my reasons are that Moss Vale is far more central and more convenient for the greatest number of the directors, as well as more suitable for the public. As a proof, I give you the directors' distance from Moss Vale and Berrima:—

Director.	Moss Vale.	Berrima.
Walter Morrice	1 mile	4 miles.
H. E. Kater	2 „	7 „
C. L. Nicholson	3 „	8 „
A. D. Badgery	3½ „	8½ „
W. J. Cordeaux	8 „	3 „
D. Morrice	8 „	8 „
W. Butler	8 „	3 „
J. A. Badgery	6 „	11 „

Showing a balance of 13 miles in favour of Moss Vale.

I may here mention that we have a convenient room at Moss Vale free of rent. I am quite prepared to answer any question Mr. Carter may put on the subject.

I am, &c.,
ANDREW D. BADGERY.

I think a copy of this letter should be sent to Mr. Carter with the request that he may supply any reply he wishes to make to it. There are certainly some very serious charges against him in this statement of the case.—F.A., 8/6/88.

The Chief Inspector of Stock.—B.C., 8/6/88.

No. 15.

Mr. Inspector Yeo to The Chief Inspector of Stock.

Sir, Stock Office, Moss Vale, 7 June, 1888.

With reference to your B.C. of the 5th June, 1888, for report and full explanation regarding Mr. Morrice's contradiction of my statement, I beg to state that the interview I had with Mr. A. D. Badgery, suggested—and Morrice was at Moss Vale, when Mr. Badgery suggested the names of the directors, which names I entered in my note-book. Mr. Morrice was standing by and heard the names suggested, and appeared to be quite agreeable. I might also mention that Mr. Badgery and Mr. Nicholson are both prepared to substantiate my previous statement, and Mr. Badgery further informs me that on a future occasion Mr. Morrice remarked to him that he quite approved of the names suggested.

With reference to Mr. Carter's remarks, I beg to distinctly deny that I was prejudiced against his reappointment as a director owing to the action he took *re* removing the office from Berrima to Moss Vale. It would, I consider, tend to show that after having first written and then making a special journey to Berrima to see the Chairman, who was away from home, that it was my duty to consult some of the other directors, and I should most certainly not have altered the original list if it had not been suggested by the gentlemen already named.

I have, &c.,
JAMES YEO,
Inspector of Stock.

No. 16.

The Chief Inspector of Stock to Mr. E. Carter.

Sir, Stock Branch, Department of Mines, Sydney, 12 June, 1888.

Referring to previous correspondence with regard to your name having been removed from the list of sheep directors for the Berrima District, I am directed to forward the copy of a letter which has been received from Mr. A. D. Badgery in order that you may make any remarks you may deem advisable thereon.

I have, &c.,
ALEXANDER BRUCE,
Chief Inspector of Stock.

No. 17.

Mr. E. Carter to The Secretary for Mines.

Sir, Golden Vale, Sutton Forest, 18 June, 1888.

I am in receipt of a letter from the Chief Inspector of Stock, enclosing a copy of Mr. A. D. Badgery's letter of the 6th June, in which Mr. Badgery undertakes the defence of Mr. Yeo's interest in this matter in stating that Mr. Yeo had nothing to do in substituting Mr. Nicholson's name in the place of mine.

As to what conversation took place between Mr. Yeo and Mr. Badgery I know nothing of. Mr. Badgery remarks that "Mr. Yeo was a perfect stranger in the district." If this was the case, the greater the reason it was for him (Mr. Yeo) to apply to the Chairman of the Board or the secretary, for any information that he may have required respecting the appointment of a board of sheep directors, and not to Mr. Badgery.

I have been informed that Mr. Yeo wrote to the Chairman (Mr. Cordeaux), asking him for the list of those who were acting as sheep directors, which names, I believe, were supplied to Mr. Yeo, and he (Mr. Yeo) removed my name.

I

I submit that Mr. Badgery had no right to interfere. Mr. Badgery says that Mr. Walter Morrice agreed to the removal of my name; but I hold Mr. Morrice's letter stating that he knew nothing of my removal from the Board. So much for Mr. Badgery's statement.

Mr. Badgery says his sole reason for leaving Mr. Carter's name out was that I did not work in the interests of the public, but for my own individual benefit. As the Board is composed of eight members, how was it possible for me individually to carry out anything in opposition to the other seven members, should they not consider that any motion I made was not for the benefit of the public; and I have at all times taken an active part and attended all meetings of the Board, and anything that I may have done that does not please Mr. Badgery, if he had attended at the meetings, he could have opposed any action that I took.

Mr. Badgery further says that I openly stated that I did not wish the native dogs to be killed. This I did not say; but have said if native dogs killed a few sheep, they also killed large numbers of marsupials. And as for Mr. Badgery stating that I said it prevented men of small means from selecting on my run, is perfectly untrue; and I wish to state that I never prevented my stockman or other servants from destroying native dogs, and my stockman (Hugh M'Pherson) has destroyed them and has taken the scalps to Berrima. Martin Bender, another servant in my employ, has also delivered scalps in Berrima, and my son has also destroyed them and delivered the scalps, I think, to Mr. Badgery.

With reference to Mr. Badgery paying Mr. A. Holt £1,100 a year rent for his estate in the county of Argyle I have nothing whatever to do with, but if Mr. Holt is communicated with he will tell you that when I was younger no person exerted himself more than I did to destroy the native dogs.

Mr. Badgery is aware that I gave large shooting parties, and supported thirty and forty men for three days at a time for several years, as shooters and drivers, to destroy the marsupials; and will Mr. Badgery dare to say that I gave instructions to any of these persons not to shoot native dogs?

Mr. Badgery has given the names of several gentlemen who live in the county of Argyle, and complains that they trace their troubles and loss to my not destroying the native dogs. Does Mr. Badgery expect me to leave the county of Camden and go into the county of Argyle to destroy the native dogs that may be trespassing upon the runs of these gentlemen?

This is one of Mr. Badgery's complaints why he (Mr. Badgery) removed my name from the Board of directors.

Mr. Badgery says, in his letter, that the marsupials will soon be almost extinct; but, for the Honorable the Minister's information, I may state that there are thousands of rock wallaby on the Crown lands adjoining my property, for which the Board allows 2d. per scalp, which is just the price of the cartridge, therefore they are now on the increase.

With reference to Mr. Cordeaux's interests being identical with mine, that interest must lie in the destruction of marsupials, as we are the greatest sufferers.

The trumped-up charges made by Mr. Badgery, to protect Mr. Yeo, has nothing to do with it. The question is, why did Mr. Yeo remove my name, unknown to me and the other six members of the Board, including the Chairman?

The questions are these:—

1. Why did Mr. Yeo remove my name without consulting the Chief Inspector of Stock?
2. Why does Mr. Yeo say it was at the suggestions of Mr. Walter Morrice and Mr. Badgery?
3. Mr. Morrice denies that statement made by Mr. Yeo, which Mr. Morrice has put in writing.
4. Why did Mr. Yeo make this statement, knowing that Mr. Morrice did not make the suggestion?
5. Why does Mr. Badgery say Mr. Yeo is not responsible, but that he (Mr. Badgery) removed my name?
6. Has Mr. Badgery the power, behind the back of the Board of Directors, to do this?
7. Why are these three gentlemen contradicting each other? If Mr. Yeo has made a statement that is not true, against Mr. Morrice, I think some notice should be taken of it.

I may state that I have always considered that the sum of £2, given for the scalp of a native dog, was excessive, as it leads to fraud, by dishonest persons destroying tame dogs and passing their tails and scalps for the dingo. It was only a few days ago that the Police Magistrate and I had to deal with one of these cases, in which a person named William Goodfellow was charged with obtaining money for a scalp not being one of a dingo, for which he was convicted.

Since writing the above, I have seen Mr. Walter Morrice, and he still adheres to what he stated in his letter, namely, that he never suggested the removal of my name to Mr. Yeo.

Yours, &c.,
EDWARD CARTER.

Please send the name and address of the hunter which Mr. Badgery refers to.

I think this letter proves that a most improper thing has been done by Mr. Inspector Yeo. I have not had his explanation yet.—F.A., 25/6/88.

No. 18.

The Chief Inspector of Stock to Mr. W. Morrice.

Sir, Stock Branch, Department of Mines, Sydney, 5 July, 1888.

With reference to the appointment of Mr. Nicholson, as a sheep director for the Berrima District, in the place of Mr. Carter, Mr. Inspector Yeo states, that after making a special trip to see the Chairman about the reappointments of the Board, and failing to see him, he consulted Mr. Badgery, and submitted the names suggested by him, that you were present and appeared to be quite agreeable. It is said that at a later period you told Mr. Badgery that you quite approved of the names suggested.

I am directed by the Minister for Mines to request that you will be good enough to say whether you were present, and agreed to the action that was taken.

I have, &c.,
ALEXANDER BRUCE,
Chief Inspector of Stock.

No. 19.

No. 19.

The Chairman of the Sheep Board to The Secretary for Mines.

Sir, Bendooley, Berrima, 7 July, 1888.

Having read a copy of Mr. Andrew Badgery's letter to you, 6th June, 1888, *re* Mr. Carter's name being removed as a director from the Stock Protection Board, Berrima, wherein he states that my interests are identical with his (Mr. Carter's) that he controlled the Board, that I was not acting for the public interest, and fostering the increase of native dogs, I beg respectfully to say, as to myself, that his assertions are quite uncalled for and untruthful. Having suffered more than any person in the district from dogs, both tame and wild, surely it was to my interest, as well as the public, to destroy them, having been in possession of sheep here since the year 1839 up to the present time, and I give to my neighbours strychnine, to destroy them, as they require it. Being Chairman of the Board since the Act came in force, and worked unanimously together, I feel hurt that he should have made these uncalled and untruthful assertions against me, he being comparatively a recent sheepholder and member of the Board.

I have, &c.,
WM. JNO. CORDEAUX,
Chairman.

No. 20.

Mr. E. Carter to The Chief Inspector of Stock.

Sir, Golden Vale, Sutton Forest, 28 July, 1888.

In writing to your Department some time ago, asking to be supplied with the name of the hunter who informed Mr. A. D. Badgery, while encamped upon my run, that the native dogs were howling around his camp, and that I would not allow him to destroy them, I shall be glad to obtain this information as soon as convenient.

Yours, &c.,
EDWARD CARTER.

Send copy to Mr. Badgery, and ask him for the name of the hunter. Inform Mr. Carter that we have done so.—A.B., 2/8/88.

No. 21.

The Chief Inspector of Stock to Mr. A. D. Badgery.

Sir, Stock Branch, Department of Mines, Sydney, 7 August, 1888.

Herewith I have the honor to forward the copy of a letter received from Mr. Carter, asking to be furnished with the name of the hunter who informed you that he (Mr. Carter) would not allow him to destroy the native dogs which were howling around his camp, I shall be glad if you will be good enough to supply me with the information.

I have, &c.,
ALEXANDER BRUCE,
Chief Inspector of Stock.

No. 22.

Mr. A. D. Badgery to The Chief Inspector of Stock.

Sir, Sutton Forest, 13 August, 1888.

In reply to your question as to who informed me that Mr. Carter would not allow him to use poison on his run, I beg to say it was Thomas Nye.

I infer from Mr. Carter's letter to you that he denies having protected the native dogs on his run. If such is the case, I can satisfy you on that point.

Mr. Carter appears hurt at being left off the Board of Directors, after having (as he says) served the public faithfully. All I can say is, the public should be the best judges; and at the ballot for thirty-six committee-men, to work in the interest of our Agricultural Society, Mr. Carter's name stands within two of the bottom of a list of sixty-one candidates.

Several people have come to me and reported that Mr. Carter had asked them to sign a document stating that he had always given satisfaction in the discharge of his duties as a director. It should be a valuable document.

I am, &c.,
ANDREW D. BADGERY.

Inform Mr. Carter.—A.B., 20/8/88.

No. 23.

The Chief Inspector of Stock to Mr. E. Carter.

Sir, Stock Branch, Department of Mines, Sydney, 20 August, 1888.

Referring to your letter of the 28th ultimo, I have the honor to inform you that Mr. Andrew D. Badgery has intimated that the person who informed him that you would not allow him to destroy native dogs on your run was Thomas Nye.

I have, &c.,
ALEXANDER BRUCE,
Chief Inspector of Stock.

No. 24.

Mr. E. Carter to The Chief Inspector of Stock.

Sir, Golden Vale, Sutton Forest, 1 September, 1888.

As A. D. Badgery has charged me with having used my position on the Board for my own individual benefit, will you be kind enough to inform me in what way I used my position on the Board as sheep director for my own individual benefit.

Yours, &c.,
EDWARD CARTER.

No. 25.

No. 25.

Mr. E. Carter to The Secretary for Mines.

Sir, Golden Vale, Sutton Forest, 10 September, 1888.

I hope you will pardon my again bringing under your notice my removal from the board of sheep directors, as I wish to bring under your notice the papers accompanying this letter.

Mr. Morrice's letter, denying that he suggested my name to be removed. Therefore Mr. Yeo has written an untruth, and by so doing, misled the Chief Inspector of Stock.

I also enclose a letter from Mr. Hillas (Bannaby), and Mr. Dennis O'Connor (Summer Hill), also a declaration made by Mr. Thomas Nye. I enclose this that the Honorable the Minister for Mines may see that Mr. Badgery has also said what is proved to be untrue.

I have enclosed the attendance of directors for last year, also the attendance for the two meetings this year. The Honorable the Minister will there see that the appointment of Mr. Yeo as secretary was through the action of those gentlemen, although Mr. Yeo's tender for the appointment was higher than the tender of Mr. Massingham by £15.

I have every reason to believe my name was removed from the Board by Mr. Yeo to ensure his appointment as secretary. The action of Mr. Badgery and Mr. Nicholson shows this. With all due respect I think Mr. Yeo should not be allowed to hold this appointment under the circumstances.

I am only asking that justice may be done to me; also to prevent the inspector from again taking into his own hands the removal of any member of the Board.

I now, sir, with respect leave my case in your hands.

I am, &c.,
EDWARD CARTER.

I wish to see Mr. Bruce about this matter, and he may ascertain if it is the case that Mr. Yeo has been appointed secretary to the Board.—F.A., 11/9/88. Mr. Yeo has been appointed secretary to the Pastures Board.—A.B., 11/9/88. The Under Secretary for Mines. Submitted.—H.W., 11/9/88.

It appears that the law does not give any power to undo what has been done in this case; but I desire to express my strong disapproval of the conduct of Mr. Stock-Inspector Yeo, who appears to have allowed himself to be used by others to the injury of Mr. Carter without sufficient reason, and such another case coming under my notice will result in serious consequences to him. Should an election of Board not take place next year, Mr. Carter's name is to be submitted for appointment. Inform all parties, including Mr. McCourt, M.P.—F.A., 12/9/88.

[*Enclosures.*]

My dear Mr. Carter, Browley, 3 June, 1888.

In reply to yours of yesterday's date, *re* your removal from the board of sheep directors for the District of Berrima, I can only say that I never recommended the same, and that I knew nothing of it until the meeting of the Board at Berrima.

I am, &c.,
WALTER MORRICE.

Dear sir, Bannaby, 5 August, 1888.

In reply to your letter of the 28th ultimo, I beg to say that I have not seen Mr. A. Badgery for nearly six months. In reference to my accusing you for my losses in sheep, I may tell you that I have been very fortunate in that way, for they have been comparatively small in comparison to my neighbours, who have been compelled to continually yard their sheep. I may have said that the native dogs were more numerous on your side of the river, as they come from that direction. Mr. D. O'Connor tells me he has poisoned either eight or nine dogs close to the Wollondilly and Berrima Rivers.

I am, &c.,
MALCOLM W. HILLAS.

Dear sir, Summer Hill, Bannaby, 29 August, 1888.

In reference to your note, dated 28th July, I beg to inform you that Mr. Andrew Badgery has misinformed you, for I consider it a gross libel for any person to belie me, as I have not spoken, personally, to Mr. A. B. for the last fifteen years; and in reference to your remarks that I should say that you were protecting the native dogs, and attributed my losses solely to you, this I distinctly deny, though my losses, for a poor man, are considerable, amounting from 280 to 300 sheep annually, and this I attribute to the dogs from the Camden side; but seeing the Legislature of the Colony has enacted a law authorizing every district to appoint a Stock Board, and giving each Board certain limited power to levy contributions on all stock, for the destruction of those noxious animals, that is, the marsupials and native dogs, and on these grounds I consider myself void of common sense to accuse you, or any other person of the said.

I am, &c.,
D. O'CONNOR, Junr.

I, Thomas Nye, of Sutton Forest, do solemnly and sincerely declare that Mr. Edward Carter never did, at any time, while camping on his run, hunting, prevent me from shooting or poisoning native dogs. If Mr. A. D. Badgery says that I told him that Mr. Carter would not allow me to destroy native dogs, he (Mr. A. D. Badgery) states what he knows is untrue. And I make this solemn declaration, conscientiously believing the same to be true, and in virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled, "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various Departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oaths and Affidavits."

THOMAS NYE.

Made and signed before me, at Moss Vale, this 23rd day of August, 1888,—
Wm. Bridges, J.P.

Berrima, 10th May, 1887.—Directors present:—W. J. Cordeaux, E. Carter, F. E. Kater, A. D. Badgery, D. Morrice.

Berrima, 19th August, 1887.—Directors present:—A. D. Badgery, W. J. Cordeaux, E. Carter, D. Morrice, H. E. Kater, W. Morrice.

Berrima, 13th September, 1887.—Directors present:—M. Butler, E. Carter (in the chair), D. Morrice.

Berrima, 24th January, 1888.—Directors present:—W. J. Cordeaux, M. Butler. Meeting adjourned. No quorum.

Berrima, 30th January, 1888.—Directors present:—The Chairman, E. Carter, J. A. Badgery. Adjourned meeting of the 24th January.

The new Board of Directors.—Berrima, 11th May, 1888.—Directors present:—W. J. Cordeaux, A. D. Badgery, D. Morrice, W. Morrice, M. Butler, H. E. Kater, C. L. Nicholson. The ninth motion.—Proposed by A. D. Badgery, and seconded by Mr. Nicholson, "That the office of the Board be removed to Moss Vale."

The new Board of Directors.—31st May, 1888. Directors present:—W. J. Cordeaux, W. Morrice, A. D. Badgery, J. A. Badgery, H. E. Kater, D. Morrice, C. L. Nicholson. Second motion, proposed by A. D. Badgery, and seconded by C. L. Nicholson, "That Mr. James Yeo be appointed secretary to the Board for the ensuing year."

No. 26.

The Chief Inspector of Stock to Mr. E. Carter.

Stock Branch, Department of Mines, Sydney, 17 September, 1888.

Sir,

Referring to your letter of the 10th instant, with regard to your name being omitted from the board of sheep directors, I have the honor to inform you that the law does not give any power to alter what has been done, but the Minister for Mines has expressed his strong disapproval of the conduct of Mr. Inspector Yeo, and has directed that he be censured.

Should no election of the Board take place next year your name will be submitted for appointment.

I have, &c.,
ALEXANDER BRUCE,
Chief Inspector of Stock.

No. 27.

The Chief Inspector of Stock to Mr. A. D. Badgery.

Stock Branch, Department of Mines, Sydney, 17 September, 1888.

Sir,

Referring to the correspondence which has taken place with regard to Mr. Carter's name being omitted from the list of sheep directors, I have the honor to inform you that the Minister for Mines has expressed his strong disapproval of Mr. Yeo's conduct, and has directed that he be censured.

Mr. Abigail has given instructions for Mr. Carter's name to be submitted for appointment next year, should there be no election of directors.

I have, &c.,
ALEXANDER BRUCE,
Chief Inspector of Stock.

No. 28.

The Chief Inspector of Stock to Mr. Inspector Yeo.

Stock Branch, Department of Mines, Sydney, 17 September, 1888.

Sir,

With reference to the correspondence which has taken place, with regard to Mr. Carter's name being omitted from the list submitted, for appointment as sheep director at Berrima, the Minister for Mines has written the following minute :—"It appears that the law does not give any power to undo what has been done in this case, but I desire to express my strong disapproval of the conduct of Mr. Stock Inspector Yeo, who appears to have allowed himself to be used by others to the injury of Mr. Carter, without sufficient reason, and such another case coming under my notice will result in serious consequences to him. Should an election of the Board not take place next year, Mr. Carter's name is to be submitted for appointment."

I have, &c.,
ALEXANDER BRUCE,
Chief Inspector of Stock.

No. 29.

The Chief Inspector of Stock to W. McCourt, Esq., M.P.

Stock Branch, Department of Mines, Sydney, 17 September, 1888.

Sir,

Referring to the correspondence which has taken place with regard to Mr. E. Carter's name being omitted from the list of sheep directors at Berrima, I am directed by the Minister for Mines to inform you that the law does not give any power to alter what has been done, but that he has expressed his strong disapproval of Mr. Yeo's conduct, and directed that should no election of directors take place next year, Mr. Carter's name is to be submitted for appointment.

I have, &c.,
ALEXANDER BRUCE,
Chief Inspector of Stock.

No. 30.

Mr. Inspector Yeo to The Chief Inspector of Stock.

Stock Office, Moss Vale, 18 September, 1888.

Sir,

I have the honor to acknowledge the receipt of your letter, dated 17th September instant, and beg to note the minute written by the Honorable the Minister for Mines, with regard to Mr. Carter's name being omitted from the list submitted for appointment as sheep director for the Berrima District. Should no election of the Board take place next year, Mr. Carter's name will be submitted for appointment, according to your instructions.

I have, &c.,
JAMES YEO,
Inspector of Stock.

No. 31.

Mr. E. Carter to The Secretary for Mines.

Golden Vale, Sutton Forest, 22 September, 1888.

Sir,

In reference to the letter I received from the Chief Inspector of Stock, and dated the 17th instant, I beg to say I am not seeking reappointment to the board of sheep directors. Does the Chief Inspector of Stock think for a moment that I would accept a seat on the Board while Mr. Yeo is secretary?

Mr. Yeo having made a false statement, and he knew he was doing so when he said my removal was recommended by Mr. Walter Morrice, I would ask how can such a person report, or his letters be believed. I have given gratuitous services to the Sheep and Stock Board for many years, and now removed

removed because the inspector of the district wished to get rid of me for his own benefit, and to carry out this, he falsely stated my removal was recommended by Mr. Walter Morrice, and the voting of Mr. Nicholson on the appointment of Mr. Yeo to the office of secretary clearly shows this to be the case.

Then we have Mr. A. D. Badgery stating that I used my position on the Board for my own benefit, and also that the hunter Thomas Nye said that I would not allow him to destroy native dogs. Mr. T. Nye's declaration is before the Minister for Mines, denying that he ever made such a statement to Mr. A. D. Badgery, also other letters disproving those charges. Is Mr. Badgery to be allowed to belie me in this way, and still be allowed to retain the position on the Board of Directors?

I am only seeking for justice, as false charges are made against me.

Mr. Badgery should be called upon to prove that I used my position on the Board for my own individual benefit.

Why is the Board of Directors not called upon to report how I have used my position as a director for my own benefit?

The Chief Inspector of Stock says the law does not give any power to alter what has been done. Am I to believe there is no law to punish crime. Is not making untruthful statements a crime? a crime that no master would allow to go unpunished, neither would he keep such a person any longer in his employment.

I have, &c.,
EDWARD CARTER.

If Mr. Yeo or Mr. Badgery has said anything to damage the reputation of Mr. Carter, he has his remedy at law. I have already expressed my strong dissent at the action of Mr. Inspector Yeo in this matter. Mr. Carter may be informed to this effect.—F.A., 29/9/88.

No. 32.

The Chief Inspector of Stock to Mr. E. Carter.

Sir, Stock Branch, Department of Mines, Sydney, 2 October, 1888.

I am directed by the Minister for Mines to acknowledge the receipt of your letter of the 22nd ultimo, and to state that if Mr. Yeo or Mr. Badgery have said anything to damage your reputation, you have your remedy at law. I am to point out that Mr. Abigail has already expressed his strong dissent at the action of Mr. Inspector Yeo in this matter.

I have, &c.,
A. C. THOMSON,
Pro Chief Inspector of Stock.

No. 33.

The Chief Inspector of Stock to Mr. Inspector Yeo.

Sir, Stock Branch, Department of Mines, Sydney, 8 February, 1889.

Referring to the resolution passed by your Board on the 30th ultimo, that Moss Vale should be appointed a polling place instead of Berrima, I have now the honor to inform you that a notice will appear in the *Gazette* on Tuesday next appointing Moss Vale a polling place, and Berrima an additional polling place for the sheep district of Berrima.

It is not considered desirable to cancel the polling place at Berrima at present.

If more nominations are received than are required, it will of course be necessary for the Chairman to appoint a deputy at Berrima.

I have, &c.,
ALEXANDER BRUCE,
Chief Inspector of Stock.

P.S.—You should prepare two lists of those.

No. 34.

Mr. Inspector Yeo to The Chief Inspector of Stock.

Sir, Stock Office, Moss Vale, 9 February, 1889.

I have the honor to acknowledge your letter dated the 8th inst., and beg to note that Moss Vale has been a polling place and Berrima an additional polling place for the sheep district of Berrima. I also beg to state that your instructions will receive my attention as requested.

I have, &c.,
J. YEO,
Inspector of Stock.

[*Enclosure.*]

EXTRACT from minutes of meeting of the Berrima Pastures and Stock Protection Board, held at Moss Vale on the 30th January, 1889.

PROPOSED by Mr. A. D. Badgery, seconded by Mr. D. Morrice,—"That this Board is of opinion that, as the stock office and the office of the Pastures and Stock Protection Board has been removed to Moss Vale, that it is desirable, should there be an election of directors for the ensuing year, the polling should take place at Moss Vale instead of Berrima, as notified in the *Government Gazette*." (Carried.)

J. YEO,
Secretary.

It is recommended that Moss Vale be notified as the polling place and Berrima as an additional polling place with a Deputy Returning Officer.—A.B., 5/2/89. The Under Secretary for Mines. Submitted.—H.W., 5/2/89. Approved.—J.M.C., 7/2/89.

No. 35.

No. 35.

Gazette Notice.

Department of Mines, Stock Branch, Sydney, 12 February, 1889.

DISEASES IN SHEEP ACTS, 1866, 1878, AND 1882; PASTURE AND STOCK PROTECTION ACTS.

NOTICE is hereby given, for public information, that Moss Vale has been appointed a Polling-place, and Berrima an additional Polling-place for the sheep district of Berrima, under the abovenamed Acts.

The notice in the *Government Gazette* of the 11th ultimo, so far as it relates to the Berrima sheep district, is hereby cancelled.

JOHN MOORE CHANTER.

No. 36.

Gazette Notice.

NOTICE is hereby given, for public information, that the undermentioned gentlemen have been duly elected Directors for the sheep district of Berrima, under the "Diseases in Sheep Acts Amendment Act of 1882" and the "Pastures and Stock Protection Acts," namely:—

Name.	Run or Holding.	Post Town.
	SHEEP DIRECTORS.	
Wm. Jno. Cordeaux, Esq.	Bendooley	Berrima.
Andrew D. Badgery, Esq.	Rosewood	Sutton Forest.
David Morrice, Esq.	Ealing Forest	Sutton Forest.
John A. Badgery, Esq.	Ivy Hall	Sutton Forest.
P. H. Throsby, Esq.	The Briars	Moss Vale.
	PASTURE DIRECTORS.	
Walter Morrice, Esq.	Browley	Moss Vale.
H. E. Kater, Esq.	Mt. Broughton	Moss Vale.
Charles L. Nicholson, Esq.	Newbury	Sutton Forest.

Dated at Berrima, this 22nd day of February, 1889.

WM. JNO. CORDEAUX,
Returning Officer.

No. 37.

Mr. Inspector Yeo to The Chief Inspector of Stock.

Sir,

Stock Office, Moss Vale, 23 February, 1889.

I have the honor to forward to you, under same cover, list of names of gentlemen duly nominated as sheep and large stock directors for the Berrima sheep district, and as these were the only nominations received, the Chairman has declared them duly elected.

I have, &c.,
JAMES YEO,
Inspector of Stock.

Sydney: Charles Potter, Government Printer.—1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

WATER BORES ON THE BOURKE-WANAARING ROAD.

(RETURN RESPECTING.)

Ordered by the Legislative Assembly to be printed, 9 *April*, 1889.

[*Laid upon the Table of the Honorable the Legislative Assembly of New South Wales, in reply to a question by Mr. Waddell, dated 4th April, a Return in connection with Bores on the Bourke-Wanaaring Road.*]

RETURN *re* bores on the Bourke-Wanaaring Road, showing:—
1st.—The time taken at each bore.
2nd.—The total cost of each bore approximately.
3rd.—The estimated supply from each bore.
4th.—What steps have been taken to conserve the water at the respective bores and the cost.
5th.—Also, the number, situation, capacity, and cost of the tanks on this road.

1st.—The time taken at each bore.

No. A.—Occupied	48 days.	No. B^3.—Occupied	95 days.
No. C.— „	42 „	No. D.— „	368 „
No. B.— „	3 „	No. F.— „	155 „
No. B^1.— „	72 „	No. E.— „	485 „
No. B^2.— „	18 „	No. F (2nd). „	300 „
No. B^2 (2nd). „	12 „		

2nd.—The total cost of each bore approximately.

	£	s.	d.
Cost of No. A (approximately)	232	15	5
Cost of No. C (approximately)	203	13	6
Cost of No. B (approximately)	14	10	11
Cost of No. B^1 (approximately)	349	3	2
Cost of No. B^2 (approximately)	87	5	9
Cost of No. B^2 2nd (approximately)	58	3	10
Cost of No. B^3 (approximately)	460	13	10
Cost of No. D (approximately)	1,784	11	5
Cost of No. F (approximately)	751	13	1
Cost of No. E (approximately)	2,351	19	0
Cost of No. F, 2nd (approximately)	1,454	16	4

These costs include the making of dams, service tanks, and fencing, &c., &c.

3rd.—The estimated supply from each bore.
No. A.—Salt water only tapped.
No. C.—Salt water only tapped.
No. B.—Fresh water rose 8 feet over surface, at the rate of 1,000 gallons per day.
No. B^1.—Fresh water stood at 34 feet below surface.
No. B^2.—Fresh water rose 21 feet over surface, at the rate of 1,450 gallons per day.
No. B^2 (2nd).—Fresh water rose 21 feet over surface, at the rate of 1,450 gallons per day.
No. B^3.—Fresh water rose 10 feet over surface, at the rate of 15,000 gallons per day.
No. D.—Fresh water rose 3 feet 3 inches over surface, at the rate of 4,320 gallons per day.
No. F.—Salt water only tapped.
No. E.—Fresh water rose 20 feet over surface, at the rate of 33,000 gallons per day.
No. F (2nd).—Fresh water flowed over surface at the rate of 22,464 gallons per day.

4th.—What steps have been taken to conserve the water at the respective bores, and the cost.

At Goonery artesian bore an iron buckle-plate supply tank, 25 in. × 25 in. × 5 in., holding about 20,000 gallons, and 300 feet of steel troughing have been erected by the Department of Public Works. The cost, which includes fencing, was £440 8s. 7d.

At Tinchelooka, or 75-mile bore, owing to the drought, the survey is incomplete, and beyond a small retaining dam across the creek no improvement has been made for storing water. The sum of £254 is upon the Estimates for enlarging the dam and for fencing. No caretaker is employed.

At Cuttaburra, or 101½-mile bore, owing to the drought, the survey is not completed, and no improvements have been made. The water, which was very good on completion of the bore, has since been represented brackish, and the Department is awaiting analysis of water before making definite recommendations for further expenditure. No caretaker is employed.

5th.—Also, the number, situation, capacity, and cost of the tanks on this road.

Tanks on Bourke-Wanaaring Road.

Name.	Situation.	Cost.	Capacity.
		£ s. d.	
1. Paka or Jay Plain	18 miles from Bourke	1,380 17 4	¾ of a million gallons.
2. Kulkyne	At 90-mile peg, 15 m. from 75-m. bore, 11½ m. from 101½-m. bore	850 0 0	2½ million gallons.

Sydney : Charles Potter, Government Printer.—1889

[3*d*.]

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

WATER BORES.

(RETURN SHOWING TENDERS FOR PUTTING DOWN, IN THE COLONY.)

Ordered by the Legislative Assembly to be printed, 27 August, 1889.

[*Laid upon the Table of the Honorable the Legislative Assembly of New South Wales, by the Secretary for Mines, a Return, in reply to a Question dated 25th June, 1889, by Mr. Hassall, M.P., showing Bores put down for water in the Colony.*]

Questions.

2. Bores put down for Water in Colony:—*Mr. Barbour*, for Mr. HASSALL, asked the SECRETARY FOR MINES,—
(1.) What were the names of the tenderers for the work of putting down twenty-five bores in search of water, as per *Gazette* notice No. 8,389, of date 20th November, 1888?
(2.) What were the prices respectively given in such tenders?
(3.) Were any of the tenders accepted, conditionally or otherwise?
(4.) If so, by whom, and at what price per foot, inclusive or exclusive of tubing?
(5.) Will he furnish a Return, giving locality and numbers of bores (if any) put down in search of water all over the Colony, carried out under supervision of Department of Mines, and the rate paid per foot, inclusive and exclusive of tubing?

Answers.

(1.) Austral American Boring Company; William S. Watkins; A. D. Carmichael; Artesian Well and Mineral Boring Company; Federal Artesian Well and Mineral Boring Company; George Proudfoot; Colonial Mineral and Water Boring Company (Limited); T. S. Parrott; Mooy Brothers.

(2.) 1. Austral American Boring Company tendered for seven bores, at the following rates:—25s. per foot for the first 1,000 feet, 27s. per foot for the next 500 feet, 30s. per foot for the next 500 feet, exclusive of tubing, etc.

2. W. S. Watkins tendered for eight bores, at the following rates:—23s. per foot for the first 500 feet, 25s. per foot for the next 500 feet, £12 10s. extra per each 100 feet from 1,000 feet to 1,500 feet, and for 10 bores at 25s. per foot up to 1,000 feet, exclusive of tubing.

3. A. D. Carmichael tendered at 22s. 6d. per foot for the first 1,000 feet, 28s. 6d. per foot for the next 500 feet, 32s. 6d. per foot for the next 500 feet, exclusive of tubing.

4. Artesian Well and Mineral Boring Company tendered for 25,000 feet boring, at the following rates:—34s. 6d. per foot for the first 1,000 feet, 46s. 6d. per foot for the next 500 feet, 60s. per foot for the next 500 feet, exclusive of tubing.

5. Federal Artesian Well and Mineral Boring Company tendered for 25,000 feet boring, at the following rates:—19s. 6d. per foot for the first 1,000 feet, 20s. per foot for the next 500 feet, 20s. per foot for the next 500 feet, exclusive of tubing.

6. George Proudfoot tendered for 25,000 feet boring, at the following rates:—32s. 6d. per foot for the first 1,000 feet, 39s. per foot for the next 500 feet, 52s. 6d. per foot for the next 500 feet, exclusive of tubing.

7. Colonial Mineral and Water Boring Company tendered for nine bores, at the following rates:—60s. per foot for the first 1,000 feet, 80s. per foot for the next 500 feet, 100s. per foot for the next 500 feet, exclusive of tubing.

8. T. S. Parrott tendered for five bores at the following rates:—68s. per foot for the first 1,000 feet, 74s. per foot for the next 500 feet, 82s. per foot for the next 500 feet. Also, for three bores at 39s. per foot for the first 1,000 feet, 45s. per foot for the next 500 feet, 53s. per foot for the next 500 feet. Also, for three bores at 36s. 6d. per foot for the first 1,000 feet, 42s. 6d. per foot for the next 500 feet, 50s. 6d. per foot for the next 500 feet. Also, for five bores at 60s. per foot for the first 1,000 feet, 66s. per foot for the next 500 feet, 74s. per foot for the next 500 feet. Also, for five bores at 63s. per foot for the first 1,000 feet, 69s. per foot for the next 500 feet, 77s. per foot for the next 500 feet. Also, for four bores at 66s. per foot for the first 1,000 feet, 72s. per foot for the next 500 feet, 80s. per foot for the next 500 feet. Also, for one bore at 58s. per foot for the first 1,000 feet, 64s. per foot for the next 500 feet, 72s. per foot for the next 500 feet. Also, for six bores, in existing Government Wells, at 74s. per foot for the first 1,000 feet, 82s. per foot for the next 500 feet, 92s. per foot for the next 500 feet. Exclusive of tubing.

9. Mooy Brothers tendered for 25,000 feet boring at 20s. per foot for the first 1,000 feet, 25s. per foot for the next 500 feet, 30s. per foot for the next 500 feet, exclusive of tubing.

(3.) Yes; Tender No. 5 was accepted conditionally, but the Tenderers have withdrawn their tender.

(4.) By the Hon. W. J. Lyne, Secretary for Lands, who was at that time administering the business in connection with Public Watering Places and Water Conservation, at the following rates, for boring:—19s. 6d. per foot for the first 1,000 feet, 20s. per foot for the next 500 feet, and 20s. per foot for the next 500 feet. For tubing:—10-in. diameter, 9s. 7d. per foot; 8-in. diameter, 6s. 6d. per foot; 6-in. diameter, 3s. 11d. per foot.

(5.) The cost of the four deepest bores sunk by this department is as under:—

Locality.	Bore.	Depth.	Cost per foot.	
			Exclusive of tubing.	Including tubing.
Wanaaring and Milparinka Road	75 mile	960 feet 0 in.	32s. $8\frac{7}{8}$d.	35s. $3\frac{1}{16}$d.
Do	$101\frac{1}{2}$ „	965 „ 10 „	24s. $4\frac{1}{3}$d.	26s. $9\frac{1}{3}$d.
Do	106 „	655 „ 1 „	21s. $7\frac{7}{9}$d.	24s. $1\frac{3}{4}$d.
Do	121 „	502 „ 10 „	17s. $8\frac{3}{4}$d.	20s. $1\frac{1}{2}$d.

Fuller details are given in the Annual Reports of the Department for years 1883, page 10; 1884, pages 12 and 221; 1885, pages 181 and 210; 1886, pages 194 and 212; 1887, pages 197 and 214; and in 1888 Report, which is in the hands of the Government Printer.

Sydney Charles Potter, Government Printer.—1889.

[3*d*.]

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

DUTIES ON IMPORTED AGRICULTURAL PRODUCTS.

(PETITION FROM FARMERS AND OTHERS IN THE WELLINGTON DISTRICT.)

Ordered by the Legislative Assembly to be printed, 26 *September*, 1889.

To the Honorable the Legislative Assembly of New South Wales, in Parliament assembled.

The Petition of the undersigned farmers, storekeepers, producers, labourers, and others, directly or indirectly interested in the productions and manufactures of the Colony,—

RESPECTFULLY SHOWETH:—

1. That your Petitioners comprise a very large proportion of the settled portion of the parish of Hargraves, in the Wellington District, and have invested a large amount of capital and labour in the development of the agricultural and producing industries in the district.

2. That for some years past the agricultural and producing industries have suffered most severely owing to continued droughts, and from other causes, coupled with the fact that agricultural and other products from foreign and colonial ports, having the advantage of water carriage, are permitted to compete duty free with similar colonial products sent by rail to Sydney.

3. That unless relief be afforded to the agriculturists of New South Wales by the imposition of duties on all imported farm produce, a considerable area of agricultural land will be thrown out of tillage, and very many agricultural labourers will be thrown out of employment.

4. Your Petitioners therefore pray that your Honorable House will take these premises into your earnest consideration, and, with the view of assisting your Petitioners and promoting the welfare of the Colony, will cause measures to be passed imposing duties upon all agricultural and other products imported into New South Wales, as well as upon such manufactured articles as can be reasonably made within the Colony.

And your Petitioners, as in duty bound, will ever pray.

[*Here follow* 31 *signatures.*]

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

DUTIES ON IMPORTED AGRICULTURAL PRODUCTS.

(PETITION FROM FARMERS AND OTHERS OF TARALGA, IN FAVOUR OF.)

Received by the Legislative Assembly, 9 *October*, 1889.

To the Honorable the Legislative Assembly of New South Wales, in Parliament assembled.

The Petition of the undersigned farmers, producers, storekeepers, labourers, and others, directly or indirectly interested in the productions and manufactures of the Colony,—

RESPECTFULLY SHOWETH :—

1. That your Petitioners comprise a very large portion of the settled portion of the Taralga district, and have invested a large amount of capital and labour in the development of the agricultural and producing industries in the district.

2. That for some years past the agricultural and producing industries have suffered most severely owing to continued droughts and from other causes, coupled with the fact that agricultural and other products from Foreign and Colonial ports, having the advantage of water carriage, are permitted to compete duty free with similar Colonial products sent by rail to Sydney.

3. That unless relief be afforded to the agriculturists of New South Wales by the imposition of duties upon all imported farm produce, a considerable area of agricultural land will be thrown out of tillage, and very many agricultural labourers will be thrown out of employment.

4. Your Petitioners therefore pray that your Honorable House will take these premises into your earnest consideration, and with the view of assisting your Petitioners and promoting the welfare of the colony, will cause measures to be passed imposing duties upon all agricultural and other products imported into New South Wales, as well as upon such manufactured articles as can be reasonably made within the Colony.

And your Petitioners, as in duty bound, will ever pray.

[*Here follow* 106 *signatures.*]

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

SEED-WHEAT TO DISTRESSED FARMERS.

(REGULATIONS FOR DISTRIBUTION OF.)

Ordered by the Legislative Assembly to be printed, 3 *April*, 1889.

[*LAID upon the Table of the Honorable the Legislative Assembly of New South Wales by the Secretary for Mines,—"Copies of Papers in connection with the Distribution of Seed-wheat to Farmers in Distress."*]

Sir, Department of Mines, Sydney, 29 March, 1889.

I have the honor, by direction of the Secretary for Mines, to forward you herewith a copy of a minute relating to the distribution of seed-wheat to farmers in need of it. From that minute you will gather what it is you are required to do, and in general terms how you are required to do it. It is at once assumed that in view of the distress which renders this action upon the part of the Government necessary you will have no difficulty in finding three gentlemen in any part of your district who, from disinterested motives, will be only too glad to aid you with such information and advice respecting applicants for seed-wheat as you may deem necessary to enable you to arrive at a decision or to make your recommendation upon each application within your district.

I also forward for your guidance a *pro formâ* declaration with forms attached to be kept in your office, and forms of declaration, &c., for use. You will, of course, see that the forms are filled up to suit each case dealt with. For instance, the "undertaking by the landlord not to distrain" will be required only in the case of tenant farmers.

If seed-wheat can be purchased in the district, and the applicant prefers it, you will, when forwarding your report (if it be favourable), recommend that it be purchased locally, and at what price.

If the seed-wheat has to be supplied from Sydney you will name the nearest railway station or port to the residence of the applicant, to which it may be sent, and whence the applicant will be required to remove it to his land.

If you require further information upon any point, or a further supply of forms, kindly apply at once by letter or telegram.

I have the honor to be,
Sir,
Your most obedient servant,

Under Secretary.

Esq., Police Magistrate.

Pro forma.

I,* A B of† C in the county of parish
of Land owner or Tenant Farmer, do solemnly and sincerely declare that‡
1. The land I occupy as [owner or lessee] is situate at in the county of parish
of being portion numbered
2. The area sown by me with wheat last season was acres.
3. The quantity of seed sown per acre was bushels.
4. The cost of preparing the land was £ [if the first crop, exclusive of the cost of clearing].
5. The quantity of wheat obtained from the above areas was bushels, which realized £
6. The number of acres proposed to be sown this season is , and the quantity of seed-wheat I require for the purpose is bushels.
7. That the number of acres ready for sowing is
8. That I cannot afford to purchase seed-wheat for the purpose of sowing the land referred to in paragraph 6, and that I require the Government of New South Wales to supply me with bushels of seed-wheat, or the money to purchase the same.

* Name.
† Residence and Occupation.
‡ Facts declared to be true.

And

And I make this solemn declaration, conscientiously believing the same to be true, and in virtue of the provisions of an Act made and passed in the ninth year of the reign of Her present Majesty, intituled, "An Act for the more effectual abolition of Oaths and Affirmations taken and made in various Departments of the Government of New South Wales, and to substitute Declarations in lieu thereof, and for the suppression of voluntary and extra-judicial Oaths and Affidavits."

(*Signed*)

Made and signed before me at
this day of 188 .

(*Signature of Magistrate*)

J.P.

Certificate.

* Name.
† Residence and Occupation.
‡ Name of Applicant.
§ Address of Applicant.

We * of † and * of † hereby certify that we personally know ‡ of § and we believe the statements made in the foregoing declaration to be true in every particular.

(*Signed*)
(*Signed*)

Date.

Undertaking to pay for Seed-wheat.

In consideration of the Government of New South Wales complying wholly or in part with my request for a supply of seed-wheat, I of , hereby undertake and promise to pay to the Colonial Treasurer in Sydney, or such officer as he may locally appoint, on or before 1st March, 1890, the sum advanced to enable me to purchase the seed-wheat, or the value of the seed-wheat supplied to me in terms of my said declaration.

(*Signed*)

(*Witness to Signature*)

Seed-wheat to Farmers in Distress.

Department of Mines, Sydney, 27 March, 1889.

The Police Magistrate in each district to act on behalf of the Government with authority to appoint three persons in any portion of his district to report to him in accordance with rules and regulations laid down. But in all cases final decision must be with the Magistrate, for any quantity under 30 bushels to any one applicant, and such Magistrate shall alone be responsible to the Government.

If any one applicant requires more than 30 bushels, report and recommendation must be made to the Minister.

Every application for seed-wheat must be supported by a statutory declaration, setting out:—

(1.) Description of land, and whether owner or lessee.
(2.) The area sown with wheat last season.
(3.) The quantity of seed sown per acre.
(4.) The cost of preparing the land.
(5.) The quantity obtained from the area sown and the amount realized.
(6.) The number of acres to be sown this season, and quantity of seed required.
(7.) The number of acres ready for sowing.
(8.) That he cannot afford to purchase seed.

Attached to such declaration a certificate by two well-known persons that they know the applicant personally, and believe the statements in the declaration to be true.

Upon receipt of this information the Police Magistrate will cause the necessary inquiries to be made and report result to the Minister for Mines.

The person receiving seed-wheat shall sign an undertaking to repay to the Colonial Treasurer the amount advanced out of the proceeds of the first crop. The landlord to sign a guarantee that the produce grown from the seed supplied will not be distrained upon for rent to the detriment of the Government.

If wheat can be obtained in the district the money will be advanced on voucher showing the actual purchase of seed-wheat, and the Magistrate to decide in each district fair market price.

In those districts where it is impossible to obtain a sufficient supply, the Government will, on receipt of the Magistrate's recommendation, send the seed from Sydney, and care will be taken to secure the very best article.

S.S.

Undertaking by Landlord not to Distrain.

I, , of , being the owner of portion numbered , in the parish of , county of , hereby declare and promise that, in consideration of the Government of New South Wales supplying my tenant , of , with seed-wheat, or the money to purchase seed-wheat, to crop any land leased by the said from me, I will not distrain, to the detriment of the Government of New South Wales, upon the crops grown from such seed-wheat.

(*Signed*)

(*Witness to signature*)

Order

Order for the supply (locally) of Seed-wheat.

I HEREBY request you to supply to of * bushels of seed-wheat of good quality, for which you will be allowed * per bushel, and charge the same to the Government of New South Wales. You will take the receipt (in the form below) of the said for the wheat when you deliver it to him, and attach such receipt to the voucher herewith, upon which you claim payment for such wheat.

* Words and figures.

(*Signed*)

Date

Police Magistrate.

To Mr.

Police Magistrate of

Receipt for Seed-wheat.

I HAVE this day of received from Mr. of , bushels of seed-wheat, in terms of the order of the Police Magistrate at , bearing date

(*Signed*)

(*Witness*)

Notice of transmission of Seed-wheat.

To Esq.,

Police Magistrate at

You are hereby informed that bushels of seed-wheat have this day been forwarded to for delivery to of

Date

Under Secretary for Mines.

To

Station-master at

You are hereby informed that bushels of seed-wheat have this day been forwarded to you for delivery to of whose receipt therefor you will be good enough to take in the form herewith, and forthwith transmit such receipt to this Department.

NOTE.—The form can be made to apply to any other person than a Station-master.

Date

Under Secretary for Mines.

Receipt for Seed-wheat.

I HAVE this day of received from the Railway Station-master at bushels of seed-wheat supplied to me by the Government of New South Wales.

NOTE.—This form can be made to apply to others than a Station-master.

(*Signed*)

(*Witness to signature*)

Seed-wheat to Distressed Farmers.

Sir, Department of Mines, Sydney, 2 April, 1889.

Under separate cover, I have the honor to forward a supply of application and other forms in connection with the distribution by the Government of seed-wheat to distressed farmers, and shall be glad to learn whether you think the supply sent is sufficient for your district.

With reference to my circular of the 29th ultimo on this subject, I am directed to point out that the gentlemen who you may select to assist you in this matter will not be paid for their services, and you may appoint three in each locality in which you think they will be required.

You should, without delay, forward to such gentlemen a supply of forms upon which application may be made. The declaration can be made before any Justice of the Peace.

I have the honor to be,

Sir,

Your obedient Servant,

Under Secretary.

Esq., Police Magistrate at

Sydney: Charles Potter, Government Printer.—1889.

[3*d*.]

1889.

NEW SOUTH WALES.

REPORT

OF THE

ROYAL COMMISSION,

APPOINTED TO INQUIRE INTO THE

INTRODUCTION OF CONTAGIOUS DISEASES AMONGST RABBITS.

Presented to Parliament by Command.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1889

[1s. 6d.] 113—a

REPORT.

To His Excellency the Right Honorable CHARLES ROBERT, BARON CARRINGTON, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, a Member of Her Majesty's Most Honorable Privy Council, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

MAY IT PLEASE YOUR EXCELLENCY,—

We, the undersigned Members of the Royal Commission appointed "To make a full and diligent inquiry as to whether or not the introduction of Contagious Diseases amongst Rabbits, by inoculation or otherwise, or the propagation of Diseases natural to Rabbits, for the purpose of destroying them, or promoting their destruction, will be accompanied or followed by danger to human health or life, or to animal life other than Rabbits, or to interfere injuriously with the profitable carrying on of the agricultural or pastoral pursuits followed by the tillers or occupants of public or private lands in our Australian Colonies; if either or any of the above means are dangerous, to what extent? if not so dangerous as to justify absolute prohibition, under what conditions and restrictions should such inoculation or propagation be permitted to be introduced and carried on, and generally to inquire into and report to us upon the several methods or means proposed or that may be proposed to the Governments of our several Colonies concerned for the purpose of checking or suppressing the Rabbit Pest in the said Colonies, and which may be referred to you by us for the purpose of inquiring into and reporting upon by you," beg to submit the following Progress Report :—

PRELIMINARY WORK.

The Commission assembled for the first time on the 16th day of April, 1888, at Sydney, representatives of the Colonies of New South Wales, Victoria, South Australia, Queensland, and Tasmania being present. Dr. MacLaurin, one of the representatives of the Colony of New South Wales, was unanimously elected President of the Commission. A general discussion ensued in which all the members took part. The Commission then met daily, with the exception of one short adjournment, until the preliminary business was completed. At the fourth meeting the representative of the Colony of New Zealand associated himself with the Commission. At the request of the Commission the representatives of M. Pasteur received permission to introduce into the Colony of New South Wales cultivations of the microbes of chicken-cholera, on condition that they would undertake to conduct no experiments therewith without the sanction of the Commission. In order to test fully and safely the various schemes proposed for the destruction of rabbits by disease, the Commission immediately took steps to obtain a suitable laboratory in which small experiments might be conducted; and also an island infested with rabbits, and an inland area similarly infested and surrounded by rabbit-proof fencing, in which experiments could be conducted on a larger scale and under normal conditions. The evidence of Henry Augustus Ellis, Esquire, M.B., was taken concerning the great mortality which had prevailed among rabbits on Tintinallogy Station, bordering on the Darling River in New South Wales, and concerning the experiments which had been conducted by Herbert Pickering Butcher, Esquire, M.R.C.S., Eng., and himself in connection with the so-called Tintinallogy disease. The Commission then proceeded to the residence of Dr. Ellis, and examined certain rabbits suffering from the so-called disease.

At

At the request of Drs. Butcher and Ellis it was resolved that all particulars submitted by them concerning this disease would be considered confidential.

In consequence of a letter from M. Pasteur's representatives, it was resolved that in accordance with the terms of the Proclamation of the Government of New South Wales, the Commission would treat as confidential the details of any method that might be examined, but not adopted for trial by the Government.

The representatives of M. Pasteur were subsequently examined concerning the condition of the cultures of the microbes of chicken-cholera, which they were about to introduce into New South Wales, and the method which they proposed to pursue in order to exterminate rabbits. They were requested to prepare a written statement in connection with the scheme of M. Pasteur, and it was arranged that facilities be granted to them for the conduct of preliminary experiments at the laboratory of the Board of Health under such precautions as Dr. MacLaurin, the President of the Commission and of the Board of Health, might prescribe. It was ordered that a supply of rabbits be obtained for purposes of experiment. A schedule of experiments was adopted by which to test the utility of chicken-cholera and of the so-called Tintinallogy disease for the destruction of rabbits. Dr. Katz, Ph.D., was appointed chief expert officer for the conduct of experiments under the direction of the Commission, and a Committee, hereinafter called the Experiment Committee, was appointed to watch the experiments on behalf of the Commission. The representatives of M. Pasteur, on April 24th, submitted their written statement, including a list of the experiments of demonstration which they proposed to make. They were then examined concerning the existing evidence in favour of M. Pasteur's scheme. On April 25th a second general discussion was held, at the close of which the order of experiments was defined, and it was resolved that the Experiment Committee should have full discretion in all matters concerning the conduct of experiments within the terms of the Commission, and in all matters regarding the progress of the inquiry, subject to the limitations already determined by the Commission. Statistics concerning the cost of rabbit destruction in New South Wales and Victoria were received, and steps were taken to obtain like information from other Colonies. On April 26th the last meeting of the first session of the Commission was held, when a memorandum was received from the Rabbit Branch of the Lands Department of New South Wales, and a minute from the Under Secretary for Lands, forwarding for consideration by the Commission all the mechanical devices, &c., which had been submitted to the Government of New South Wales in connection with rabbit destruction. It was resolved that these appliances should be placed in some suitable store where they might be inspected by members, and the further consideration of their merits was postponed. The Experiment Committee was requested to scrutinize the correspondence concerning these appliances which was then in the possession of the Hon. the Minister of Mines. It was resolved that two members of the Committee should form a quorum and the Committee was requested to elect a chairman, who should have general control over the experiments about to be adopted. The Hon. the Secretary for Lands invited the Commission to take into consideration the question of the proper width and mesh of rabbit-proof netting fencing. It was accordingly resolved that a Committee, consisting of the members representing the Colony of Victoria, with such other members as were able to attend, should take evidence in Victoria from witnesses who had practical experience in the use of rabbit-proof fencing; and this Committee was authorised to make public advertisement inviting such evidence. The Commission advised that licenses to prosecute their experiments with the so-called Tintinallogy disease might be granted to Doctors Butcher and Ellis with safety to the public health. It was then resolved that on or about May 23rd the Commission should meet in Adelaide, and investigate the action of the disease known as rabbit scab, and subsequently proceed to Silverton, and if necessary to Tintinallogy or elsewhere, to take evidence concerning the so-called Tintinallogy disease. Steps were taken to secure the presence at Silverton of Dr. Butcher, and of rabbit inspectors and others who could give evidence concerning the mortality among

rabbits

rabbits at Tintinallogy, and the Government of South Australia was invited to provide facilities for the work of the Commission in South Australia. The first session of the Commission then closed.

Appointment of Experiment Committee and equipment of Laboratory.

On the following day, April 27th, the first meeting of the Experiment Committee was held, and Dr. W. Camac Wilkinson was elected chairman. The minutes of the proceedings of this Committee are set forth in Section VI of the detailed report. At the outset great difficulty was experienced in obtaining a suitable site for a laboratory, in which the schedule of experiments adopted by the Commission could be executed. Many places were visited, which were in some respects capable of adaptation to the purpose, but some serious difficulty presented itself in every instance. It became evident that no suitable building could be obtained in any inhabited neighbourhood, without risking interruption of the experiments, on the ground of danger to the public health. Ultimately, on May 4th, after communication with the Hon. the Secretary for Lands, Rodd Island was set apart for the use of the Committee as an experimental station. The necessary plans were speedily prepared, and the works were executed with admirable expedition by the Department of the Colonial Architect of New South Wales. Mr. A. N. Pearson, one of the representatives of the Colony of Victoria, rendered most important service in connection with the designing of the station, and with the supervision of all the work. A description of the station is given in Section VIII of the detailed report, so that here it need only be said that the island is surrounded by a broad belt of water; that the general enclosure, in which animals are kept, measures nearly a quarter of an acre, with stalls and pens, an aviary, artificial burrows, &c., the whole enclosure, with every outlet from it, being protected by fly-proof gauze, the drainage being conducted into disinfecting tanks, and a furnace being provided in which dead carcasses and all infected matters may be burnt. A well-equipped laboratory is provided, with quarters for the experts and servants. All these works were completed in less than two months, and thus, at a comparatively small cost, provision was made for the experiments to be performed under the direction of the Commission; and when its work is ended, a permanent bacteriological station will remain, in which, from time to time, the communicable diseases of animals can be studied with facility.

Difficulties with M. Pasteur's Representatives.

Meanwhile, on May 8th, the Committee received a letter from Dr. Hinds, one of the representatives of M. Pasteur, stating that their preliminary experiments were completed. The list of experiments with microbes of chicken-cholera, which had been adopted by the Commission, was sent to Dr. Hinds, and he was asked to suggest any other experiments. At the meeting of the Committee on May 14th, a letter dated May 10th was read, signed by Dr. Hinds, Dr. Germont, and M. Loir, in which they stated that they were unable to accept any participation in these experiments. This letter and the correspondence which ensued will be found in the Report of the Experiment Committee forming Section VII of the detailed report. As considerable delay in the progress of experimental work was caused by this correspondence, it is necessary to show clearly the positions taken by the Commission and its Experiment Committee on the one hand, and by M. Pasteur's representatives on the other.

The Commission, at its meeting on April 24th, had adopted a definite schedule of experiments concerning chicken-cholera, which would test—(1) whether chicken-cholera would spread from infected rabbits to healthy rabbits in hutches, cages, and artificial burrows; (2) whether domestic animals could be injured by the microbes of chicken-cholera; (3) what birds are liable to chicken-cholera; (4) whether the virulence of chicken-cholera is altered when it is repeatedly communicated from rabbit to rabbit. Incidentally, it was to be tested whether birds at liberty in a large enclosure would contract chicken-cholera when rabbits were dying from that disease in the enclosure. At the same meeting, at which this schedule was adopted, the representatives

of M. Pasteur proposed to make experiments as follows:—(1) to show in the laboratory that they could kill rabbits by adding microbes to their food; (2) to show similarly that domestic animals are not affected by the addition of microbes to their food; (3) to make an experiment on an inland area of (say) 500 acres, enclosed with rabbit-proof fencing, but otherwise under natural conditions. In this experiment food containing microbes would from day to day be placed in different parts of the area. On behalf of the Commission it was explained that a laboratory would soon be ready, and that any experiments which M. Pasteur's representatives might desire would certainly be done; and it was proposed that they should associate themselves with Dr. Katz, the Chief Expert Officer of the Commission, in the conduct of their own experiments. The experiments proposed by the Commission were carefully explained, and M. Pasteur's representatives were informed that if they desired any modification of these experiments, their wishes would receive careful consideration, and also that Dr. Katz had been instructed that all work concerning chicken-cholera was to be performed in association with them. Dr. Hinds, on behalf of M. Pasteur's representatives, at once assented to these proposals. The Chairman asked if M. Pasteur's representatives would not take time to consult. They conversed shortly among themselves, and Dr. Hinds said, "We accept your proposals at once." In the course of their examination which followed, great stress was laid by members of the Commission on the necessity for proving, not merely that rabbits could be killed by administering infected food, but also that chicken-cholera would spread from infected rabbits to healthy rabbits independently of the administration of infected food.

When the Commission closed its first session, on April 26th, it was apparently understood by all parties that the laboratory experiments with chicken-cholera, including those prescribed by M. Pasteur and those directed by the Commission, would be performed as soon as the laboratory was completed. But the subsequent refusal of M. Pasteur's representatives to take any part in the tests prescribed by the Commission necessitated a tedious and disappointing correspondence. This refusal was considered by the Experiment Committee, as before stated, on May 14th.

Visit of Commission to Melbourne, Adelaide, Silverton, and Tintinallogy.

Four days later the Commission met informally, in Melbourne, to hear the statements of Dr. R. F. Hudson and Mr. A. L. Gilbert, concerning their observations during a recent visit to Tintinallogy. As it proved possible to obtain a full attendance of the Commission in Melbourne, the intended committee meeting was replaced by a one day's Session of Commission, which was held on May 21st. Ten witnesses, who held land in various parts of Victoria and New South Wales, were then examined, chiefly concerning the proper height and mesh of rabbit-proof fencing. Two of the rabbit inspectors of Victoria were also examined.

The Commission then passed into South Australia, and on May 23rd, at Adelaide, the evidence was taken of seven witnesses, including owners, lessees, and managers of large station properties, and Professor Watson, who introduced the *Sarcoptes cuniculi*, or rabbit scab. Rabbits and sheep, which had been made the subjects of experiments with this disease, were examined by the Commission. It was then resolved that with a view to economise the time of the Commission, an Executive Committee, consisting of Dr. Bancroft, Dr. Wilkinson, Mr. Dillon Bell, and Mr. Tabart, should proceed forthwith to Tintinallogy, make investigations there, and submit a written report to the Commission.

On May 26th and 28th the Commission met at Silverton and examined Dr. Butcher, of Tintinallogy, and Mr. C. W. Reid, who assisted him in his experiments; also the managers of several large station properties in the Western District of New South Wales; Mr. H. E. Vindin, the Superintending Inspector of the Rabbit Branch of the Lands Department of New South Wales, and several of his staff, and Mr. M. J. C. Tully, the Inspector of Stock for the Sheep District of Wilcannia.

During the return journey the Commission examined, at Adelaide, on May 29, Mr. C. J. Valentine, Chief Inspector of Stock, and Mr. S. G. Hübbe, the Chief Inspector under the Vermin Destruction Acts of South Australia; and also one of the members of the Pastoral Board of that Colony. At Melbourne, on June 6th, the evidence was taken of Mr. E. M. Curr, Chief Inspector of Stock for the Colony of Victoria.

Meantime the Executive Committee had visited Tintinallogy, had personally examined the infested country on that and neighbouring runs, and had taken evidence there, and at Albemarle Station and at Adelaide.

Further Negotiations with M. Pasteur's Representatives.

On June 11th the Experiment Committee again assembled at Sydney, and gave orders for the completion of the necessary works at Rodd Island. Negotiations with the representatives of M. Pasteur were actively resumed. Finally, these representatives definitely declined to conduct any experiments to test the communicability of chicken-cholera from rabbit to rabbit, or to supply microbes of the disease for experiments under the direction of the Committee, until all the experiments of demonstration prescribed by M. Pasteur had been completed, including an experiment on a large scale on some inland area, protected only by a rabbit-proof fence. At last a cablegram was despatched to M. Pasteur, asking him (1) to consent to an experiment testing the contagiousness of chicken-cholera from rabbit to rabbit; (2) to permit infected rabbits to be given to the Commission for special experiments. M. Pasteur consented to an experiment, but directed that five infected rabbits should be kept for six days with twenty healthy rabbits in an enclosure of one square metre (*i.e.*, less than $1\frac{1}{4}$ square yards), and that his representatives should wait before giving microbes of dead rabbits.

On June 16th M. Pasteur's representatives were asked whether, if this experiment was successful, they would permit further experiments under less favourable conditions, say in artificial burrows, or in a larger space, or with fewer rabbits. They said they could not. They were asked again whether they would make the experiment several times over, placing two infected rabbits with five healthy rabbits in each of six enclosures of two square metres each. They refused.

The Commission was therefore called together, and met on June 19th, 21st, and 22nd. A report was submitted by the Experiment Committee, and the correspondence and minutes of the Committee were read. It was thereupon unanimously resolved:—

"That the representatives of M. Pasteur be informed that the experiment which they propose to perform is not satisfactory to the Commission—that even if it be attended with positive results the Commission will not be able to infer that the disease will spread from rabbit to rabbit under natural conditions; that the Commission refuse to permit any broadcast dissemination of chicken-cholera microbes on any inland area until satisfactory proof shall have been given by experiments approved by the Commission—(1) that the disease is capable of spreading freely from rabbit to rabbit; (2) that the disease is innocuous to domestic animals; and that the Commission express its surprise that as M. Pasteur is seeking to obtain a reward of £25,000 for his scheme, his representatives should have absolutely declined to permit the fullest testing of its merits. The Commission will not object to the conduct of an experiment on the lines laid down by M. Pasteur, but it requests a final answer without delay—whether M. Pasteur's representatives will allow the experiments prescribed by the Commission to be conducted, and whether they will furnish rabbits suffering from chicken-cholera for the purpose of experiments under the direction of the Commission. If M. Pasteur's representatives do not assent to these conditions the Commission will report accordingly to the Government of New South Wales, and will recommend—(1) that correspondence with M. Pasteur and his representatives be suspended; (2) that the permission granted to M. Pasteur's representatives to introduce into New

New South Wales and keep in New South Wales the microbes of chicken-cholera, and to perform experiments on rabbits with a view to maintain a supply of the microbes in active state, be withdrawn; (3) that steps be taken to obtain the microbes of chicken-cholera from other sources, so that the utility of this disease for the extermination of rabbits may be tested in a satisfactory manner."

A copy of this ultimatum was sent to the representatives of M. Pasteur.

Other Schemes for the Destruction of Rabbits.

Papers by Mr. Coleman Phillips, concerning the bladder-worm in the Wairarapa district of New Zealand, were received from the Government of South Australia. This subject was afterwards made the subject of close study, as will be shown in another part of this Report.

As fears were expressed that Drs. Butcher and Ellis would lose control of the so-called Tintinallogy disease, the Commission advised that they be granted permission to employ the so-called disease among rabbits in such districts as they may desire, provided that the places in which the disease is being employed be notified to the Commission. Dr. Ellis was requested to forward to Dr. Katz, as soon as possible, fifty rabbits suffering from the so-called disease, or any less number which might be available.

A Committee appointed to examine the correspondence relating to the introduction of disease for the extermination of rabbits presented its report, which was adopted. In conformity with a recommendation in that report, it was resolved that letters be addressed to Mr. F. A. Bishop, of Sydney; M. Lanféron, of Nevers, France; M. A. Laplanche, of Fismes, France; Mr. E. D. Graham, of Cairns, North Queensland; and Mr. J. H. Richardson, of Colorado, asking for additional particulars in support of their statements. At an earlier stage the Committee had caused a message to be sent by cable to Messrs. West and Raphael, of London, through the Agent-General of New South Wales, requesting them to forward the microbe cultures which were mentioned in their letter. (*See* Appendix I.) Letters were also addressed to Professor Ribbert, of Bonn, and to Professor Loeffler, of Greifswald, asking for information concerning the diseases of rabbits recently discovered by them.

It was further resolved,—

(1.) That the Commission recommend the Governments of the respective Colonies to issue licenses to responsible persons who may desire to keep rabbits in confinement for the purpose of poison experiments.

(2.) That the Commission recommend that licenses to keep rabbits in confinement be granted by the Governments of each Colony to any competent persons who may desire to conduct pathological inquiries concerning the destruction of rabbits.

(3.) That these resolutions be transmitted to the Honorable the Secretary for Lands, and that he be requested to forward copies of them to the Governments of the other Colonies.

The Experiment Committee was authorised to subject to experiment, on the general experimental lines already laid down, any disease that might be submitted to them for examination, and that might seem worthy of investigation.

SUMMARY OF EVIDENCE.

The chief diseases which were submitted for consideration by the Commission were—

(1.) Chicken-cholera.

(2.) The so-called Tintinallogy disease.

(3.) Bladder-worm (*cœnurus*).

(4.) *Sarcoptes cuniculi* or Rabbit Scab.

The evidence concerning the usefulness of these diseases for the destruction of rabbits will now be stated as briefly as possible.

Evidence concerning Chicken Cholera.

The case in favour of the employment of the microbes of chicken-cholera as submitted by M. Pasteur and his representatives was very imperfect. It will be found stated in Appendix III, and in Section II of the detailed report, pp. 43–49. It may be summarized shortly as follows:—

M. Pasteur states that, though he had made no special study of rodents, he had often seen rabbits die in cages which had not been disinfected after fowls had succumbed to chicken-cholera in them; that he soon convinced himself that the least meal given to rabbits, after the food has been tainted with the microbes of chicken-cholera, will speedily entail the death of the rodents. At his instigation M. Loir put five rabbits in a box and fed them with infected food, and six hours later introduced three healthy rabbits into the same box. The five rabbits fed with infected food died, and also one of the three rabbits placed with them. On another occasion four rabbits were fed with infected food, and four healthy rabbits were placed with them. Within twenty-four hours the four infected rabbits were dead. Their carcasses were left in the box with the healthy rabbits. Of the healthy rabbits one was found dead on the third day, one on the fourth, one on the fifth, and one on the seventh. Tame rabbits were used in both these experiments. In all these instances it was verified, according to M. Pasteur, that death was due to the microbes of chicken-cholera. Swine, dogs, goats, sheep, rats, horses, and donkeys were fed with infected food, and not one of them became indisposed. The microbes can be grown easily in broth made of flesh, *e.g.*, the flesh of rabbits. They lose their virulence and perish at 51° Centigrade (124° Fah.); but when not exposed to the atmosphere they may be kept for years. In addition, M. Pasteur gave a short sketch of the experiment on the Pommery Estate. Here a large number of rabbits, penned up for purposes of sport in an enclosure measuring eight hectares*, were absolutely dependent for food on eight large trusses of hay† that were daily scattered about their burrows. On one day (Friday) this food was sprinkled with a fresh growth of the microbes of chicken-cholera. The food was consumed in a few minutes. On the day following the exposure of the infected food (Saturday), nineteen dead rabbits were seen outside the burrows. On Sunday no one visited the paddock. On Monday thirteen other dead rabbits were counted. The rest died in the burrows. Not a single live rabbit was seen after the day on which the fatal meal was given.

This was the sum of the evidence available prior to the arrival of M. Pasteur's representatives. These gentlemen stated before the Commission (1) that the virus was not weakened by transmission from one rabbit to another; (2) that there was no instance on record in France, within their knowledge, in which a natural epidemic of the disease among fowls had spread to rabbits; (3) that they had never heard of the epidemics among domestic fowls spreading to wild fowls; (4) that several diseases may kill rabbits, with very similar symptoms and *post-mortem* appearances; (5) that it was doubtful whether all the rabbits at Mme Pommery's Estate partook of the poisoned food, but that it was thought that the quantity exposed was not sufficient for all of them, and that therefore some must have communicated the disease to others.

The plan of spreading the disease, as proposed by the representatives of M. Pasteur, will be found on pages 45 and 46 of the detailed report.

M. Pasteur's Experiments of Demonstration.

The experimental station at Rodd Island being in readiness, and the negotiations with the representatives of M. Pasteur having advanced a stage, the experiments of demonstration prescribed by M. Pasteur were performed by M. Loir, Dr. Germont, and Dr. Hinds, between July 7th and August 4th, under the supervision of the Experiment Committee, and of Dr. Katz, the Chief Expert Officer of the Commission. It was shown that, as a rule, rabbits died speedily after eating food to which the broth-cultures of the microbes of chicken-cholera had

* A hectare is equivalent to 2 acres 1 rood 35 perches. † See Appendix No. III.

had been added, or after inoculation with such cultures; when several rabbits were fed, in some instances all died, in others some survived; but the survivors invariably succumbed after a second or third feeding. The proof that the rabbits died from chicken-cholera was not as complete as was desirable, but a strong presumptive case was established. The next experiment was that dealing with the contagiousness of the disease. Five rabbits were inoculated with about two drops each of a broth-culture of the microbe, and thereafter placed with twenty healthy rabbits in an enclosure of one square metre area (*i.e.*, 3 feet 3 inches square). They were kept under observation for a period of seven days. The five inoculated rabbits died within fourteen and a half hours; of the twenty not inoculated five died within seventy-one hours, and from that time until the conclusion of the experiment no more died. The dead rabbits were left in the little enclosure to the end, but none of them were examined so as to obtain certainty as to the cause of death. The rabbits which survived ate food from off the bodies of the dead. Of twenty-five healthy rabbits kept in a similar enclosure for the same time three died without any introduction of infection.

Subsequently, the experiment was repeated with slight variation in another enclosure of the same size. Five rabbits fed on infected food were placed among twenty healthy rabbits. One of the five, through inadvertence, was not specially marked. The rabbits were kept under observation for ten days. Within this period eleven died. Among them were three of the five to which infected food had been given. One of the five survived. The fate of the fifth could not be decided owing to the omission to mark it. So that either seven or eight of the twenty healthy rabbits died. Blood from three of the eight unmarked rabbits which died was examined microscopically, and organisms agreeing in form with those of chicken-cholera were found. In two cases out of the three so examined, blood from the dead rabbits was inoculated into living rabbits; death followed, and similar organisms were found in the blood. A control experiment on twenty-five healthy rabbits was not made.

It was next shown that a horse, a cow, a sheep, a goat, a pig, and a dog did not suffer after many meals containing large doses of broth-cultures of the microbes of chicken-cholera.

When these experiments prescribed by M. Pasteur ended on August 4th, Dr. Katz, with the permission of M. Loir, took some blood from the heart of one of the rabbits which had died after eating infected food, and from this blood successive cultures of microbes were grown, which were used in the experiments conducted on behalf of the Commission. The experiments of demonstration, carried out according to the instructions of M. Pasteur, were regarded by the Commission as unsatisfactory. But it was now possible to institute a new series of tests which would fully try the real issue.

Experiments with Chicken-cholera Microbes, conducted by Dr. Katz, on behalf of the Commission.

These experiments are fully described in Section XI of the detailed report, so that only a brief summary need be given in this place. They were carried out chiefly in order to ascertain whether chicken-cholera will spread freely from infected to healthy rabbits. In some of the experiments, infected rabbits were allowed to be with healthy rabbits in artificial burrows, or in hutches, either with wooden bottoms or wire-netting bottoms; in other experiments healthy rabbits were put in hutches or boxes in which other rabbits had died of chicken-cholera. The artificial burrows varied from 16 to 70 feet in total length of the branching passages, and were so made that they could be easily opened. According to the size of the burrows, infected and healthy rabbits were let go into them in the respective numbers of one to two, two to four, three to six. In all, eight infected rabbits were placed with sixteen healthy ones. Within twenty-five minutes all the rabbits had found their way inside the burrows. A transmission of the disease from the sick to the healthy did not occur in any instance. Of the eight infected rabbits six died outside the burrows, and two inside. In the hutch experiments, ten infected rabbits were placed with twenty uninfected in eight wooden hutches, in six of

of which one infected rabbit was placed with two uninfected, while in two hutches two infected rabbits were associated with four uninfected. Four of the twenty uninfected rabbits contracted chicken-cholera in the hutches, and died in consequence. In five separate experiments single rabbits were placed in hutches or boxes in which other rabbits had died of chicken-cholera; all of these hutches or boxes contained droppings of infected animals, but the rabbits placed in them did not in any instance contract the disease. In the course of these experiments several facts were established:—

(1.) Australian rabbits are killed in a very short time by the addition of small quantities of the microbes of chicken-cholera to their food, most of them dying in between twenty and twenty-four hours. Inoculation of cultures causes death in from seven and three-quarters to about fifteen hours. But on the other hand Dr. Katz stated in a summary report, dated November 21st, that "food material polluted with small portions of the contents of the rectum or cæcum of rabbits which succumbed to chicken-cholera (feeding) did not prove dangerous to healthy rabbits which ate it."

(2.) The stage of incubation, or latency, occupies most of the time before death, the symptoms lasting but a short time.

(3.) While chicken-cholera in fowls is a form of blood-poisoning attended with severe diarrhœa, the excreta being virulently infective, in rabbits the disease presents the characters of pure blood-poisoning, without diarrhœa or intestinal hæmorrhage. With few exceptions, the rectum or lowest portion of the bowel of rabbits dead from chicken-cholera contained ordinary fæcal balls. In one rabbit, however, the contents of the rectum were soft; a rabbit, inoculated with a small quantity of this soft matter, died from chicken-cholera; but another rabbit, fed with a larger quantity, survived. In another series of experiments, two rabbits were fed with cabbage leaves, to which had been added part of the contents of the cæcum (or the first portion of the large intestine) of a rabbit dead from chicken-cholera; in neither case was chicken-cholera developed.

(4.) So far as may be judged from one experiment, the urine of rabbits suffering from chicken-cholera is not infective.

(5.) Dr. Katz frequently observed that blood-stained liquid exuded from the nostrils of rabbits which had been lying dead for some days from chicken-cholera.

(6.) The virus of chicken-cholera preserves its infecting power for some time in putrid or putrefying matter; thus blood taken from a rabbit dead from this disease, kept for nineteen days and allowed to putrefy, caused a vigorous rabbit to die from chicken-cholera in less than seventeen hours; but after being kept for twenty-three days it failed to cause death when inoculated.

(7.) In the course of putrefaction, moisture is necessarily present. But a series of experiments were performed to ascertain whether the process of drying at ordinary temperatures would prove fatal to the microbes. Sterilized silk threads were steeped in the blood of rabbits dead from chicken-cholera or in broth-cultures of the microbes of this disease. They were then dried in a desiccator at temperatures between 64·4° and 71·15° Fahr. From time to time these threads were placed under the skins of rabbits. Those steeped in blood lost their power of inducing chicken-cholera within four days; those steeped in broth-cultures even earlier. Similar threads were placed on sandy soil in baskets protected from rain and sun, and were successively inoculated into rabbits; the thermometer ranged from 68·9° to 84·65° Fahr.; threads soaked in blood lost their virulence in twenty-four hours; those steeped in broth-cultures in less than eight hours. In a subsequent series of experiments the basket and its contents were exposed to direct sunlight on a warm December day with southerly breeze; the threads steeped in broth-cultures failed to cause chicken-cholera after two hours exposure; but those soaked in blood retained their virulence longer, one of them inducing the disease after eight hours exposure. The general conclusion is that the process of drying even at comparatively low temperatures soon destroys the virulence of the microbes.

(8.)

(8.) The virulence of chicken-cholera did not vary in any important degree when the disease was transmitted from one rabbit to another, from this to yet another, and so onwards for twenty removes from the first rabbit.

(.9) In rabbits newly dead from chicken-cholera, the blood in the heart contained comparatively few microbes, contrasting strongly in this respect with blood taken from rabbits which had been left untouched where they died for twelve, twenty-four, thirty-six or more hours. The relative abundance of the organisms some time after death impressed itself upon Dr. Katz in every instance in which a comparison was made.

(10.) No wild rabbit has manifested immunity from the disease, but one of the tame rabbits experimented upon survived after repeated feedings and inoculations with virulent matter.

(11.) The virus of chicken-cholera, administered through the digestive organs, proved fatal to two magpies, two butcher birds, and a blue jay (which are principally animal feeders), and to two wonga pigeons, one bronze wing pigeon, one rose breasted cockatoo, and two swamp quail (all of them vegetable feeders). One cockatoo, which resisted two feedings, died of chicken-cholera after inoculation. Of two laughing jackasses, one died after feeding with infected matter, but not from chicken-cholera; the other resisted two feedings, but died from the disease after inoculation. Two Maori hens (wekas) remained alive after one had been twice fed and once inoculated, and the other once fed and twice inoculated. Of six crows variously inoculated and fed with infected matter, three died of chicken-cholera and three survived. Five infected rabbits were allowed to die in an aviary containing nine fowls and twelve pigeons; their bodies remained there for periods varying from two to five weeks, and were much pecked, those which lay longest being torn into fragments, while the others were pecked open and largely devoured. One of the pigeons died of chicken-cholera within the five weeks occupied by the experiment and one fowl died of that disease shortly after the experiment terminated. Apparently the tendency of birds to contract chicken-cholera in this way is not great.

(12.) Hares are very liable to take chicken-cholera, after feeding or inoculation.

(13.) Ferrets are not liable to the disease, after either feeding or inoculation.

In the various experiments so conducted concerning chicken-cholera, it is all important to establish the fact that the microbes used were in reality those of chicken-cholera. It may, therefore, be stated (1) that the cultures were developed from the blood of a rabbit which died of chicken-cholera in the course of the experiments conducted by M. Pasteur's representatives; (2) that the course, symptoms and post-mortem appearances of the disease produced by the microbes agreed with those which characterize chicken-cholera; (3) that the blood of animals experimented upon contained microbes of characteristic form and reactions; (4) that cultures of these microbes presented typical appearances; and (5) that introduction of these cultures or of the blood of infected animals into healthy rabbits succeeded invariably in reproducing the disease.

Does Chicken-cholera Exist in Australasia?

Section XII of the detailed report contains the results of inquiries made into the question, whether chicken-cholera exists in the Australasian colonies or not. A large number of suspicious outbreaks were reported to the Commission from New South Wales, Victoria, and New Zealand. When possible, specimens of the affected fowls were obtained. Dr. Katz was able to make an examination in nine cases; in none of these could the disease be identified as fowl-cholera. So far, therefore, there is no proof that the disease exists in these colonies.

colonies, but more extended observations and experiments are necessary to determine this question. Dr. Gamaleïa, of Odessa, recently stated that he had obtained bacteria of chicken-cholera from the intestines of normal pigeons; that these bacteria had only slight virulent power, but that they acquired virulent power as against pigeons and fowls after being transmitted through susceptible animals, such as rabbits and other rodents. Several experiments made by Dr. Katz lent no confirmation to these statements.

Large Experiment with Chicken-cholera.

At this stage the Commission resolved that a larger experiment should be performed, so as to test fully, under conditions as natural as possible, whether chicken-cholera would spread from infected to healthy rabbits to such a degree as to warrant the dissemination of a disease which does spread naturally among domestic fowls, which has not been known to spread naturally among rabbits, and which has not been proved to exist among domestic fowls in these colonies.

The details of this large experiment are given in the progress report (No. III) furnished by Dr. Katz, which will be found in section XI of the detailed report, pp. 168–171. Shortly stated, the experiment was as follow:—On November 7th, a hundred rabbits were turned loose in an enclosure measuring 100 feet by 80 feet, and containing artificial burrows in all 185 feet long. These rabbits were in very poor condition. They had been caught in the dry country around Hay, N.S.W., and had suffered from partial starvation. Other rabbits from the same source were fed with cultures of the microbes of chicken-cholera and placed in the same enclosure, as follow:—Ten on November 7th, six on November 14th, and six on November 22nd. Of the twenty-two rabbits so introduced, twenty-one died before the 29th November, when the experiment terminated. Three of the twenty-one were removed after death; of these, one died from chicken-cholera, whilst two died from other causes. The remaining eighteen rabbits, according to Dr. Katz, died of chicken-cholera, and their bodies were left in the enclosure until the completion of the experiment. Of the hundred rabbits not specially fed, five died very quickly, and five other rabbits were put in their places. Between November 8th and 14th, fifty-two died; between November 15th and 22nd, seventeen died; and between November 23rd and 29th, ten died. Of the seventy-nine rabbits which so died, not one perished from chicken-cholera. All died, apparently, in consequence of the primary starvation.

The result of this experiment was unsatisfactory, owing to the great mortality which occurred among the rabbits from causes independent of chicken-cholera. The Commission therefore ordered that another experiment on a large scale should be conducted so soon as a sufficient number of strong healthy rabbits had been obtained, the experiment to be conducted strictly on the lines laid down by the Commission on October 15th.

This order was made on December 19th, 1888. Delay followed, owing to the difficulty experienced in obtaining a sufficient stock of healthy rabbits. Subsequently on January 2nd, a fire broke out at the experimental station on Rodd Island, the kitchen being destroyed, the shed and passages and main enclosure being damaged. The injury to the enclosure was not repaired till February 4th, and the kitchen was not rebuilt till an even later date. Meantime, between January 7th and 30th, one hundred and sixty-one live rabbits had been sent to the station in different consignments; but, in spite of attention to feeding and accommodation, large numbers died, only eighty-six surviving on February 4th. The second large experiment was commenced on February 12th, though the full number of rabbits required was not available till the 14th.

Second Large Experiment.

The main enclosure on the island was divided into two nearly equal divisions, separated from each other by a double fence of rabbit-netting, the space between the two fences being one yard wide. In each division there were artificial

artificial burrows and special feeding places (see diagram 9). One division, called the disease division, was stocked on February 12th with fifty rabbits, most of which looked healthy; among these five well-conditioned rabbits were at once introduced, which had been fed on cabbage leaves, sprinkled for each rabbit with two cubic centimetres of a virulent broth-culture of the microbes of chicken-cholera. At the end of a week other five rabbits, infected in the same manner, were turned loose in the enclosure, and at the end of the second week five others, similarly fed. At the end of the third week, on March 5th, the experiment terminated. All the infected rabbits died speedily. Their bodies were allowed to remain in the enclosure, with one exception. In that instance, the rabbit had been much bruised, but the microbes of chicken-cholera were found in its blood. A control rabbit which died of chicken-cholera was put in its place in the enclosure. It may be inferred with confidence that the fourteen other infected rabbits died of chicken-cholera, because other rabbits fed at the same times, in the same manner, were proved to have died of this disease, and because many of the fourteen died with characteristic symptoms, and their bodies after death showed distinctive characters. Dr. Katz has now acquired such experience that he is able to recognize the symptoms during life, and the appearance of the carcass soon after death with some degree of certainty. Though the fifteen infected rabbits so introduced died of chicken-cholera, and though their bodies were allowed to remain to the close of the experiment, only four of the fifty rabbits originally placed in the disease division died of chicken-cholera. But no less than thirty-two rabbits died during the experiment from causes independent of chicken-cholera.

At the outset of the experiment, on February 12th, thirty-eight rabbits, mostly full-grown, were placed in the other half of the enclosure, called the control division. The majority of these rabbits were not in such good condition as those in the disease division. Two died almost immediately; and, when a fresh supply of rabbits arrived two days later, the number in the control enclosure was raised to fifty. No infected rabbits were introduced. Of the fifty, twenty-nine died during the course of the experiment. Dr. Katz satisfied himself in every case that death was not due to chicken-cholera.

The great mortality among the rabbits in both enclosures from causes other than chicken-cholera is attributed by Dr. Katz, in part at least, to the oppressive state of the atmosphere and the excessive heat prevailing at intervals during the course of the experiment. Injuries sustained by the rabbits in capture and during transit from the interior must also be taken into consideration. In examining the bodies of rabbits which died during this experiment from causes other than chicken-cholera, Dr. Katz found in quite a number of cases an appearance of the entrails resembling that found by Dr. Wilkinson in rabbits examined at Albemarle *(see* Appendix VII). Such rabbits, therefore, were in anthing but a healthy state. In other rabbits the lungs were distinctly pneumonic. Before the experiment was commenced on February 12th ninety-one rabbits had died out of one hundred and ninety-one sent to the station. Even in the contagion experiments conducted by the representatives of M. Pasteur, which lasted only one week, and in which comparatively few rabbits were used, several deaths occurred from causes independent of chicken-cholera.

The details of this large experiment will be found in the Progress Report (No. V), submitted by Dr. Katz.

General conclusion concerning the Utility of Chicken-cholera for the Destruction of Rabbits.

The Commission therefore finds that while rabbits are easily killed by the addition of the microbes of chicken-cholera to their food, the disease does not spread freely from infected to healthy rabbits. The disease in rabbits differs widely in this respect from chicken-cholera as seen among fowls. In poultry-yards it is virulently infective. The inquiries conducted on behalf of the Commission furnish a satisfactory explanation of the difference. Fowls infected with chicken-cholera suffer not only from blood poisoning but also from severe diarrhœa, and the droppings have power to spread the disease. On the contrary, infected rabbits, with

with few exceptions, remain free from diarrhœa, and die of pure blood poisoning. The microbes are chiefly in their blood. If these microbes are to infect other rabbits in any number the bodies of rabbits dead from the disease must be broken up by decomposition, or by the agency of carrion birds, &c., and the microbes so set free must contaminate the food of other rabbits. If the dead bodies lie in the burrows it will be remembered that rabbits do not feed there. If they lie in the open and the microbes are set free, a temperature of 124° Fah., or the mere process of drying at a much lower temperature, will suffice to destroy their virulence. Moreover, the experiments of Dr. Katz indicated that while the microbes retain their virulence for a time when mixed with putrefying matter, there is a limit to their power of survival. Generally, therefore, it appears that the destruction of rabbits on a large scale by chicken-cholera can be obtained only by feeding the rabbits with the microbes of the disease; and, as other poisons, such as arsenic and phosphorus, to the use of which no objection can be taken, will kill rabbits to which they are administered, the Commission cannot recommend that permission be given to disseminate broadcast through Australasia a disease which has not been shown to exist in these Colonies, which in other countries prevails in disastrous epidemics among fowls, but which has never been known to prevail naturally among rabbits.

Experiment with Chicken-cholera under Natural Conditions.

It has already been made manifest that the Commission has arrived at an unfavourable conclusion concerning the practical utility of chicken-cholera for the destruction of rabbits. The Commission, in fact, does not feel justified in recommending any further expenditure by Government in testing the efficacy of this disease; but as M. Pasteur and his representatives desire that the microbes should be tried in an infested country under natural conditions, the question arises whether such experiments should be permitted. The investigations and experiments conducted by the Commission tend to prove that exaggerated notions have prevailed concerning both the probable spread of the disease from rabbit to rabbit and the contingent danger of spread from infected rabbits to birds. It has been made certain that chicken-cholera will not affect domestic animals other than birds. Even with the most susceptible animals the spread of the disease will be far less free in open country than among fowls in poultry yards. Certain wild birds, such as jackasses, crows, and cockatoos, are not so susceptible to infection as fowls or rabbits. Birds kept in an enclosure in which rabbits are dying or lying dead from chicken-cholera do not contract the disease in great numbers, though they peck freely at the carcasses. It may be urged that the experiments conducted at the station at Rodd Island, though very severe as regards the number of infected rabbits turned loose among healthy rabbits, and as regards the limited space within which diseased and healthy rabbits were penned together, do not furnish an absolute test of what would be the degree of contagion in an experiment conducted under natural conditions with natural food. The Commission, therefore, is not prepared to advise the Government of New South Wales to forbid the performance by M. Pasteur's representatives of an experiment in infested country under natural conditions, provided that such experiment be conducted on certain lines and subject to adequate precautions.

M. Pasteur's representatives, at their interview with the Commission on April 24th, 1888, spoke as follows: "We propose . . . . to make an experiment on a larger scale in a space in the country, enclosed with rabbit-proof fencing, but otherwise under natural conditions. For this purpose we would go to a station, prepare there the broth, and make a cultivation; and this we would spread on food (natural, if available; if not, an artifical food—the cheapest to be procured in the neighbourhood) where the rabbits are thickest. From day to day we would go to the different parts of the area to spread the disease. We ask for this purpose an area of not greater extent than about 500 acres, for if we are able to prove that rabbits can be poisoned under natural conditions, the only question for future consideration will be the distribution of the poison. We consider that if we practically clear the area given to us for experiments it will be a fair and good test of the efficacy and practicability of the method advocated by M. Pasteur." Such

Such an experiment would, in the opinion of the Commission, be utterly unsatisfactory, whatever might be its result.

It has already been demonstrated that the microbes of chicken-cholera are deadly to rabbits, but do not injure domestic animals, excluding birds.

If M. Pasteur is to claim a reward of £25,000 simply on killing the rabbits in an area of 500 acres, his task is an easy one. No one doubts that such an area could be cleared with ease by means of chicken-cholera. But in such a case most, if not all, of the rabbits would be poisoned with infected food. No experiment can possess any value unless it is performed under such conditions that the main agent in the destruction of the rabbits shall be the spread of infection from diseased to healthy rabbits. One or other or both of the following experiments would be satisfactory:—(1) On an area of 500 acres of infested land, enclosed by netting-fencing, to catch from time to time a number of rabbits, infect them with chicken-cholera and turn them loose in their old haunts; (2) On a generally infested area of not less than 25,000 acres similarly enclosed, to lay food infected with microbe cultures at the discretion of the experimenters. In the former case all consequent mortality would be due to contagion; and in the latter case any approach to extermination would imply either a very extensive operation of contagion, or the use of such large quantities of infected food as to reduce the entire experiment to a mere competition between the present methods of poisoning, on the one hand, and the use of infected food (considered as a direct poison), on the other. In either experiment the enclosures should contain sufficient natural food to eliminate any possibility of death from starvation. There is obvious necessity for supervision by competent inspectors, and for the observance of all possible precautions.

The Commission, however, considers that the possibility of any useful results from such experiments is so remote, that its definite judgment on M. Pasteur's scheme, as above recorded, need not longer be withheld.

M. Pasteur's Letter to the Chief-Inspector of Stock.

On the 1st October, 1888, M. Pasteur addressed a letter to Mr. Bruce, the Chief-Inspector of Stock in New South Wales. A free translation was published in the *Sydney Morning Herald*, and a copy of the published translation was forwarded to the Commission by the Under Secretary for Lands. Certain inaccuracies in the translation were calculated to cause misconception of M. Pasteur's position. The part of M. Pasteur's letter on which the Commission desires to comment, when literally translated, reads as follows*:—

"With regard to the rabbit plague, I have not confided further to any one the secret of the use on large scale of the means which I have proposed for the partial or total extermination of these rodents by the adoption of chicken cholera. It is to the Government of Sydney that I will make it known, if there be occasion. My representatives have only one thing to do, and I have sent them to do it, at the request of that Government: they have to show that I have proposed a means harmless to domestic animals, a means which kills the rabbits in twenty-four hours, after a single meal sprinkled with the microbes, and that this means is contagious, that is to say, that the rabbits which have taken the fatal meal communicate the disease and death in a notable manner to healthy rabbits, with which they are mixed, as they are in the burrows.

"How to arrange for the manufacture of the fatal ingredient, how to mix and use at a distance this ingredient with all its properties, that is my secret, about which the Commission is to see and know nothing for the present, and which I will only make known if the prize proposed on the 31st August, 1887, is awarded to me." The

* "Quant au fléau des lapins, je n'ai pas davantage confié à personne le secret de l'application en grand du moyen que j'ai proposé pour l'extermination partielle ou totale de ces rongeurs, par l'emploi du choléra des poules. C'est au Gouvernement de Sydney que je le ferai connaître, s'il y a lieu.

"Mes représentants n'ont qu'une chose à faire, et je les ai envoyés la faire, à la demande de ce Gouvernement: ils ont à démontrer que j'ai proposé un moyen inoffensif pour les animaux domestiques, moyen qui tue les lapins en vingt-quatre heures à la suite d'un seul repas souillé par le microbe, et que ce moyen est contagieux; c'est-à-dire, que les lapins qui ont pris le repas mortel, communiquent d'une manière notable la maladie et la mort à des lapins sains auxquels ils sont mêlés, comme ils le sont dans les terriers.

"Comment disposer une fabrique de l'ingrédient mortel, comment ingrédier et utiliser au loin cet ingrédient avec toutes ses propriétés, là est mon secret, sur lequel la Commission n'a rien à voir ni à savoir pour le moment, et que je ne ferai connaître que si le prix, proposé le 31 août 1887, m'est attribué."

The translation previously published implied that there was some essential secret concerning M. Pasteur's method kept back by him. From the original letter it is clear that M. Pasteur instructed his representatives to make, on a small scale, a demonstration of the efficacy and safety of his scheme; but that he retains the method of applying it on a large scale as his own secret, which he will make known only if the prize of £25,000 is awarded to him. M. Pasteur, however, seems not to understand the terms of the proclamation concerning the reward, which was offered to "any person or persons who *will make known and demonstrate* at his, or their own expense, any method or process, not previously known in the Colony, for the effectual extermination of rabbits."

According to M. Pasteur's letter, he sent his representatives to show, *inter alia*, that chicken-cholera was contagious; whereas, in point of fact, the Commission had the utmost difficulty in inducing his representatives to perform any experiment testing the contagiousness of the disease among rabbits. M. Pasteur's letter implies that he expects the reward to be adjudged him for his scheme on such proofs of its efficacy as he may determine, and before the mode of carrying it out on a large scale shall have been revealed.

Mortality among Rabbits in certain Districts.

From time to time great mortality has prevailed among rabbits in different parts of the Australasian Colonies. Thus, on the Ellenthorp property in Tasmania, about five years ago, a disease prevailed among rabbits, but not to such a degree as to exterminate them. On two other occasions disease appeared among the rabbits on two other estates in that Colony, 60 miles distant from each other, and destroyed all the rabbits. Two very recent instances of great mortality among rabbits have engaged the close attention of the Commission — namely, the so-called outbreak of disease at Tintinallogy Station, on the Darling River (N.S.W.), and the disappearance of rabbits from the Wairarapa district, in the North Island of New Zealand. Much information concerning the former will be found in this report, but no absolute conclusions can be arrived at in the absence of further experimental tests. The Commission is able to reprint an exhaustive report by Professor Thomas, of Auckland, on the causes of the mortality in the Wairarapa district.

The so-called Tintinallogy Disease.

Tintinallogy is a station on the eastern bank of the Darling River, between Menindie and Wilcannia. It includes about 380 square miles of country appraised at one sheep to 7 acres, but more heavily stocked. Rabbits were present in 1884 when the present manager went to reside there; but they increased vastly in numbers in the following years. In 1885, 5,000 rabbits were killed on this station; in 1886, 32,000; in 1887, 291,000. The maximum was in the month of September, 1887, when twenty-two men killed 56,510 rabbits. Dr. Butcher, who was resident at the station, and Dr. Ellis, of Sydney, had discussed the probability of an outbreak of disease among the swarms of rabbits, and agreed to investigate any disease which might present itself. The so-called Tintinallogy disease appeared about 1½ mile above the home station, and Dr. Butcher obtained a rabbit suffering from it at the beginning of September, 1887. He at once commenced a series of experiments to test the contagiousness of the disease, and reported the matter to the Minister of Mines. In consequence, orders came to destroy his rabbits. Proceeding to Sydney, he obtained permission to fence off with rabbit-proof netting a bend of the Darling, including about 500 acres, and to continue his experiments in this enclosure. He claims to have spread the disease through the bend, and subsequently through the Tintinallogy station by turning loose rabbits which he had infected artificially. His first attempt to infect the bend, early in November, 1887, failed, in his opinion, because he used rabbits from the back country which would not mingle with the bend rabbits. He then caught rabbits in the bend, infected them, and turned them loose in their old haunts. From that time, he says, the rabbits died in the bend. From the original centre of the outbreak, the

the disease spread in all directions, and with great fatality. Dr. Butcher turned loose infected rabbits in various parts of the run, especially in places where the natural spread seemed to be checked. In five or six months from the first appearance of the mortality among the rabbits, Tintinallogy, which was so heavily infested before, became a thinly infested country. Mr. Tully, Inspector of Stock for the sheep district of Wilcannia, was sent to Tintinallogy to report on the experiments made by Dr. Butcher concerning the transmission of the disease to stock. At his first visit early in January 1888, he saw little evidence of general mortality among the rabbits in the country which he passed through on his way to Tintinallogy. He saw no evidence of disease till his arrival within two or three miles of the home station; within this limit the rabbits were in very low condition, and he noticed carcasses lying about. In the bend he saw evidence of general mortality. At his second visit, early in February, he noticed a falling off in condition of the rabbits, which were apparently ill from some cause a much greater distance up the river, more than 9 miles from the station. There did not seem to be anything like the same number of live rabbits in the bend. Carcasses were lying about. There was still green feed along the river frontage. On his third visit, in the middle of March, there were very few rabbits left in the bend. Many dead rabbits were lying about, and the live rabbits were very weak. The river frontage was still in good condition, though dry and a little bare. The rabbits along the frontage outside the bend enclosure appeared more or less sickly, and their number had decreased amazingly. The rabbits were sickly for 20 miles up the river. He was quite satisfied that at the time of his first and second visits, the mortality could not have been due to starvation; and even at his third visit, the condition of the feed was not such that he could conclude that the mortality was due to starvation. Mr. Clarke, the Rabbit Inspector of the district, which includes Tintinallogy, Murtie, Billilla, Teraweynia and adjoining stations, stated that Tintinallogy was very heavily infested with rabbits; that the rabbits began to die in large numbers in November, 1887; that the feed was then good, and the condition of the stock good; that he had reported the decrease in the number of rabbits as 95 per cent. At Billilla and Teraweynia, on the Tintinallogy boundary, the mortality was also great. On Murtie, nearly 60 miles from Tintinallogy, the mortality was startling in its intensity and suddenness, as great an effect being produced in one month as in six months at Tintinallogy. The manager of Murtie is reported to have said that in one month (February) 80 per cent. of the rabbits died.

According to Dr. Butcher, the course of the disease is as follows:—The fur on the head stands up, the eyes are prominent, and there is a very slight discharge from the eyes and nose, lasting only three or four days. By the end of a week, emaciation is perceptible, the fur stands up all over the body, power is lost in the hind legs, so that when the rabbit tries to sit up, it falls over. Weakness and emaciation become more and more marked, and the animal dies in a kind of convulsion in about twenty or twenty-one days.

In the course of a large number of post-mortem examinations, Dr. Butcher found slight increase of serous fluid in the abdominal cavity; the liver blackish and friable, but not increased in size; the mesenteric glands swollen, and infiltrated with jelly-like fluid; and the glands above the kidneys (supra-renal glands) enlarged and altered in colour from dull white, the natural colour, to blood-red or black. He had found little nodules containing pulp in the liver in many cases, but these were absent in a large number of affected rabbits.

Dr. Ellis, in his evidence given at Sydney, said he had not noticed enlargement of the mesenteric glands, that the supra-renal bodies were red instead of white, and that points like tubercular abscesses were scattered over the surface and in the substance of the liver.

In examining diseased rabbits at Dr. Ellis' residence, the Commission noted chiefly the great emaciation, and the presence in the liver of lines and nodules of yellow pulpy matter, due to the growth in the bile ducts of a gregarinoid animal parasite, called *coccidium oviforme.*

During

During their visit to Tintinallogy, Dr. Bancroft and Dr. Wilkinson made examinations (post-mortem) of several rabbits suffering from the disease. The chief appearances were general emaciation of the body and darkening in colour of the liver. Dr. Wilkinson examined a number of rabbits suffering from the same disease at Albemarle station. He found emaciation, excess of fluid in the abdominal cavity, the liver dark-blue or black, and very friable, the supra-renal capsules, spleen and kidneys healthy; but there was invariable evidence of catarrhal inflammation of the stomach, with small patches of hæmorrhage in the lining membrane, and in many cases erosions, or even ulcerations of the surface. Signs of chronic inflammation were present in other parts of the alimentary canal.

Dr. Butcher found a scabby skin disease prevalent among the rabbits. and also, in constant association with this skin disease, cheesy deposits in the muscles. But in the great majority of the rabbits suffering from the so-called Tintinallogy disease the skin was healthy. The skin disease had been known in the district for some considerable time.

Dr. Butcher's experiments concerning the transmission of the disease from affected rabbits to healthy rabbits are described with great fulness in the detailed report (pp. 73 to 79). Blood-clot, blood serum, and the substance of the liver or the supra-renal glands mashed up in water, were used to communicate the disease. The infective matter was introduced into other rabbits by injection beneath the skin with a hypodermic syringe, by inoculation into a vein, and by the passage of a seton steeped in infective matter beneath the skin. In all these ways the disease was reproduced. A few animals operated on died from septic poisoning in a few days, others from various accidents, but in the great majority of cases the disease was produced and ran its regular course, death ensuing usually on or about the 16th or 17th day. Control rabbits, kept under similar conditions, but not inoculated, did not die. The rabbits experimented on were well cared for in every way. Infected rabbits having been kept in a certain crate, other rabbits placed in the empty crate contracted the disease. A rabbit suffering from the natural disease was put with sixteen rabbits in a yard measuring 10 ft. x 12 ft.; all the rabbits died between the 18th and 23rd day. One inoculated rabbit was placed in a crate with six other rabbits; after 24 hours the inoculated rabbit was removed; the six rabbits died on the 19th and 20th days. A diseased rabbit caught in the bend was placed in a yard 20 ft. x 24 ft. with thirty-eight other rabbits; the bend rabbit died in 9 days, all the other rabbits died between the 19th and 24th days, the one remaining rabbit was lost sight of. In each case, some kind of control experiment was conducted. Thus, in the last instance, ten rabbits were kept in a similar yard under similar conditions, and these all remained alive. Diseased rabbits caught in the bend were nursed and fed; but they died in the usual way. A number of sheep, a horse and a calf, variously inoculated, remained healthy. The carcasses of rabbits lying dead from the disease in various parts of the run were eaten by dogs, cats, pigs, fowls, crows and hawks. None of these animals died except cats. The cats died in great numbers. When the Executive Committee visited Tintinallogy, the bodies of eighteen cats were seen on the bank of the river. Two of these cats were examined by Dr. Bancroft and Dr. Wilkinson. They died fat; inflammation with exudation was present in part of the small intestine.

The witnesses examined before the Commission at Silverton, and by the Executive Committee, varied greatly in their views concerning the cause of the great mortality among the rabbits at Tintinallogy. Thus, Mr. Sadlier, the general manager of the Albemarle station, on which, also, the disease made its appearance, believed that it was produced by the food. He remarked that "A very similar disease to the present one—in fact, identical, so far as I can observe—has displayed itself on this station during the summer in previous years; but as these seasons were unusually good, and the feed abundant, it did not last long, and the rabbits seemed to get quite healthy again. . . . At the present time, since the rain a fortnight ago, the rabbits are becoming quite active, and getting quite strong." Mr. Vindin, Superintending Inspector of the Rabbit Department of New South Wales, was at Tintinallogy from the 5th to the 9th March. He came to the

conclusion

conclusion that the rabbits were dying of some disease, and that the disease was caused by the dryness and poverty of the feed. Over a large part of his district, since the beginning of March, there had been great mortality among the rabbits, which he ascribed to the condition of the feed. His general conclusion was, that the rabbits at Tintinallogy died through eating dry feed and astringent barks, and through want of nourishing food; and that, as the feed improved, the disease would disappear to a great extent, and the rabbits would recover. Mr. Brown, manager and part-owner of Kallara Station, visited Tintinallogy on behalf of the Wilcannia Pastoral Association. He held that the disease was Nature's remedy for the plethora of rabbits; but he thought that it was closely connected with the condition of the feed—"Where the rabbits are very thick, and feed very scarce, there this disease appears." The theory that the mortality was directly due to the rabbits eating bark, through want of other succulent food, was not supported by the general tenor of the evidence given before the Commission. It was stated, on the contrary, that the rabbits died in the open country as well as where scrub was abundant, and that the rabbits were not dying in some parts where the barking of the shrubs had been extreme.

Amidst these diversities of opinion, it was all-important that the experimental results should be placed beyond question. But the experiments conducted by Dr. Butcher cannot be regarded as conclusive. They were not watched by any competent independent observer. The rabbits used in them were obtained from the run, on which vast numbers of rabbits were dying naturally from the so-called disease. Hence, comparatively little weight can be attached to Dr. Butcher's results unless they be confirmed by a disinterested expert, working with rabbits obtained from a district where no unusual mortality prevails. Why, then, were such experiments not performed under the direction of the Commission? For the simple reason that Drs. Butcher and Ellis would not, or, at all events, did not, furnish diseased rabbits to the Commission, though repeatedly requested to supply them.

The history of the correspondence between the Commission and Drs. Butcher and Ellis may be shortly stated as follows:—The Commission, having heard the evidence of Dr. Ellis on April 17th, resolved on the 23rd that experiments be at once made on behalf of the Commission with the disease suggested by Drs. Butcher and Ellis. On April 24th, a schedule of experiments was adopted for the testing of the so-called Tintinallogy disease. On April 26th, the Commission advised that licenses to prosecute their experiments with the said disease might be granted to Drs. Butcher and Ellis, with safety to the public health. It was then clearly understood that Dr. Ellis would forward to the Commission rabbits suffering from the so-called disease. On May 28th, the evidence of Dr. Butcher was taken at Silverton. On June 21st, as fears were expressed that the control of the disease would be lost, owing to the limited number of rabbits obtainable at Tintinallogy, the Commission advised that Drs. Butcher and Ellis be granted permission to employ the so-called Tintinallogy disease among rabbits in such districts as they may desire, provided that the places in which the disease is being employed be notified to the Commission. It was further resolved, that Dr. Ellis be requested to forward to Dr. Katz as soon as possible fifty rabbits suffering from the so-called disease; or if fifty were not quickly available, to send, in the first instance, such number as might be forthcoming. On August 18th, the Chairman of the Experiment Committee reported that no further communication had been received from Drs. Butcher and Ellis; that no experiments with the Tintinallogy disease had been conducted, owing to rabbits not having been supplied; and that he was unable to say when rabbits affected with the disease would be forthcoming. It was resolved that a communication be addressed both to Dr. Butcher and to Dr. Ellis, asking whether their experiments were being conducted in new country in accordance with the permission granted on 21st June, and enquiring when they would be able to provide twenty rabbits, suffering from the said disease, for the purpose of experiments under the direction of the Commission; that Messrs. Butcher and Ellis be also reminded that the permission granted to them to establish this so-called disease in fresh country was merely intended to prevent the disease from being lost, and did

did not involve approval of their scheme by the Commission. On October 13th, a letter from Dr. Butcher was read, complaining that his account for expenses for his attendence at Silverton had not been attended to, and intimating that no infected rabbits would be forwarded until such account was paid, and a guarantee given to refund the cost of the carriage of such rabbits to Sydney. A scale of payment for the expenses of witnesses was adopted; provision was made for the payment of Dr. Butcher's expenses according to this scale; and it was resolved that Drs. Butcher and Ellis be again requested as speedily as possible to forward to Sydney fifty rabbits suffering from the so-called Tintinallogy disease, or such less number as may be forthcoming—the Commission undertaking to defray the expenses of conveying such rabbits to Sydney. Dr. Butcher intimated that, being at considerable expense through his experiments, he had closed his camp at the bend and could not provide rabbits, but that, on receipt of his expenses as already applied for, he would re-open the camp. The Commission regards the neglect by Drs. Butcher and Ellis to supply rabbits suffering from the disease as highly unsatisfactory. The failure to supply such rabbits was of long standing, before any difficulty arose concerning expenses.

The Commission finds it hard to believe that the abandonment of this scheme by its promoters was due to the alleged illiberality of the official scale of expenses. The Commission is not in a position to state whether, independently of conditions arising directly from starvation, any disease, and especially any communicable disease, existed at Tintinallogy. The balance of the very imperfect evidence at present available appears to incline to the negative.

Bladder Worm and Coccidial Diseases in New Zealand.

Section IV of the detailed report, pages 115 to 123, consists of the evidence of Mr. Coleman Phillips, concerning the disappearance of rabbits from the South Wairarapa district of the North Island of New Zealand. This district contains over a million acres, and the rabbits, which a few years ago were swarming in the country, have almost entirely disappeared. According to Mr. Phillips, the poisoning operations conducted in 1883–4 were not successful; and in the South Island, where millions of rabbits have been destroyed by poison, the plague is as severe as ever. He attributes the success in the Wairarapa district to the ravages of the bladder worm, which is an encysted parasite, forming a bladder-like tumour in the muscles of rabbits. The mature form of the parasite is a tape worm, found in the intestines of dogs. Segments of these tape worms, or the eggs thereof, pass from the intestines of the dogs, and, when eaten by rabbits with their food, produce the bladder worm; just as the little echinococcus tape worm in the dog leads to the hydatid cyst in man. In this bladder worm, heads of new worms develop in large numbers. Dogs in turn feed on the flesh of rabbits containing bladders, and the heads thus swallowed form new tape worms in the intestines of the dogs. This cycle is constantly being repeated. Mr. Coleman Phillips therefore recommends that all dogs at stations where rabbits abound be fed on rabbit flesh till they get thoroughly infested with these worms, so as to become thin and mangy in appearance; that they then receive doses of areca nut, so that the worms may be expelled. The segments with their myriads of contained eggs will then infect the grass. Rabbits will eat the grass and develop the bladder worm. Mr. Phillips thinks that other natural enemies of rabbits, such as ferrets, stoats, weasels, cats, and hawks may also harbour the parasite in its tape worm stage, and thus assist in propagating the bladder worm among rabbits. He maintains that these natural enemies of rabbits slay by the parasites contained in their excreta, and not by directly killing the rabbits; that the process is slow, but effectual.

Professor Thomas, of University College, Auckland, made an inquiry into the causation of the disappearance of rabbits from the Wairarapa district, and his Report to the Honorable the Minister of Lands of New Zealand will be found reprinted in full in Appendix VIII. The Commission regards this Report by Professor Thomas as most valuable. He concludes that the decrease

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of rabbits in the Wairarapa has, in the first place, been due to the measures adopted by man, especially the winter poisoning; but that certain parasitic diseases have appeared in the district, have been widely but unequally prevalent, and have assisted, to a small extent, in keeping down the rabbits. These parasitic diseases include—(1) the bladder worm (*cœnurus*) of which Professor Thomas gives an excellent history, and the smaller bladder worm (*Cysticercus pisiformis*); (2) the *coccidia** or gregarinoid animals which have already been referred to in connection with the so-called Tintinallogy disease; (3) the rabbit mange, itch, or scab; and (4) the rabbit louse. The little mite which causes the scab disease is distinct from the *Sarcoptes cuniculi* experimented upon by Professor Watson; it lives on the surface of the skin and is comparatively harmless. In the opinion of Professor Thomas, the effects of this mite, and of the larger louse, are seldom so serious as to lead to the death of a rabbit infested with them. Professor Thomas found comparatively few rabbits affected with the bladder worm, but rabbiters told him that 20 per cent. were not uncommonly infested. Infested rabbits usually contained only one bladder, some had two, and in one instance of the natural disease Professor Thomas found three bladders. The bladder-like cyst is usually situated among the muscles in one of the limbs, the trunk, or the head, but may be in the internal parts of the body. It may reach the size of an orange, and consists of a gelatinous membranous sac full of clear fluid, and supported externally by the thickened tissues of the part in which it lies. The inner surface is dotted with minute heads of future worms.

"Avoiding unnecessary details," (writes Professor Thomas) "we may say that the effect of a single bladder-worm will, as a rule, hardly be shown during the first three or four months, but that afterwards, as it continues to increase in size, it may be a source of weakness to the rabbit; but I have not been able to find any evidence that a rabbit affected with a single bladder-worm only might not live till death came to it from some other natural cause. But with the increase of the number of parasites the tax on the strength of the rabbit becomes greater than it can bear, and it succumbs to the burden, sometimes directly, sometimes indirectly, being brought into a low and weak condition, in which it readily falls a victim to other adverse influences, such as weather, scarcity of food, or enemies."

The presence of one, or at most two, bladder-cysts indicates that as a rule the rabbit swallows isolated eggs of the tape-worm; but Professor Thomas' experiments showed that when whole segments were swallowed, little bladder-cysts grew in multitudes in the tissues, and death followed from the disturbance so caused. It is difficult to estimate how often such an event occurs in the natural process of infection.

The researches of Professor Thomas prove that the bladder worm of rabbits and the tape worm of the dog from which it is derived are perfectly distinct from the *cœnurus* which sometimes proves fatal to sheep. Stock of all kinds that fed on the same ground with the diseased rabbits remained in good condition. A few experiments on ferrets and cats gave Professor Thomas no reason to think that any animals except dogs could be the bearers or hosts of the adult tape-worm.

The smaller bladder-worm of the rabbit (*Cysticercus pisiformis*) was found by Professor Thomas in only two of the rabbits from the Wairarapa district, but it was present almost constantly in rabbits caught in the Waikato, each rabbit usually containing one to ten specimens. This bladder-worm is round, about the size of a pea, and is found free in the abdominal cavity, or, at a later stage of development, adherent to the lining membrane, usually in that part forming the great omentum or that covering the rectum. "When present in small numbers it causes very little injury to the rabbit . . . . It must be seldom, however, that this parasite can, under conditions obtaining in nature, cause the death of a rabbit."

Professor

* Further information concerning *coccidia*, with magnified representations of the lesions caused by them, will be found in Appendices V and VI.

Professor Thomas found *coccidia* in the liver more prevalent than the bladder worm, and apparently productive of more serious mischief. *Coccidia* spread from infested rabbits to healthy rabbits through the droppings of the former falling on to the food which is eaten, or being carried into water which is drunk by the latter.

Immediately before summarizing his general results, Professor Thomas writes as follows on parasitic diseases generally:—

"One of the most prominent characteristics of parasitic diseases is their unequal development in different localities and in different seasons. So, with reference to the diseases due to the bladder-worm and liver coccidia, we may expect in some localities a more extensive development and useful results, whilst in other localities the diseases may not meet with the necessary conditions, and little or no good may result. Further, we have seen that moisture is favourable to the spread of these diseases; we may expect them therefore to be more prevalent in moist or ill-drained localities, and to be more useful in wet seasons and climates than in dry ones. Hence, over a great part of Australia the diseases would be less effective than in New Zealand.

"When animals of the same kind are densely crowded together on the same ground, as is the case with the rabbits in the infected districts, one of the conditions for the spread of a parasitic or infectious disease is best fulfilled. When the number of animals is reduced, the danger of infection will diminish."

Professor Thomas summarizes his conclusions as follows:—

"1. The reduction of rabbits in the Wairarapa has been chiefly due to measures adopted by man. The most valuable of these measures has been the winter poisoning, which has been followed up during the rest of the year by trapping, &c. Cats and ferrets, too, seem to have done good work.

"2. Certain parasitic diseases have appeared in the district, and have been widely, though unequally, prevalent.

"3. Of these parasitic diseases two only—those due to bladder-worm and liver coccidia—deserve special notice as being capable of destroying rabbits. There is reason to believe that these have assisted to a small extent in destroying rabbits in the district.

"4. The employment of the liver coccidia for the destruction of rabbits cannot be advocated, as in rare instances the parasites have been known to attack man. They are, however, present in the district, and it would probably be impossible to suppress them. Fortunately the danger to human beings is very small indeed, and the disease may prove of further use in killing rabbits.

"5. The bladder-worm may be usefully employed against the rabbit pest; but it must not be expected that it will destroy more than a small percentage of the rabbits in the district. Like all parasitic diseases, it is variable and apparently capricious in its distribution, and its propagation is limited by conditions which will vary with the locality and season. It would be more useful in a moist climate than in one which is hot and dry. It assuredly cannot be regarded as furnishing alone a sufficient means of dealing with the rabbit pest, nor will it render unnecessary the ordinary methods of the destruction of rabbits, but must be looked upon as simply a minor and auxiliary means of destruction."

A rabbit suffering from bladder worm was brought from New Zealand by Sir James Hector, for examination by the Commission. It was received at the station on June 16th. Since then the bladder has increased in size, but otherwise the rabbit seems in a normal state.

Mr. Hawkins, of North Wairarapa, in a letter recently addressed to the Commission, states that, during the past seven years, rabbits have not decreased in numbers in his district, though the bladder worm has been prevalent. He states that ferrets throve exceedingly well in South Wairarapa, but did not multiply freely in the North. He holds that the great diminution of the rabbit

pest

pest in South Wairarapa has been due, not to the bladder worm disease, but to the great multiplication of ferrets. His letter will be found in Appendix IX.

In the opinion of the Commission, the receipt of Professor Thomas' full report renders it unnecessary that the Commission should make any further inquiry concerning the bladder worm disease.

Sarcoptes Cuniculi or Rabbit Scab.

In March 1887, Professor Watson, of the University of Adelaide, succeeded in importing from Germany six rabbits suffering from the *Sarcoptes cuniculi* or rabbit scab. He placed them in an enclosure about 50 feet square with a number of Australian wild rabbits. The latter contracted the same disease and died, some in two, some in three, and some in six months. The *Sarcoptes cuniculi* is the itch-mite of the rabbit, an animal parasite which lives in the fur, the female burrowing and depositing eggs in the skin. The insect is only a quarter of the size of the scab insect in sheep. It causes great irritation of the skin, and enlargement of the lymphatic or absorbent glands. The affected animals die of wasting and exhaustion. In Germany, where the *sarcoptes* has been chiefly studied, septic poisoning usually occurs, with suppuration in the absorbent glands; but this complication was absent in the rabbits subjected to experiment in Adelaide. The fur of rabbits infested with the *sarcoptes* was repeatedly inserted in the wool of sheep without any ill effect. Attempts to communicate the rabbit scab to man, and to a dog and cat, failed. It thus appeared probable that the *sarcoptes* could be utilised for the wholesale destruction of rabbits. But the spread of the parasite from infested rabbits to healthy rabbits, and the fatal development of the disease, occurred in the wet season. As soon as the dry season set in, the infested rabbits, which had been suffering severely, proceeded to recover in the most thorough manner. Professor Watson satisfied himself that the *sarcoptes* would not be of any practical utility for the destruction of rabbits in the dry parts of Australia, but he is not satisfied whether it might not be of service in districts which possess a moist climate. While the results were still favourable, Professor Watson sold all his stock of infested rabbits. The subsequent history of these rabbits, as described by several witnesses, did not encourage any hope that material assistance in dealing with the rabbit plague would be obtained by use of the *Sarcoptes cuniculi*, at all events in the dry districts of Australia.

Other Schemes for the Destruction of Rabbits by Disease.

Suggestions for the destruction of rabbits by disease were submitted by one hundred and fifteen correspondents for consideration by the Commission. Of these, 26 were from New South Wales, 8 from Victoria, 3 from South Australia, 3 from Queensland, 6 from New Zealand, 2 from Tasmania, 1 from Fiji, 15 from England, 4 from Scotland, 1 from Ireland, 12 from France, 3 from Belgium, 2 from Germany, 2 from Switzerland, 2 from Spain, 1 from Italy, 1 from Austria, 1 from Roumania, 17 from the United States, 1 from Canada, 1 from India, 1 from Netherlands India, and 2 from South Africa. Most of these schemes were classified and reported upon by a special committee, and the results of the labours of that committee are recorded in Appendix 1, pages . The remaining schemes came under the notice of the Commission at a later date, and were classified by Mr. Pearson, whose report appears in the supplement to Appendix I, page . According to these reports, in which the Commission fully concurs, many of the schemes are vague, no specific disease being mentioned, or merely "a disease" said to be peculiar to rabbits. In many instances the use of diseases dangerous to man or to domestic animals is recommended, such as small-pox, syphilis, glanders, hydrophobia, tuberculosis, &c. Other correspondents suggest the employment of nasal catarrh, which is mentioned by Leuckart as peculiar and fatal to rabbits; of the liver-worm, which is said to have killed great numbers of rabbits in Colorado; of diseases which have decimated the wallabies and opossums in certain districts, &c. In all cases in which there seemed to be any possibility that the disease mentioned would prove useful, letters asking for further information were sent

sent to the correspondents concerned. Communications were also addressed to Professor Ribbert, of Bonn, and Professor Loeffler, of Greifswald, requesting fuller details concerning diseases recently described by them as peculiar to rabbits. In two instances replies were received stating that the original correspondents had disappeared. A letter from M. Laplanche, of Fismes, was unfortunately lost in transit, and a request for a copy of the same has been forwarded. One proposal was that as disease always breaks out when animals are crowded together, rabbits should be placed in an enclosure, fed well, and encouraged to breed freely, and that when any disease manifested itself among them attempts should be made to spread it widely.

The Commission has found no evidence to warrant the belief that any known disease can be so employed as to exterminate rabbits. Probably many diseases will be found useful auxiliaries in reducing the rabbit plague within manageable proportions. Further inquiry by competent observers into the epidemic and parasitic diseases of rabbits should be encouraged. But even when much fuller information concerning these diseases shall have been obtained, it will still be necessary, in the opinion of this Commission, to continue the methods of suppressing the pest which are now generally adopted, subject to such improvements in detail as may from time to time be discovered.

Schemes for the Destruction of Rabbits otherwise than by Disease.

About fourteen hundred schemes for the destruction of rabbits by means other than disease have been referred to this Commission. It was intended that the schemes should be classified and reported upon by a special committee prior to the publication of this Report, but the mass of the correspondence has rendered it impossible to complete this labour. The Commission trusts to be able, within the space of six weeks, to submit this classified list of schemes, with notes on the merits of the several proposals.

On certain points, however, the Commission has arrived at definite conclusions, the chief of which may be formulated as follow:—

(1.) That the responsibility for the destruction of rabbits, whether on freehold or on leasehold land, must rest on the landholder. That, with respect to unoccupied Crown lands, the State must accept similar responsibility.

(2.) That the rabbit pest has made the continuance of the system of annual leases of Crown lands impossible.

(3.) That no finality in rabbit destruction will be obtained without making the erection of rabbit-proof fences compulsory.

(4.) That there are very large areas of land so poor that the erection of rabbit-proof fences around individual holdings might cause financial failure. That the Department administering the Rabbit Destruction Acts should be empowered to permit the fencing of such poor holdings in groups. That in dealing with land of very poor carrying capacity the State should show special consideration to the lessees in respect of tenure.

(5.) That in all infested country, but especially in such poor districts, simultaneous operations for the destruction of rabbits should be made compulsory.

(6.) That netting fencing, 3 feet high, with a mesh of $1\frac{5}{8}$ inch, forms a practically efficient barrier against the incursions of rabbits.

(7.) That the system of compulsory trapping, with professional trappers and State bonuses, is radically bad.

(8.) That legislative measures should be taken compelling land owners or lessees in districts infested by rabbits to join, subject to the above provisions, in payment of the cost of rabbit-proof netting fences or in the addition of such netting to existing fences.

In the opinion of the Commission these propositions require little explanation or argument in their favour. Responsibility for the destruction of rabbits must be placed somewhere. To whom can it be assigned but to the holder of the land, whether owner or lessee? Boundary fences would then be paid for jointly by neighbours. The State must take all the responsibilities of ownership with reference to unoccupied Crown lands, both as to destruction of rabbits and joint payment of the cost of boundary fences. In infested country the leasehold occupiers of Crown lands must have certainty that, if they expend the money necessary for the destruction of rabbits and for the protection of their lands, they will enjoy for a fair term the fruit of their labours. The contest with rabbits is most difficult in the huge resumed areas of poor land now held under ordinary squatting tenure. To break up these large holdings at once into small blocks is to postpone the adoption of effective measures for the destruction of rabbits. The first work in saving these lands must be done by large holders; and the necessary expenditure will not be incurred unless there is a reasonable security of return. In every large leasehold of this character it should be arranged that at intervals a certain fraction of the whole should be open for resumption. There would then be no sound reason for complaint either by the State, the lessee, or the selector. The necessity for rabbit-proof fencing scarcely needs demonstration. However stringent supervision may be, action on adjoining holdings will fail in certain cases to be simultaneous, and the holder who acts promptly will find in the absence of fencing that the respite from the plague is but temporary, while the holder whose lands abut on unoccupied hilly or scrubby country will see all his operations futile. When once rabbit-proof fences are erected the reduction of the pest within manageable proportions is a question simply of time and money. Yet, with large areas of land of very poor carrying capacity, the erection of rabbit-proof fencing around individual holdings may not be financially practicable. These areas must be fenced off from the better land around, and the *simultaneous* pursuance of the best known methods of rabbit destruction must be made compulsory. The Commission, realizing that the cost of netting fencing was a great difficulty, made careful inquiry concerning the minimum height and the maximum mesh which would prove effective. Abundant evidence will be found in the proceedings in favour of the decision of the Commission: that netting fencing 3 feet high, with $1\frac{5}{8}$ inch mesh, is for all practical purposes an effective barrier. Such was the almost unvarying testimony of those witnesses who had practical experience with netting of this width and mesh. Rabbits die of starvation when their warrens are encircled with this netting; gardens protected by it are free from invasion, though the infested country around is dry and bare. Little weight can be attached to the opinions of witnesses who never used such netting, and still less to experiments in which rabbits are chased in small enclosures.

The system of compulsory trapping, with professional rabbitters and State bonuses, is radically bad. Rabbitting parties settle down in thickly-infested country and speedily kill multitudes of rabbits; as soon as the numbers are greatly thinned, a longer stay is unremunerative. No attempt at extermination is made. The party moves on to another place favourable for its operations, leaving the remaining rabbits to multiply ready for its next visit. Large sums are paid to such parties *per capita*. The station hands are demoralised. The State treasury is depleted of hundreds of thousands of pounds, and with what result? The rabbits are as numerous as ever; the operations of the trappers simply drive them more and more widely over the country; the landholders are disgusted at being forced to assist in a practice which they condemn; and no good whatever is done except to the rabbitters themselves, who fatten on a pernicious system. The Commission expresses its satisfaction that the Rabbit Department of New South Wales has resolutely turned its back upon this wasteful policy. It must not be inferred that the Commission objects to traps and trapping parties *per se*. Trapping is, without doubt, a useful method, but should be carried out by station hands, and with a view to the extermination of rabbits, not to profitable employment.*

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* This limited recommendation of trapping must be held to apply only to areas enclosed by wire-netting fences, and in which the propagation of natural enemies of rabbits is not being encouraged.

It remains only to record that the first-appointed President of the Commission, Dr. MacLaurin, was able to attend but few of the meetings; that Professor Allen, as acting-Chairman, undertook the general direction of the business of the Commission; that on August 18 it was notified to the Commission that Dr. MacLaurin's resignation of membership had been received, and that at the repeated request of the Commission, Professor Allen finally accepted the office of President.

Certified under our hands and seals this third day of April, 1889,—

(L.S.) H. B. ALLEN (PRESIDENT),

(L.S.) W. CAMAC WILKINSON,

(L.S.) EDWARD QUIN,

(L.S.) E. H. LASCELLES,
per H. MAHON,

(L.S.) A. D. BELL,

(L.S.) HENRY TRYON,

(L.S.) THOMAS A. TABART,
per H. MAHON.

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DISSENT I.

In opposition to the majority of my colleagues I submit that M. Pasteur's representatives should not be permitted to make experiments with chicken-cholera microbes in infested inland country protected only by netting-fencing.

The experiments made under the direction of the Commission show that chicken-cholera has very little tendency to spread from infected to healthy rabbits. This result agrees with the fact that in France and elsewhere the disease has not been known to prevail among rabbits when it was devastating the poultry farms. Hence, if used for the destruction of rabbits, the microbes of chicken-cholera must owe almost all their value to their action as direct poisons to the rabbits which eat them. A certain quantity of a broth culture of these microbes will kill a rabbit, but so also will a certain dose of phosphorus, arsenic, or strychnine. For the preparation of cultures and their maintenance in full virulence the services of experts are necessary. The cultures lose their virulence on drying at ordinary temperatures or on short exposure to the sun's rays on a warm summer day. Hence as a direct poison the microbes must be more expensive, less stable, less manageable, than the poisons now in use. So far as this paragraph is concerned I believe that my statements have the concurrence of my colleagues.

In my opinion, a small experiment with chicken-cholera on an inland area is of no service, except as a preliminary to the wide dissemination of the microbes through the huge areas of infested country. Such dissemination would entail risk to wild birds, though the experiments of the Commission show that the risk is not so great as might have been anticipated. The chief risk is the remote one to domestic fowls. It has not been shown that chicken-cholera exists among fowls in Australasia. The introduction of any new disease should be forbidden unless some decided benefit is clearly to be secured; the wide dissemination of a new disease is specially objectionable. In face of the final conclusion of the Commission that chicken-cholera should not be disseminated broadcast in the infested parts of Australia, I regard any limited experiment in open country as useless and not devoid of danger.

3 April, 1889. (L.S.) H. B. ALLEN.

DISSENT II.

I dissent from the decision arrived at by the majority of my colleagues to withdraw opposition to the introduction of fowl-cholera microbes into the country; and the following are the reasons for my dissent:—

The action of the Commission as set forth in this resolution is opposed to their past action, as especially set forth in the proceedings, and report of the Experiment Committee, page 130 at the top, and page 135, 23rd line from the top.

The chain or reasoning by which my colleagues endeavour to link the present with the former action of the Commission may be briefly presented as follows:—

Although the experiments at Rodd Island have throughout indicated that chicken-cholera has so low a degree of contagion amongst rabbits that there is next to no probability of its possessing any special merits as a means of destroying these pests, yet, it is just possible that there may be in the open country some condition, not existing at Rodd Island, which would operate in favour of the contagiousness of the disease. And, because this is possible, it would be more conclusive to have the experiment tried under entirely natural conditions.

The original objection to admitting the microbes into the interior for the purposes of experiment in the open was that there might perhaps be danger to the public health, to sheep, cattle, and other domesticated beasts, and that there certainly was danger to poultry, and perhaps to many useful wild birds. The experiments at Rodd Island are held to have shown that there is no danger to the public health, nor to domesticated beasts, and that the danger to birds is much less than was anticipated, that, in fact it is so small as to be practically out of the reckoning. Therefore these objections having been removed, there is no reason why an experiment in the interior should not be allowed.

To

To me, however, this chain of reasoning appears seriously imperfect. Leaving out of consideration the danger to man and to beast (which, for general reasons, may be regarded as *nil*) the true logical position is as follows:—

(1.) The contagion amongst rabbits at Rodd Island was less than desired.

(2.) The danger to birds at Rodd Island was less than anticipated.

(3.) In the open country the contagion amongst rabbits may be greater than at Rodd Island.

Here the argument of my colleagues ends. But to complete the chain the following is necessary:—

(4.) In the open country the danger to birds may be greater than at Rodd Island.

Whatever line of reasoning be applied to the question of contagion amongst rabbits must just as rigorously be applied to the question of danger to birds, and indeed also to the danger to stock and to the public health.

If, however, the position be abandoned, and it be admitted that no hope whatever can be entertained of there being greater contagion in the open country than there was at Rodd Island, then it must be asked, what is the object of introducing the disease at all? The only answer which can be given is that it is out of courtesy to M. Pasteur, and that his agents may be allowed to perform the experiments of demonstration, which they came to perform. But, as a matter of fact, the experiment which the majority of the Commissioners have decided not to oppose, is not the experiment which these gentlemen came to perform. It is in substance an experiment on a large scale, which the Commission have repeatedly requested to have performed, but which M. Pasteur's agents have strenuously declined to carry out. And even supposing that the experiment were precisely that which M. Pasteur has laid down, it seems to me entirely unjustifiable to permit, out of mere courtesy to anyone, and with no practical object, the introduction of a disease into the country, when that introduction, as shown by the Rodd Island experiments, will undoubtedly, in a degree, be dangerous to poultry, and to some other birds.

If it be said that the probabilities of any real danger to birds are so small as to be practically out of the reckoning, I cannot agree with the statement. By arguing from probabilities, it is easy to arrive at any conclusion which may be desired. The conclusion where possible should be based, not on probabilities, but on known facts. And what are the known facts? They are, on the one hand, that chicken-cholera has never been known to prevail, or even to occur, naturally amongst rabbits; and that in the experiments at Rodd Island, the contagion was so small as to be of no practical utility; and these experiments it is important to bear in mind were specially devised so as to be eminently favourable to contagion amongst rabbits; devised not only by the Commission but also by M. Pasteur himself. Then, on the other hand, the facts are, that chicken-cholera, according to M. Pasteur's own statements, has prevailed naturally as a virulent, devastating, and highly infectious disease in poultry-yards; and that, according to the experiments at Rodd Island, birds do contract the disease from rabbits. If then the disease be once admitted into the country, there is a risk that it may become established amongst birds, and by slow degrees be carried about both by birds and by insects, until at last it reaches the poultry-yards. To attempt to estimate the amount of this risk is useless, whether that attempt be in the direction of exaggerating it or of minimising it. But one thing is clear, while the disease is not in the country there is no risk; if it be introduced there will be risk.

If, finally, it be said that fowl-cholera already exists in the colonies, then it is to be answered that the investigations of the Commission all go to show that the disease now in the colonies is not the same as M. Pasteur's *choléra des poules;* and it is undesirable to supplement one disease by the importation of another.

For these reasons, and as being officially interested in poultry farming, I am obliged to dissent from this resolution.

In all the rest of the report I concur.

(L.S.) A. N. PEARSON,
per H. MAHON.

3 April, 1889.

NOTE

7.38

NOTE BY THE COMMISSION ON DISSENT II.

The Commission has decided to print Mr. Pearson's dissent with its Report, although such dissent did not reach the Commission till a few minutes before the hour appointed for the signing of the Report, Mr. Pearson having already left Sydney. It is absolutely necessary to state that the general opinions, arguments, and conclusions attributed by Mr. Pearson to the Commission have never been entertained for a moment, so far as the Commission is aware, by a single member; at any rate the Commission utterly repudiates them. The Commission has already given its final judgment against M. Pasteur's scheme. Its position with regard to an experiment with chicken-cholera in the open is simply that no sufficient reason exists why M. Pasteur's representatives should be forbidden to perform such an experiment if they so desire. In development of this position, the Commission has briefly indicated, for the guidance of the Government, if it should be decided to permit any such experiment, certain leading conditions, which would be indispensable if the experiment is to be worthy of the slightest attention. The Commission is of opinion that no advantage can be gained by such an experiment, other than that M. Pasteur's representatives would not be able to complain that any part of the demonstration which they were sent to perform had been prohibited by Government.

Inserted by order of the Commission,—

(L.S.) H. B. ALLEN,
President.

3 April, 1889.

NOTE ON NETTING-FENCING BY MR. BELL (NEW ZEALAND).

While (as a member of a mixed Australian and New Zealand Commission) I do not dissent from the emphatic declarations made in the Report with regard to the value of "rabbit-proof" fences as an aid to rabbit destruction, I desire to say that I do not consider this part of the Report to be entirely applicable to the circumstances of New Zealand. My Australian experiences in connection with the work of the Commission have satisfied me that wire-netting is an agent of considerable value in Australia, where there are no heavy snow-drifts, no mountain torrents, no great streams and rivers changing their course with every flood, no extensive landslips, glaciers, mountain crags thousands of feet high, and so on. In New Zealand, where all these special conditions prevail, its usefulness must, I think, be proportionately less. Moreover, there are few districts in New Zealand where the country is not considerably intersected by road lines, which introduce obvious difficulties into the wire-netting question. This is not the case in Australia, where vast tracts of infested country are traversed by at most two or three lines of road. I do not dwell upon the well-known danger of the wilful introduction of wild rabbits into netted areas by persons interested in the maintenance of the pest, because such a practice could scarcely be carried out on a scale of serious magnitude in the case of an already infested district subdivided into netted enclosures. Where, on the other hand, what is called a "barrier" is attempted, by the erection of a "rabbit-proof" fence between an infested district and a clean one, this practice of dropping rabbits over the fence from the infested side must certainly be taken into account in weighing the probabilities as to the efficacy of the plan.

(L.S.) A. D. BELL.

3 April, 1889.

Sydney: Charles Potter, Government Printer.—1889.

[1s. 6d.]

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RABBIT ACT.

(RETURN OF REVENUE AND EXPENDITURE UNDER, UP TO 18 JUNE, 1889.)

Ordered by the Legislative Assembly to be printed, 16 *July*, 1889.

[*Laid upon the Table of the House in accordance with promise made by the Honorable the Secretary for Lands, in answer to Question No.* 7, *on Votes and Proceedings No.* 23, *of* 9 *May*, 1889.]

Questions and Answers.

(1.) The amount of money expended annually in wages, rations, and bonuses under the Rabbit Act since it first came into operation, up to 18th June, 1889, is as follows :—

	£	s.	d.
Expenditure for the year 1883	887	7	11
,, ,, 1884	8,204	19	1
,, ,, 1885	11,340	6	1
,, ,, 1886	9,036	11	5
,, ,, 1887	8,393	14	9
,, ,, 1888	5,257	2	7
,, ,, 1889	.....		
Total	£43,147	1	10

(2 and 3.) The following statement shows the state of the Rabbit Account on 31st May, 1889 :—

RABBIT ACCOUNT
(Under Act 46 Vic., No. 14).

Dr. *Cr.*

	Assessment.	Consolidated Revenue Fund.	Total.		Total.
	£ s. d.	£ s. d.	£ s. d.		£ s. d.
1883 Payments	489 18 9	.....	489 18 9	1883 Receipts	35,899 14 9
1884 ,,	69,405 19 4	.....	69,405 19 4	1884 ,,	44,757 8 0
1885 ,,	46,925 18 4	88,127 16 5	135,053 14 9	1885 ,,	37,463 10 10
1886 ,,	40,200 2 5	127,434 8 7	167,634 11 0	1886 ,,	40,023 17 9
1887 ,,	47,518 2 0	161,228 0 6	208,746 2 6	1887 ,,	41,173 4 3
1888 ,,	41,308 4 4	109,463 12 7	150,771 16 11	1888 ,,	47,941 1 9
1889 ,, (to 30th May)	.....	62,763 0 9	62,763 0 9	1889 ,, (to 30th May)	3,505 13 11
					250,764 11 3
Totals £	245,848 5 2	549,016 18 10	794,865 4 0	Balance £	544,100 12 9
				Total £	794,865 4 0
31st May, 1889— To Balance due by Assessment Fund to Consolidated Revenue Fund			£544,100 12 9		

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RABBIT NUISANCE ACT.

(PETITION FROM TENTERFIELD PASTURES AND STOCK PROTECTION AND SHEEP BOARD, CONDEMNING.)

Received by the Legislative Assembly 17 *April*, 1889.

Petition from the Tenterfield Pastures and Stock Protection Board to the Honorable the Speaker and Members of the Legislative Assembly of New South Wales, in Parliament assembled,—

HUMBLY SHOWETH:—

That your Petitioners would respectfully urge the justice and necessity of the immediate repeal of the "Rabbit Nuisance Act of 1883" (46 Vic. No. 14), on the ground that it has, ever since it became law, worked most unsatisfactorily, and instead of bringing about the destruction of the vermin, it has conduced to their spread over a large tract of country formerly free from the pest.

Your Petitioners would also humbly pray your Honorable House that in any future legislation on this subject, the principle of local self-government and the compelling of each district to destroy the pests within its boundaries be, as far as possible, enforced.

And your Petitioners will ever pray.

On behalf of the Board,
AUGUSTUS R. FRASER,
Chairman,
Tenterfield P. & S. P. & Sheep Board.

30th March, 1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RABBIT NUISANCE ACT.

(PETITION FROM CHAIRMAN OF GLEN INNES PASTURES AND STOCK PROTECTION BOARD.)

Received by the Legislative Assembly, 2 *May*, 1889.

From the Glen Innes Pastures and Stock Protection Board to The Honorable the Speaker and Members of the Legislative Assembly of New South Wales, in Parliament assembled,—

HUMBLY SHOWETH:—

That your petitioners would respectfully urge the justice and necessity of the immediate repeal of the Rabbit Nuisance Act of 1883, on the ground that it has, ever since it became law, worked unsatisfactorily, and instead of bringing about the destruction of the vermin, it has conduced to their spread over a large tract of country formerly free from the pest.

Your Petitioners would also humbly pray your Honorable House, that in any future legislation on this subject the principle of local self-government and the compelling of each district to destroy the pests within its boundaries be as far as possible enforced.

And your Petitioners will ever pray, &c.

On behalf of the Board,
CECIL BLOXSOME,
Chairman, Glen Innes Pastures and Stock Protection Board.

Glen Innes, 25 April, 1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RABBIT NUISANCE ACT.

(PETITION FROM CHAIRMAN OF CARCOAR PASTURES AND STOCK PROTECTION BOARD.)

Received by the Legislative Assembly, 8 *May*, 1889.

Petition from the Carcoar Pastures and Stock Protection Board.

To the Honorable the Speaker and Members of the Legislative Assembly of New South Wales, in Parliament assembled.

HUMBLY SHOWETH:—

1. That your Petitioners would respectfully urge the justice and necessity of the immediate repeal of the Rabbit Nuisance Act of 1883 (40 Vic. No. 14), on the ground that it has, ever since it became law, worked most unsatisfactorily, and instead of bringing about the destruction of the vermin it has conduced to their spread over a large tract of country formerly free from the pest.

2. Your Petitioners would also humbly pray your Honorable House that, in any future legislation on this subject, the principle of local self-government and the compelling of each district to destroy the pests within its boundaries be as far as possible enforced.

And your Petitioners will ever pray, &c.

On behalf of the Board,

HENRY GLASSON,

Chairman, Carcoar Pastures and Stock Protection Board.

Carcoar, 4 May, 1889.

[3*d*.] 254—

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RABBIT NUISANCE ACT.

(PETITION FROM CHAIRMAN OF GRAFTON PASTURES AND STOCK PROTECTION AND SHEEP BOARD.)

Received by the Legislative Assembly, 14 *May*, 1889.

To the Honorable the Speaker and Members of the Legislative Assembly of New South Wales, in Parliament assembled.

The Petition of the Pastures and Stock Protection Board, Grafton,—

HUMBLY SHOWETH:—

That your Petitioners would respectfully urge the justice and necessity of the immediate repeal of the "Rabbit Nuisance Act of 1883" (46 Vic. No. 14), on the ground that it has ever since it became law worked most unsatisfactorily, and instead of bringing about the destruction of the vermin it has conduced to its spread over a large tract of country formerly free from the pest.

Your Petitioners would also humbly pray your Honorable House that in any future legislation on this subject the principle of local self-government, and the compelling of each district to destroy the pests within its boundaries, be as far as possible enforced.

And your Petitioners, as in duty bound, will ever pray, &c., &c.

WILLIAM SMALL,
Chairman, Grafton Pastures and Stock Protection and Sheep Boards.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RABBIT NUISANCE ACT.

(PETITION FROM A. T. LAURIE, CHAIRMAN OF THE PORT STEPHENS PASTURES AND STOCK PROTECTION BOARD.)

Received by the Legislative Assembly, 22 *May*, 1889.

Petition from the Port Stephens Pastures and Stock Protection Board.

To the Honorable the Speaker and Members of the Legislative Assembly of New South Wales, in Parliament assembled,—

YOUR PETITIONERS HUMBLY SHOWETH:—

That the repeal of the Rabbit Act of 1883, 46 Vic. No. 14, would be an act of justice to the general public and the contributors under the Act, forasmuch that such Act in its working is universally admitted to be a failure, as the vermin are spread by the working of the Act, while each hour of delay must aggravate the evil.

Your Petitioners are aware that a Bill has been drafted dealing with the question on the lines suggested by the delegates from the various Pastures and Stock Boards who met for its consideration.

Your Petitioners therefore humbly pray that an Act repealing the present Act may be speedily passed, and that another better fitted to meet the exigencies of the case may be called into existence without delay.

And your Petitioners, as in duty bound, will ever pray.

On behalf of the Board,
A. T. LAURIE,
Chairman.

[3*d*.] 300—

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RABBIT NUISANCE ACT.

(PETITION FROM J. M. ANTILL, CHAIRMAN OF THE PICTON PASTURES AND STOCK PROTECTION BOARD.)

Received by the Legislative Assembly, 28 *May*, 1889.

To the Honorable the Speaker and Members of the Legislative Assembly of New South Wales, in Parliament assembled.

The Petition of the Picton Pastures and Stock Protection Board,—

HUMBLY SHOWETH:—

That the Rabbit Nuisance Act of 1883 (46 Vic. No. 14) has worked most unsatisfactorily ever since it became law, and that instead of bringing about the destruction of the vermin, it has been the means of spreading the pest over a large extent of country, formerly free from rabbits. Your Petitioners therefore pray that the Act may be immediately repealed, and that, in any future Legislation on the subject the principle of local administration may be adopted as far as practicable.

And your Petitioners, will ever pray, &c.

For and on behalf of the Board,—

J. M. ANTILL,
Chairman.

Pastures and Stock Protection Board, Picton, May 22nd, 1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RABBIT NUISANCE ACT.

(PETITION FROM J. MOXLEY AND J. RIDDLE, DIRECTORS OF THE NARRABRI PASTURES AND STOCK PROTECTION AND SHEEP BOARD.)

Received by the Legislative Assembly, 5 *June*, 1889.

To the Honorable the Speaker and Members of the Legislative Assembly of New South Wales, in Parliament assembled.

The Petition of the Pastures and Stock Protection Board, Narrabri,—

HUMBLY SHOWETH:—

That your Petitioners would respectfully urge the justice and necessity of the immediate repeal of the "Rabbit Nuisance Act of 1883" (46 Vic., No. 14), on the ground that it has, ever since it became law, worked most unsatisfactorily, and, instead of bringing about the destruction of the vermin, it has conduced to its spread over a large tract of country formerly free from this pest; and further your Petitioners would humbly ask to be released from the assessment this year.

Your Petitioners would also humbly pray your Honorable House, that in any future legislation on this subject the principle of local self-government, and the compelling of each District to destroy the pests within its boundaries, be as far as possible enforced.

And your Petitioners, as in duty bound, will ever pray, &c., &c.

J. MOXLEY, } Directors, for Chairman, Narrabri Pastures
J. RIDDLE, } and Stock Protection and Sheep Board.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RABBIT NUISANCE ACT.

(PETITION FROM W. E. ABBOTT, CHAIRMAN OF THE MURRURUNDI PASTURES AND STOCK PROTECTION BOARD.)

Received by the Legislative Assembly, 25 *June*, 1889.

From the Murrurundi Pastures and Stock Protection Board.

To the Honorable the Speaker and Members of the Legislative Assembly of New South Wales, in Parliament assembled.

HUMBLY SHOWETH :—

That your Petitioners would respectfully urge the justice and necessity of the immediate repeal of the Rabbit Act of 1883, 46 Vic. No. 14, on the ground that it has ever since it became law worked most unsatisfactorily, and, instead of bringing about the destruction of the vermin, it has conduced to their spread over a large tract of country.

Your Petitioners would also humbly pray your Honorable House that in any future legislation on this subject the principle of local self-government, and the compelling each district to deal with its own pests, should be enforced.

And your Petitioners will ever pray.

W. E. ABBOTT,
Chairman, Murrurundi Pastures and Stock Protection Board.

757

1889.

NEW SOUTH WALES.

FIRST ANNUAL REPORT

OF THE

BOARD OF WATER SUPPLY AND SEWERAGE,

BEING FOR THE YEAR

1888.

Presented to Parliament by Command.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1889.

[1s. 3d.] 79—a

[1,400 copies—Approximate cost of printing (labour and material), £30 17s. 1d.]

1889.

NEW SOUTH WALES.

BOARD OF WATER SUPPLY AND SEWERAGE.

(FIRST ANNUAL REPORT FOR 1888.)

Presented to Parliament by Command.

To the Honorable the Secretary for Public Works.

Sir,

The Board of Water Supply and Sewerage have the honor to submit to you their first annual Report.

2. The notification appointing the following gentlemen members of the Board was published in the *Government Gazette*, 26th March, 1888 :—

Thomas Rowe, Esq., F.R.I.B.A., President;
William Christopher Bennett, Esq., M. Inst., C.E.;
Cecil West Darley, Esq., M. Inst., C.E.;
Benjamin Palmer, Esq., J.P.;
John Douglas Young, Esq.;
George William Lander, Esq., J.P.;
Joseph Graham, Esq., J.P.

3. The first meeting of the Board was held 9th April, 1888, when Mr. Palmer was elected Vice-President. The Board met twice a week to overcome the great amount of work consequent on starting a new Department, for though some of the chief executive officers were the same as had been at the Town Hall in charge of the waterworks, yet the system adopted by the Board was, to some extent, new to them.

4. The Board, during the first few weeks of their office, determined to make themselves perfectly acquainted with all the works entrusted, and which would become ultimately entrusted, to their charge, and with this object in view they visited the source of the present water supply at Pheasant's Nest, on the Nepean River, and the Cataract River, where the tunnel enters into it from the Pheasant's Nest, and then viewed the canal for several miles, and at all points of interest above and below Campbelltown. They also visited the Prospect reservoir, which covers an area, when full, of over 1,200 acres, and holds 10,000,000,000 gallons. The Board were much interested in the works at the off-take which regulate the quantity of water being discharged from the dam to Sydney, &c. They also inspected the open canal and pipe line to the Pipe Head.

5. The Board visited the sewerage works at Botany, and inspected the main sewer duct from Belmore Park to Bondi, walking through it from end to end.

6. The arrears of water rates to 30th June, which the Board had to collect, and which were handed over to them by the City Corporation, extended over two and more years, and amounted to £52,650 6s. 4d. Of this sum, £46,638 9s. 1d. was collected or accounted for by 31st December. This collection was not made without very great difficulty on the part of the Board; in fact, 2,059 summonses were issued, of which only seven were given against the Board. Notwithstanding the Board having had to call in the aid of the Police Courts to such a large extent, the fact has to be recorded that at the end of the year a sum of £41,739 13s. 3d. was still outstanding of uncollected rates for the half-year ending 31st December.

7. A great deal of trouble was experienced with builders who in many instances neglected to pay the required fees before using the water necessary for building purposes. Six licensed plumbers had their licenses suspended for various breaches of the by-laws.

8. The mode and scale of rating for water adopted by the City Council was at 5s. per room, no difference being made as to the size of the room, and consequently of the building. The amount raised by this charge was barely sufficient to pay the working expenses and material for maintenance, and a certain quantity of material for new works per year. The Governmeut having remitted the Corporation certain debts, and taken over from that body £85,000 of debentures, which they raised to meet extraordinary expenses, the City Corporation lowered the rate to 3s. 6d. When the Board took control they found themselves with a debt on the Nepean scheme, with accumulated interest to date, of £2,499,970, and £85,000 worth of debentures; to meet the interest on these sums and provide a sum for working expenses, including material for maintenance, and a sinking fund to replace the pipes (as they wore out) that were already in the ground, they found it necessary to raise over £150,000 per annum. In accordance with the Act, they altered the mode of rating per room to so much per £ of the assessed annual value, which is the mode adopted by all other water companies, with the exception of those who sell the water exclusively by meter. This mode, selling exclusively by meter, the Board rejected, as it would entail every householder affixing a meter, which with its connections, costs from £6 to £10, and this charge on the smaller preperties, which are a large majority in the number of tenements, would be out of all proportion to the amount of water they consumed, besides making necessary an army of meter-readers and workshops for testing and repairing meters. Water companies in England and Scotland charge as much as 1s. and 2s. in the £ without a sliding scale. The water sold by measure was fixed by the Board at 1s. 6d. per 1,000 gallons.

The scale of rates adopted by the Board—a maximum of 6d. in the £, and then a sliding scale to 2d.—did not prove as remunerative as was expected, but they determined to give it a fair trial for twelve months. This scale of rates is very much cheaper than Melbourne, which is 8d. in the £, with a sliding scale to 3d., and Adelaide, which is 1s. in the £, the same as Parramatta, without a sliding scale.

9. At first complaints were made by the public at this change in the mode of rating, as it bore heavily in comparison on the larger and more valuable properties, but at the same time it cheapened it on those under £80 annual value; the public had been accustomed to a rating which was manifestly unfair, and no fairer scheme than the mode adopted has been found by large experience in other countries to be practicable; it bears heavily in individual cases, but the community at large is treated on an equitable basis, and is therefore benefited by it.

10. The expenses of the Department, including wages and material for maintenance, for the nine months were £19,205 14s., equivalent to £25,607 12s. per annum, compares very favourably with the Glasgow waterworks; for though the Department supervised and laid 53½ miles of new mains in nine months, the Glasgow waterworks expended in 1886 (latest returns to hand) £31,805 13s. 7d., and only laid 9½ miles in twelve months.

11. When the sewerage works are ultimately transferred to the Board the cost of the Department, which now is entirely borne by the water fund, will to some great extent be divided with the sewerage fund.

12. The Board considered it was their duty to work the Department on as near a commercial basis as possible, and the following statement will show in a few entries their transactions for the year:—It is proposed to provide sinking funds to extinguish the £85,000 of debentures, also for any sums that may be raised by loans for new works, so that after a few years the works will be self-supporting; the Board have not yet contemplated making any sinking fund for the money expended on the Nepean scheme, as the works have not yet been handed over to them.

BOARD OF WATER SUPPLY AND SEWERAGE.

Cash Statement, December 31st, 1888.

RECEIPTS.	£	s.	d.	EXPENDITURE.	£	s.	d.
To transfer from City Corporation..	15,000	0	0	By Nepean scheme—4 per cent. interest on £2,499,970 for seven months 6 days	59,976	7	3
„ Rates, &c., collected	75,089	9	11	„ Interest on £85,000 debentures	4,300	0	0
				„ Sinking fund, to repay £315,300 in thirty years at 4 per cent. (original cost of pipes laid to 12 May, 1888)	5,625	0	0
				„ Refunds	957	14	6
				Received from Colonial Treasurer on Vote 1888, for general expenses	16,160	0	0
				Colonial Treasurer, balance at credit to meet outstanding liabilities...	3,130	8	2
	£90,089	9	11		£90,089	9	11

	£	s.	d.
Rates outstanding on 31 December, 1888	21,391	9	4
Meter accounts	20,348	3	11
	£41,739	13	3

13. From which it will be seen that the whole cost of the Nepean water supply to date, with interest added, is debited to the account; also, that a sinking fund for replacing the pipes, &c., which were laid underground before the Board took over the control, has been provided, and that after providing for this, paying interest on the Water Supply scheme, interest on debentures and loans, and working expenses, the Board have a credit balance of £3,130 8s. 2d. to carry forward to next year, with assets of uncollected rates amounting to £41,739 13s. 3d. This happy state of things, it must be borne in mind, is brought about by the receipt of rates extending over a period of three or four years, and cannot be looked upon as revenue belonging to the year; the excess which there must be in 1889 of expenditure and liabilities over revenue—as Sinking Funds will have to be provided as already mentioned—will to a great extent be met by the uncollected balance of rates standing over from 1888.

The

The Board consider it their duty to make their revenue meet their expenditure and liabilities, and hope to be able to effect this without raising the rates, which course they will only resort to if greater necessity arises than is at present apparent.

14. The population supplied with water, by the Board having laid 53½ miles of mains, according to the proportion mentioned in the Report on Sewerage of Western Suburbs, viz., 339 persons per mile for City and Suburbs, and 254 per mile for Western Suburbs, and taking the lower estimate, 254 persons per mile, is equivalent to 13,589 souls, or a total for the year of 68¼ miles, equivalent to 17,336 souls.

15. Frequent complaints have been made by the public with regard to the situation of the offices of the Board, which are placed in a most inconvenient position, far away from the business parts of the city. The Board have been trying to obtain suitable accommodation in a more central situation, but have not yet been able to attain their object.

16. The amount of water pumped from Crown-street to Paddington shows an increase of one-eighth, and from Crown-street to Woollahra an increase of over one-third of the amount of water pumped the previous year to these reservoirs. The average daily amount of water flowing into Sydney from the Prospect Reservoir was about 9,000,000 gallons.

17. The Board have in contemplation the advisability of having stored in the high levels of Sydney sufficient water for a day's consumption, and also extending the present low-level reservoir with the same object, so that if any accident occurs to the pipe-line, the city would not be inconvenienced as it would be as at present, as the storage of the Crown-street reservoirs is only equal to a third of a day's consumption.

18. During the nine months forty-nine meetings of the Board were held, at which the attendance was as follows:—

	Present.	Absent.
President (T. Rowe)	49	Nil.
Vice-President (B. Palmer)	46	3
W. C. Bennett	48	1
*C. W. Darley	13	36
J. D. Young	48	1
G. W. Lander	48	1
J. Graham	46	3

* Mr. Darley was absent from the Colony through ill-health from 20th May; previous to that time he attended each meeting, and during his stay in England has been exceedingly useful to the Board on various important matters.

19. The report of the Board Engineer, Mr. Trevor Jones, C.E., is enclosed herewith, covering a report of Mr. Robertson, inspector, and Mr. Fyfe, engineer of pumping, also the balance-sheet by Mr. Green, accountant.

REGINALD BLOXSOME,
Secretary.

THOMAS ROWE,
President.

Board of Water Supply and Sewerage,
1st March, 1889.

APPENDICES.

APPENDICES.

A.

Metropolitan Board of Water Supply and Sewerage—Statement of Receipts and Expenditure to 31st December, 1888.

Receipts.	£ s. d.	£ s. d.	£ s. d.
Amount paid over by City Council—Water Fund	.....	15,000 0 0	
Water rates, including arrears	48,557 4 3		
Meter accounts do	22,186 17 4		
Plumbers and others account, including arrears	1,484 17 10		
Sundry Water Supply, including arrears	53 7 4		
House supply	159 1 2		
Building fees	2,176 16 0		
Drilling fees	389 6 0		
Plumbers' Licenses	46 5 0		
Rents	16 3 0		
Miscellaneous Receipts	19 12 0		
		75,089 9 11	
			90,089 9 11
Advance Account.			
Per Treasurer—On account of 1888, &c.	16,100 0 0		
Advance by Treasury to be refunded	1,905 9 10		
		18,005 9 10	
Per Treasurer—On account of loan authorised 1888, for £150,000 0 0		36,961 17 7	
			54,967 7 5
Contractors' Accounts.			
Deposits on Contracts		.....	2,306 17 6
			£147,363 14 10

Expenditure.	£ s. d.	£ s. d.	£ s. d.
Paid to Treasury to credit of "Water Supply" Account	.....		90,089 9 11
Maintenance.			
General expenses of the Department, including wages and materials for maintenance		9,256 4 10	
Management.	£ s. d.		
President's Salary and Board Fees	1,253 10 3		
Salaries of officers	4,628 6 1		
Assessment expenses and wages of Temporary Staff	1,471 12 9		
Rent	767 6 8		
Printing and stationery	1,303 7 1		
Advertising and miscellaneous expenses	525 6 4		
		9,949 9 2	
Construction and Stock.			
New mains, machinery, pipes, stores, working plant and tools, &c.		48,913 7 10	
City Council Water Fund.			
Amount paid for outstanding claims due at time of transfer		3,690 4 4	
		71,809 6 2	
Less—			
Amount to credit of contractors and others for accounts passed and outstanding not yet paid		16,842 8 9	
			54,966 17 5
The Treasury.			
Unclaimed wages to be refunded		.....	0 10 0
Contractors' Deposits.			
Deposits on contracts refunded		581 17 6	
Balance at credit of this account, deposited with E. S. and A. C. Bank		1,725 0 0	
			2,306 17 6
			£147,363 14 10

MELBE. GREEN,
Accountant.

Metropolitan Board of Water Supply and Sewerage—Balance-sheet—Water Supply—31st December, 1888.

Dr.		£ s. d.
To amount advanced by Treasury—Loans to 25th May, 1888, with interest added	.....	2,499,970 0 0
Amount advanced by Treasury—Loans, 25th May to 31st December	.....	36,961 17 7
City Council Water Fund	.....	380,720 1 6
Debentures	.....	85,000 0 0
Colonial Treasurer—advance to date	.....	1,905 9 10
Rates overpaid to be refunded	.....	193 19 8
Outstanding accounts due to contractors and others	.....	16,842 8 9
Amount due contractors for deposits on contracts	.....	1,725 0 0
Revenue to date, including arrears	.....	125,485 19 0
Sinking Fund	.....	5,625 0 0
	£	3,154,429 16 4

Cr.	£ s. d.	£ s. d.
By Metropolitan Water Supply Works—Expended to 25th May, 1888, from loans by N.S. Wales Government, with interest added	.....	2,499,970 0 0
Lands, reservoirs, mains, buildings, machinery, stores, and new works to date	.....	513,132 3 8
Water rates uncollected	.....	41,739 13 3
Amount at credit of contractors—Deposits, deposited with E.S. and A.C. Bank	.....	1,725 0 0
Colonial Treasurer—Balance at credit	3,130 8 2	
,, ,, unclaimed wages to be refunded	0 10 0	
,, Sinking Fund	5,625 0 0	
		8,755 18 2
Interest on loans, 25th May to 31st December, 1888	59,976 7 3	
Interest on debentures	4,300 0 0	
Cost of maintenance and management	19,205 14 0	
Transferred to Sinking Fund	5,625 0 0	
		89,107 1 3
£		3,154,429 16 4

MELBE. GREEN,
Accountant.

B.

Initiatory proceedings of the Board.

Initiatory.

The Board was met at its inception by more than the usual difficulties which beset the inauguration of a Commission to conduct the business of a Department already in full swing, so far as operations were concerned, but to which it was necessary to appoint nearly all the officers and operatives, a small nucleus only of those previously conducting the work having been retained.

State of affairs when Board was called into existence.

The state of affairs, when the Board took office, was as follows:—An unprecedented drought prevailed, to which all previous droughts were mild by comparison; residents of outlying districts who had up to that time been able, with economy, to tide over all previous seasons, now were soliciting water to stave off actual water famine. To aggravate the evil the stock of pipes was exhausted, and, moreover, the markets in all the Colonies were completely stripped in this respect.

The Board had bought in every available pipe, and were forced into comparative inaction though anxious to afford relief.

This difficulty was made more exasperating by the fact that owing to the partial completion of the trunk mains, the Prospect dam, together with the partial filling of the latter, an ample store of water was available in the City reservoirs, but could not be distributed to the outlying suburbs requiring it for want of pipes.

Pipes ordered.

About July consignments of pipes previously ordered by the City Council began to arrive, and the Board earnestly and sedulously furthered the work of laying the same in all directions.

Letting pipe-laying by yearly contract.

Early in the existence of the Board it was decided that the work of pipe-laying should be effected by contract, after due consideration having been given to two other methods practised previously by the City Council, viz., by "day labor" and "piecework."

I was at first a little distrustful lest this mode should prove costly, and that possibly troublesome litigation might arise from it.

I am now glad to be able to state that, by adding to my own specification such experience as had been brought together in the Harbours and Rivers Department, the present specification is such as to have achieved excellent results without a serious dispute, and at a cost a little below that entailed by other methods. The Board is, I think, to be congratulated on the result of the experiment.

This system enabled the Board to amplify their operations to any extent, when required, without enlarging their staff of operatives.

A considerable amount of work has been carried on, more or less, in connection with the City and Suburban Councils, and it is gratifying to be able to record that the Board has always received from these bodies every courtesy as well as facilities for the conduct of mutual business.

Below I have arranged, under their respective headings, an account of the several works undertaken, proposed, or executed by the Board during the year 1888. I also append a report from the inspector of pipe-laying upon the operations of his branch, and a schedule of streets, lanes, &c., in which pipes have been laid by the Board, and the cleansing of mains as carried out under his superintendence.

This last work is one that deserves more than a passing notice, being a system whereby mains that are all but stopped by internal incrustation are rendered equal in efficiency to new, by the introduction of an instrument and forcing it through the pipes.

I had the honor of introducing this practice into Sydney, having witnessed its effect as practised by the hydraulic engineer in Melbourne, W. Davidson, Esq.; by its use a saving of at least 90 per cent. is effected over the practice that previously obtained of renewing the mains when they became ineffectual.

Campbelltown water supply.

The drought was so protracted and severe that petitions for water supplies poured in on the Board from unexpected quarters; localities situated along the line of canal, as Campbelltown, Liverpool, Parramatta, Granville, and Auburn, were among the number.

Campbelltown's wants, appearing the most urgent and being the first applicants, received immediate attention, and, in order to accelerate the work, a plan, already prepared in the Harbours and Rivers Department, having been modified so as to bring it within the community's means, was adopted.

The Board had at the time no pipes wherewith to carry out the work, but in order to allay the great want of water in the town, a sufficient quantity were bought in Sydney at an advanced rate, to lay the 6-inch trunk main from the canal to the standpipe in the centre of the town.

The work was so far completed by last Christmas as to permit of the water being turned on as promised, and would have proved a well-appreciated boon but for a copious rain that fell a few weeks previously, which relieved the wants of the residents. When pipes arrive the town will be reticulated.

Liverpool.

The Municipal Council of this town, having had the matter of water supply under consideration for many years, and had several schemes submitted to them, favored one prepared in the Harbours and Rivers Department, which consisted of erecting an earthen dam at Hinchinbrook, near the upper extremity of the Cecil Hill tunnel, filling the same from the canal and bringing the water by a 6-inch main to the town for distribution by a reticulation system.

The mayor and aldermen of Liverpool designed to take the whole cost of the proposed work on themselves, and waited on the Board with the request that if such works were carried out the Board should grant water for filling the reservoir at a trifling charge, the Council undertaking the distribution and management, and the collection of rates. This proposal could not be entertained by the Board, there being legal and other difficulties in the way.

The Board ultimately agreed to give the town a water supply on the same terms as were agreed to for Campbelltown; the nature of the works is decided on, but for the want of pipes cannot immediately be put in execution.

Parramatta.

The Town Council of Parramatta, having a working scheme of their own for many years, have requested the Board to grant water when required to fill their local dam, at 1s. 6d. per 1,000 gallons, and also they paying for the line of trunk main from Granville to the local reservoir.

The Board looked favorably on the proposal, but timely rains as well as want of pipes have interfered to delay any further action for the present.

Granville.

Granville is already provided with a trunk main laid along the Woodville Road from the canal to the town, and, as soon as pipes arrive, it is to be reticulated by order of the Board, if suitable financial arrangements can be determined on between the Board and the Council.

Water for irrigation.

Many proprietors and tenants of land which is commanded by the canal are petitioning the Board to be supplied with water for irrigation direct from the canal.

This is a question with which it behoves the Board to deal very circumspectly, bearing in mind that a concession once made is difficult to recall; water for irrigation for large areas, to be of any good use, should be available in very great quantities, and the supply as at present laid out, though adequate for many years to supply fairly large quantities, will by degrees be required for the use of the city, but which, unless stringent provisions accompany the concession, could not be withdrawn from the irrigationists.

Adequacy of Nepean scheme to provide for irrigation with proper arrangements.

The Nepean scheme, however, is capable with proper arrangements of being developed into an irrigation scheme, and was designed with the intention of being so utilized, because the large quantity of water that the canal is capable of conveying when running full during the time the Nepean is in flood, enables it to replenish lateral reservoirs which are proposed to be constructed along its course, and which might thereafter be used for irrigation.

Salt-water mains.

During the early existence of the Board, while its officers were determining the assets of the Board, it was found that about £7,000 remained unpaid by the City Council for work done and materials supplied by the Water Branch of the City Engineer's Department in laying salt-water mains in and about the city during 1883-4-5.

These salt-water mains were handed over to the City Council by the Board as they were deemed to be doing good work in watering the streets with salt water, thereby saving the water of the Board.

Hudson Brother's pipes.

When the Nepean scheme was so far completed as to be in a position to take up the whole supply of Sydney and suburbs, the temporary line of wrought-iron pipes and the flumes forming the scheme, known as Hudson Bros., were no longer wanted, and as the pipes and flumes had an intrinsic value the Board decided to offer them for sale to the highest bidder.

When inquired into it was found that some complication existed as to some of them being on private land, also that the Government wanted to retain a portion of them, which, together with other considerations now in process of being settled, caused delay in disposing of them.

New outlets from Paddington Reservoir.

For the last few years it has been becoming evident that the branches on the pumping main from Crown-street to Paddington Reservoir (which also serves as supply main) were too restricted to afford a free supply to the localities they were feeding. It had also been in contemplation for some time to give the centre of the city the benefit of the high-level supply when the pumping power should be adequate.

For these and other reasons it was decided to form new outlet works to the Paddington Reservoir; these outlet works should have been completed during 1888, but owing to unreasonable delay in procuring castings at local foundries the completion has been deferred for several weeks.

The work consists of a 24-inch outlet pipe from each compartment joining into one in a chamber just outside the reservoir, fitted with a complete set of outlet and reflux valves, air-vessels, &c.; the main proceeds through a tunnel across Oxford-street and along Begg-street as a 24-inch main; at the intersection of Begg-street with Glenmore Road it bifurcates into a 20-inch main towards the city and a 15-inch towards Double Bay. The city branch continues along Glenmore Road and Liverpool-street as far as Darlinghurst Road, where the present contract terminates, and which when completed to this point will at once do away with complaints of precarious or turbid supply in Darlinghurst and Surry Hills.

Another contract will then be let to continue the main, 18 inches in diameter, along Liverpool-street to its intersection with College-street, where it will bifurcate and discharge into the 15 and 12 inch mains already laid for the more liberal distribution of high level water to meet the growing requirements caused by the lofty buildings lately becoming so numerous in Sydney.

It is satisfactory to be able to state that the Board's operations of pipe-laying have exceeded all previous experience in Sydney in point of speed, 53½ miles having been laid since the Board's formation, and that no defects in joints or pipes have shown themselves. Moreover that complaints of improper restoration of street surface have been very few.

North Shore pumping scheme.

Early in the year it became my duty to report the great want of water that existed on the higher levels of North Shore, and to submit a scheme for raising water temporarily for the benefit of the residents pending the arrival of the permanent scheme from Potts' Hill *via* Ryde.

The Board approved the scheme, accepted tenders for the same, and on the 1st October water was given to the higher levels, and operations of pipelaying were vigorously pushed ahead in response to the many urgent petitions received by the Board.

The

The pumps are a pair of Blake's duplex direct acting, guaranteed to lift 10,000 gallons per hour through a 6-inch pipe, to an elevation of 150 feet, into a pair of buckled plate tanks, containing together 40,000 gallons, procured from the Roads and Bridges Department.

The whole plant acts admirably, developing considerably more power than the guarantee, moreover working so silently and smoothly as to cause no nuisance to the populous neighbourhood.

Ashfield Heights supply.

Since the Board was formed the bulk of the parts of the western suburbs, the reticulation of which remained incomplete, has been accommodated, especially the part most urgently in want of water, but a portion of Ashfield is so elevated that the head of water in the grand trunk main from Potts' Hill is not adequate to reach to the dwellings in these localities.

There are also parts of Petersham and Newtown that receive but a precarious supply owing to their elevation.

To remedy this want only one course is open, viz., to raise water by pumping.

To this end a plan was submitted to the Board during 1888 to erect a small engine at Petersham to fill elevated iron tanks erected at Ashfield; this work was approved, and tenders received for the same under the emergency that the locality was at the time suffering from a water famine, and consequently the wants of Ashfield only received consideration.

Seeing that the recent rains have nearly altogether mitigated all water scarcity in the locality, it seems now that it would be advisable to combine the consideration of the Petersham and Newtown claims, as the same pumping plant will do for all, as all the above requirements are permanent in character.

With the above view a plan is being prepared for submission to the Board, embracing a provision for all the places named, as well as a balance tank for Balmain, which latter is considered as part of the Balmain supply, and necessary in order to conserve the water from the 15-inch trunk main when the pressure is good, and to give it out during the day when the consumption is at its maximum.

Utilizing Busby's Bore.

It has always appeared a matter to be regretted, that on account of the elevation of the ground intervening between Crown-street reservoir and the low-lying localities of Rushcutters' Bay, Double Bay, and Rose Bay, the gravitation water could not reach them, and it was necessary to give to those places water, which had been pumped partly to Paddington and partly to Woollahra.

When Busby's Bore became disused, in casting about for some useful purpose to put the tunnel to, it occurred to me that it is at precisely the level necessary for passing the Crown-street water by means of a pipe laid through it to the levels in question, and that it is also in the proper direction.

At an early date a scheme having the above object will be submitted to the Board, and if approved will considerably reduce pumping operations.

Duplication of pumping mains.

Since the consumption of water has begun to rise rapidly a want of constancy has been felt in the water at the higher levels, which I attribute to the fact that the old pumping plant is not able to keep the Paddington reservoir full against the increased consumption, on account of there being only a single rising main for part of the distance whereby only one set of pumps can work at the same time.

In 1886 I represented this to the City Council, who in August, 1887, ordered large pipes for duplicating the pumping mains from Crown-street to the corner of Moore Park, whence it is already double—one branch to Paddington the other to Woollahra.

This line of pipes would also, under the terms of the contract, have been finished by the end of the year, but has been delayed through want of castings, and is only now drawing towards completion.

When finished these mains will enable both pumps to work simultaneously, instead of as hitherto, one set having to stop while the other was working, and will also enable a better head of water to be kept up at both Paddington and Woollahra reservoir, thus giving a continuous good pressure to all the mains charged from these reservoirs.

The new pumping plant.

It has been made known to the Board that when they took office the pumping plant at Crown-street was in a very precarious condition. I had in several reports represented the same to the City Council. As soon as the Board was formed I urged the necessity of immediately procuring a pumping plant, such that if accident happened to the existing engines their work could be performed by the new.

The type of engines recommended were the Worthington direct acting duplex compound condensing, fitted with compensating cylinders of 150 horse-power to be accompanied with a battery of Babcock and Wilcox boilers.

My report was referred to Mr. Darley, who—in an exhaustive memorandum—while agreeing as to the type of both engines and boilers, advised that they should be of larger dimensions, and more powerful.

The Board agreed on account of the urgent necessity of immediately replacing the old and worn-out plant, and to obviate the inconvenience that would be entailed by a break-down to order the larger type engines and boilers direct from the makers through the Agent-General, the same to be inspected and approved by Sir John Fowler, the Government consulting engineer in England.

A letter was afterwards received from the latter gentleman highly approving of the Board's selection with reference to both engines and boilers.

The plant is now well under way, the engine and boiler-houses designed, the design for the superstructure having been actively supervised by the President of the Board, and it is confidently hoped that the foundations for engines and boilers will probably be ready for the arrival of the engines and boilers.

It is anticipated that for effectiveness and economy of working, economy of space occupied, they excel anything of the kind in Australia.

Work

Work being carried on by Harbours and Rivers Department.

A great amount of work for the extension of the supply to fresh districts is contemplated by the Harbours and Rivers Department, viz., the duplication of the trunk mains from Potts' Hill to Crown-street, the laying of a trunk main from Potts' Hill to the southern and south-eastern districts, viz., Canterbury, Kogarah, Hurstville, &c.; also a trunk main from the same place, *via* Burwood and Ryde, to Chatswood supply reservoir (into which the water is to be pumped by a plant located near Ryde), whence the water will gravitate to Hunter's Hill and North Shore.

Extent of water-mains in city and suburbs.

The estimated extent of trunk and reticulation water-mains laid in the city and suburbs at the end of 1888, exclusive of mains laid by the Government under Sydney Water Supply Act of 1880, is 382⅝ miles.

J. TREVOR JONES, C.E.,
Board Engineer.

The Secretary, Board of Water Supply and Sewerage.

C.

Sir, Water Supply and Sewerage Department.

I have the honor to submit the Annual Report of work done for the year ending 31st December, 1888, which includes work done by the City Council prior to the Water Board assuming control:—

Main laying.

Prior to the Board's control there were laid 8,446 pipes, extending over 26,127 yards, in 1888. Under Board's control 30,399 pipes, extending over 94,173 yards, making in all 38,845 pipes of total measurement of 120,300 yards, or 68 miles 620 yards. The contract system adopted by the Board appears in every respect to be a success, the work being more economically and expeditiously executed than under the old system of day labour. As evidence of the faithful manner in which it has been carried out there has not been a single instance of leakage through defective workmanship. During the latter portion of the year the rate of laying has been about 3½ miles per week, which could be increased to and maintained at 4 miles, without any addition to the present staff, if a sufficient supply of materials were available.

Main cleaning.

For the year a length of 5 miles 1,417 yards of mains has been cleaned; some of which have been down between fifteen and twenty years and were practically closed up, have been made as efficient as new.

There are still a great number of mains require cleaning, but owing to the great consumption of water that takes place during the present hot weather, it is a work that could be more advantageously prosecuted in the winter months, when it would be advisable to have as much as possible done.

Fire-plugs, &c.

Since the principle of laying mains upon footways has been adopted a marked difference in the cost of maintenance of hydrants and plugs has been shown. Those on footway rarely require any repairs, and are conspicuous, whilst those in the roadway, owing to the heavy traffic, are constantly requiring attention, and sometimes found with difficulty, which, in case of fire, is a matter of vital importance. There is also a greater liability to pollution, as when the plugs are drawn in low positions, and the water in the main becomes exhausted, the hydrant falls upon the higher portions of the main fall, and a rush of air into the main ensues, which in its course carries with it the accumulated substances within the cases.

Much trouble is experienced in dealing with the present style of hydrant and wooden fire-plug, and I would suggest the adoption, if available, of an improved hydrant which would not be so difficult to deal with in case of fire, &c.

Water supply.

Although there has been such a large addition made to the length of mains, and the consumption proportionately increased, there have been less complaints made of the insufficiency of supply than for some years past, which is attributable to some important alterations that have been made in the reticulation and a more equable distribution of water.

I have much pleasure in testifying to the harmonious and creditable manner in which the various officers under my supervision have worked, to which much of the successful working of the Department is attributable.

I have, &c.,
D. C. ROBERTSON,
Inspector.

The Board Engineer.

SUMMARY of Work done during the year 1888.

	Pipes.	Yards.	
Mains—Laid prior to Water Board's control	8,446	= 26,127	
Under Water Board's control	30,399	= 94,173	
Total...	38,845	= 120,300	= 68 miles 620 yards.
Cleaned prior to Water Board's control	... 2,287 yards.		
,, under ,, ,, ...	... 7,930 ,,		= 5 miles 1,417 yards.
Repaired prior ,, ,, ...	... ...	79	
,, under ,, ,, ...	... ...	76	,, 155
Removed prior ,, ,, ...	... ...	28	
,, under ,, ,, ...	... ...	29	,, 57
Standpipes—Erected for boroughs	... ...	...	6
Private works—Paid for by consumers	... ...	...	36
Main drillings—To connect service	... ...	...	2,811
Extensions from existing services	... ...	...	344
Meters—Affixed	... ...	...	780
Horse-troughs—Supplied	... ...	...	7
Gulley shafts—Supplied	... ...	...	28
Leaks—Services cut off to prevent waste of water	... ...	...	1,859
Inspections—Made of premises	... ...	...	12,692
Notices served to abate waste of water	... ...	...	677
,, ,, affix meter	... ...	...	146
,, ,, remove standpipes	... ...	...	79

Abstract of Mains laid in the Year 1888.

District.	No of Report Sheet	Number of different sized Pipes.										Lengths of different sized Pipes.										Total No of Pipes for District	Total length of Mains for District.
		3″	4″	6″	7″	9″	12″	15″	18″	20″	24″	3″	4″	6″	7″	9″	12″	15″	18″	20″	24″		
Abstract of Mains laid 1888, under Water Board's control.																							
Alexandria	1	..	876	411	.	...	...	...	.	..	...	2,646	1,258	.	.....	.	...	..	. .	..	1,287	3,904	
Ashfield	2		2,488	1,125	...	924	737	...		.	...	..	7,580	3,395	.	2,853	2,931		.		5,274	16,759	
Balmain	3	..	377	. ...		...		...	.	..	.	..	1,164	...		. ...	. .	..	..	..	377	1,164	
Burwood	4	..	1,612	524		545	115	.			..	..	4,903	1,598	.	1,637	463	...	...	...	..	2,796	8,601	
Campbelltown	5	6	5	1,648	12	...	. .	...	...	...	.	15	20	4.956	37	.....	. .	...		...	...	1,671	5,028	
City	7	42	5	94	...	51	16	184	..	129	.	134	16	311		173	79	774	..	511	. .	521	1,998	
Concord	8	..	3	1,157		...	.	..		..		.	10	3,440	..	.....	...	...	...	. .	.	1,160	3,450	
East St. Leonards	9	.	86	67		. .	...		...			..	252	201	..	.....	...	...	..	...	...	153	453	
Leichhardt	11	.	1,979	165	.			..	.	.	..		6,030	510	..	.....	...	...	..	...	...	2,144	6,540	
Macdonaldtown	12	.	...	111		.		...	...	.	..	..	.....	330	...	... ..	...	...	.	...	..	111	330	
Marrickville	13		1,531	956	..	270	101	..		..	.	...	4,658	2.889	.	817	381	...	...	.	...	2,858	8,745	
Newtown	14	..	363	.. ..		.	.		..	...		.	1,119	.....		. ...	...	..	.	. .	...	363	1,119	
Paddington	15	.	44	...	...	...		...		104	68	...	137	...	.	.. ...	..	...	..	416	265	216	818	
Petersham	16	.	1,694	618		.	191	.	34	39		...	5,196	1,894	..	...	716	.	136	151	...	2,576	8,093	
Randwick	17	..	1,004	184	.	77	.	.				. .	3,057	555	.	231	...	. .	..	...	...	1,265	3,843	
Redfern	18	.	239	.... .	...	.	.	.	..	. .	..	..	725	. ...	...	.....	...	...	.		..	239	725	
St. Leonards	19	2	1,336	672	...	44	.	128		..	...	6	4.042	2,032	...	142	. .	483	. .	...	...	2,182	6,705	
St. Peters	20	...	1.997	89	.	528	...	..	..		..	..	6.113	280	...	1,603	. .			. .	..	2,614	7,996	
Strathfield	21	.	114	224		.	. .	.	.	...	..		342	637	...	.....	. .		...	.	...	338	979	
Victoria	22		147	...		...	...	...	..			.	451	.....	..	.. ...	...	...	..	. .	..	147	451	
Waterloo	23	.	407	73		150	54	..	..	..	.	..	1,250	225	...	445	231	...	..	...	.	684	2,151	
Waverley	24	..	932	321	...	.	...	...		...	..		2,843	970	.	... .	...	...	. .	...	...	1,256	3,813	
Woollahra	25	.	167	.....	.	.	...	..	...	..	..		508	....	...	...			.	...	...	167	508	
Under Board's control	...	50	17,406	8,442	12	2,589	1,214	312	34	272	68	155	53,062	25,481	37	7,901	4,801	1,257	136	1,078	265	30,399	94,173	
Prior to Board's control.	..	48	4,027	3,035	.	963	373	...		..	..	153	12,323	9,330	.	2,961	1,360	. .	...	...	..	8,446	26,127	
Total for year	...	98	21,433	11,477	12	3,552	1,587	312	34	272	68	308	65,385	34,811	37	10,862	6,161	1,257	136	1,078	265	38,845	120,300	

Mileage under Board's control ..... 53 miles 893 yards.
Mileage prior to Board's control ..... 14 „ 1,487 „
Total ..... 68 „ 620 „

Abstract of Mains laid, 1888, prior to Water Board's control.

Balmain	3	34	314	.....	..	...	...	...	...	...	.	105	970	.....		... .	..	...	..	...	..	348	1,075
Burwood	4	.	520	.... .	...	294	192	...	...	..	.	..	1,603	.....	...	925	592	...	..	...	..	1,006	3,120
Camperdown	6	.	58	18	...	249	. .		..	..	..	.	169	61	...	755	.	...	..	..	...	325	985
City	7	14	171	974	...	20	...	...	.	...	.	48	542	3,082	.	64	.	...	...	...	...	1,179	3,736
East St. Leonards	9	.	....	308	...	...	...	.	..	...	.	..	.....	936		.....	. .	...	..	...	...	308	936
Glebe	10	...	11	.....	..	..	...	...	..	...	..	..	33	.... .	...	.	.	...	..	...	.	11	33
Leichhardt	11	...	271	104	..	...	...	..	..	...	..	..	778	318		... .		...	.	...	...	375	1,096
Marrickville	13	...	126	215	..	..	...	...	..	...	..	...	386	641	.	.. ...	.	...	..	...	..	341	1,027
Newtown	14	..	.. ..	13	..	249	...	...	...	...	..	..	.....	42		755	...	.		...	..	262	797
Paddington	15	.	127	.. ...	..	...	...	...	...	...	..	..	393	.....	...	.....	.	.		...	..	127	393
Petersham	16	...	53	.....	..	...	...	...	...	...	.	..	165	.. .	...	.....	.	.	...	. .	...	53	165
Randwick	17	..	180	335	.	...	...	...	...	...	..	..	550	1,017	.	.....	...	...	...	...	..	515	1,567
Redfern	18	...	55	.. .	...	...		...	..	.	..	..	162	.. ..		.....	...	...	...	...	..	55	162
St. Leonards	19	...	.....	117	...	...	. .	...	...	...		.	.....	350	..	.	...	...	...	...	..	117	350
St. Peters	20	.	.. ...	. ...	..	151	181	.	..	...			...	.....	.	462	768	..	...		.	332	1,230
Strathfield	21		889	272	..	...	...	...	...		...	..	2,733	821	...	.....	...	...	..	...	..	1,161	3,554
Victoria	22	..	743	187		...	...	...	..	.	..	.	2,288	570	...	... ..	.	...	...	...	.	930	2,858
Waverley	24	.	509	224		...	...	.	..	..	..	..	1,551	681	..	. ....	. .	...	...	...	.	733	2,232
Woollahra	25	..	... .	268	..	...	...	.	..	..	...		...	811	..	.....	...	...	...	...		268	811
Total	...	48	4,027	3,035	...	963	373	...	...	..	...	153	12,323	9,330	.	2,961	1,360	...	..	...	.	8,446	26,127

Abstract of Mains laid, 1888.

Alexandria	1		876	411	.	...	...	.	...	..	..	..	2,646	1,258	..	.....	...	...	...	...	..	1,287	3,904
Ashfield	2	.	2,488	1,125		924	737	..	...	...	..	.	7,580	3,395		2,853	2,931	...	...	. .	.	5,274	16,759
Balmain	3	34	691	.. ..	.	...	...	..	.	...		105	2,134	.. ...	...	.....	..	...	..	. .	..	725	2,239
Burwood	4		2,132	524	.	839	307		..	...	...	...	6,506	1,598	...	2,562	1,055	...	..	...	..	3,802	11,721
Campbelltown	5	6	5	1,646	12	. .	...	...	..	..	..	15	20	4,956	37	.. ...	...	...	...	...	..	1,671	5,028
Camperdown	6	.	58	18	...	249	...	..	.	.	.	.	169	61	..	755	..		...	...	..	325	985
City	7	56	176	1,068	..	71	16	184	..	129	..	182	558	3,393	..	237	79	774	..	511	..	1,700	5,734
Concord	8	..	3	1,157		.	...	..	.	...	..	..	10	3,440	.	.....	...	...	...	...	. .	1,160	3,450
East St. Leonards	9		86	375		. .	...	..		..		.	252	1,137	.	...	...	...	..	...	..	461	1,389
Glebe	10	..	11	..			...	...	...			...	33	..	...	.....	...	. .	..	...	...	11	33
Leichhardt	11	...	2,250	269	.	...			...	.	..	..	6,808	828	.	.. .	...	. .	.	. .	.	2,519	7,636
Macdonaldtown	12	...	.....	111	...	. .	.	...	.	.	..	..	...	330	.	..	.	...	.	...	..	111	330
Marrickville	13	...	1,657	1,171	.	270	101	.	.	..	..	.	5,044	3,530		817	381	.	..	...	..	3.199	9,772
Newtown	14		363	13	.	249	...	..	...	...	..		1.119	42	.	755	. .	...	..	. .	..	625	1,916
Paddington	15		171	...	...	...	.	..	..	104	68	...	530	....		. . ..	...	..	416	265		343	1,211
Petersham	16	...	1,747	618		. .	191	..	34	39		.	5,361	1.894	..	.....	716	...	136	151	..	2,629	8,258
Randwick	17	...	1,184	519	.	77	...	...			..	.	3,607	1,572	...	231	.	...	..	...	..	1,780	5,410
Redfern	18		294	.. .		.	...		...	..	..	..	887	... .	.	....	...	. .	..	...	..	294	887
St. Leonards	19	2	1,336	789	..	44	...	128	..	..	..	6	4 042	2.382	.	142	...	483	..	...	..	2,299	7,055
St. Peters	20	..	1,997	89	..	679	181	...	..	.	.	.	6,113	280	.	2,065	768	. .		...	..	2,946	9,226
Strathfield	21	..	1,003	496	...	..	...	.	.	.	.		3,075	1.458	..	...	...	...	..	...	..	1,499	4,533
Victoria	22		890	187		.	.	..		..	..	..	2,739	570		.....	.	...	..	...	.	1,077	3,309
Waterloo	23	.	407	73	.	150	54	...		.	...	.	1,250	225	..	445	231	...	...	...		684	2,151
Waverley	24	.	1,441	548	..	...	...	.	..	.	...	..	4,394	1,651	..	... ..	. .	...	..	...	.	1 989	6,045
Woollahra	25	.	167	268	..	...	...	...		.	..	...	508	811	...	.....	...	...	...	. .	...	435	1,319
Totals	...	98	21,433	11,477	12	3,552	1,587	312	34	272	68	308	65.385	34.811	37	10,862	6,161	1,257	136	1,078	265	38,845	120,300

Total mileage, 68 miles 620 yards.

MAINS LAID, 1888.—*continued.*

District and Street.	No. and Size of Pipes.							Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
	3″	4″	6″	9″	12″	15″	20″				
ALEXANDRIA.											
Under Water Board's control:—											
Gerard-street	...	30	...	...	...	...	...	90	90		
Phillip-street	...	42	...	...	...	...	...	127	127		
Henderson-street	...	56	...	...	...	...	...	167	167		
Buckland-street	...	...	149	...	...	...	...	456	462		
Do	...	2	...	...	...	...	...	6			
Short-street	...	25	...	...	...	...	...	77	77		
Lyne-street	...	31	...	...	...	...	...	93	93		
Alexandria-street	...	12	...	...	...	...	...	38	38		
Renwick-street	...	122	...	...	...	...	...	370	370		
Jennings-street	...	51	...	...	...	...	...	155	155		
Dibbs-street	...	47	...	...	...	...	...	140	140		
Reserve-street	...	...	60	...	...	...	...	187	217		
Do	...	10	...	...	...	...	...	30			
Queen-street	...	83	...	...	...	...	...	249	249		
Collins-street	...	12	...	...	...	...	...	36	36		
Victoria-street	...	75	...	...	...	...	...	225	225		
Fountain-street	...	...	31	...	...	...	...	95	95		
Jesson-street	...	278	...	...	..	...	...	843	843		
Hurley-street	...	...	37	...	...	...	...	114	114		
Maddox-steet	...	...	39	...	...	...	...	119	119		
Copeland-street	...	...	95	...	...	...	...	287	287		
Total for year	...	876	...	...	...	...	...	2,646	3,904	3,904	1,287
	...	...	411	...	...	...	...	1,258			
ASHFIELD.											
Lackey-street	...	...	58	...	...	...	...	174	174		
Alt-street	...	12	...	...	...	...	...	36	855		
Do	...	...	273	...	...	...	...	819			
John-street	...	2	...	...	...	...	...	6	315		
Do	...	...	103	...	...	...	...	309			
Elizabeth-street	...	11	...	...	...	...	...	31			
Do	...	...	108	...	...	...	...	322	1,047		
Do	...	...	...	182	...	...	...	556			
Do	...	..	...	...	30	...	...	138			
Liverpool Road	...	5	...	...	...	...	...	17			
Do	...	...	32	...	...	...	...	97			
Do	...	...	...	567	...	...	...	1,753	1,871		
Do	...	..	...	...	1	...	...	4			
Murrel Road	...	15	...	...	...	...	...	46	46		
Victoria Road	...	...	...	22	...	...	...	66	232		
Do	...	...	...	...	41	...	...	166			
Norton Road	...	150	...	...	...	...	...	457	681		
Do	...	...	...	...	55	...	...	224			
Prospect Road	...	...	8	...	...	...	...	27	66		
Do	...	...	...	...	9	...	...	39			
Smith-street	...	12	...	...	...	...	...	52			
Do	...	...	13	...	...	...	...	41	1,277		
Do	...	...	...	...	292	...	...	1,184			
Cecil-street	...	135	...	...	...	...	...	414	414		
Church-street	...	...	187	...	...	...	...	567	567		
Milton-street	...	...	225	...	...	...	...	676	676		
Edwin-street	...	3	...	...	...	...	...	9	658		
	...	...	...	...	159	...	...	649			
Park Avenue	...	279	...	...	...	...	...	839	839		
Holden-street	...	...	86	...	...	...	...	263	263		
Bland-street	...	154	...	...	...	...	...	471	471		
Tintern-street	...	117	...	...	...	...	...	358	358		
Henson-street	...	213	...	...	...	...	...	646	646		
Joseph-street	...	41	...	...	...	...	...	121	121		
Queen-street	...	313	...	...	...	...	...	953	953		
Chandos-street	...	...	27	...	...	...	...	85	85		
Frederick-street	...	358	...	...	...	...	...	1,088	1,103		
Do	...	...	5	...	...	...	...	15			
Robert-street	...	226	...	...	...	...	...	682	682		
Henry-street	...	70	...	...	...	...	...	221	221		
Hercules-street	...	48	...	...	...	...	...	147	147		
Albert Parade	...	220	...	...	...	...	...	669	669		
Lucy-street	...	104	...	...	...	...	...	317	317		
Parramatta Road	...	...	...	96	...	...	...	297	297		
Croydon Road	...	...	...	1	...	...	...	12	539		
Do	...	...	...	...	150	...	...	527			
Anthony Road	...	...	...	56	...	...	...	169	169		
Total for year	...	2,488	...	...	...	...	...	7,580	16,759	16,759	5,274
	...	...	1,125	...	...	...	...	3,395			
	...	...	...	924	...	...	...	2,853			
	...	...	...	...	737	...	...	2,931			

MAINS LAID, 1888—*continued.*

District and Street.	No. and Size of Pipes. 3″	4″	6″	9″	12″	15″	20″	Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
BALMAIN.											
Prior to Water Board's control:—											
Hoskings-street	34	...	...	...	...	...	...	105	105		
Fawcett-street	...	42	...	...	...	...	...	130	130		
Dick-street	...	43	...	...	...	...	...	136	136		
Foy-street	...	70	...	...	...	...	...	215	215		
Gipps-street	...	36	...	...	...	...	...	112	112		
Lawson-street	...	103	...	...	...	...	...	314	314		
M'Kenzie-street	...	20	...	...	...	...	...	63	63		
	34	...	...	...	...	...	...	105	1,075	1,075	348
	...	314	...	...	...	...	...	970			
Under Water Board's control:—											
Church-street	...	141	...	...	...	...	...	430	430		
Ewell-street	...	48	...	...	...	...	...	153	153		
Bruce-street	...	63	...	...	...	...	...	194	194		
Datchett-street	...	75	...	...	...	...	...	233	233		
Addison Road	...	20	...	...	...	...	...	63	63		
Punch and Gow Streets	...	30	...	...	...	...	...	91	91		
	...	377	...	...	...	...	...	1,164	1,164	1,164	377
Total for year	...	...	...	...	...	...	...	.....	.....	2,239	725
BURWOOD.											
Prior to Water Board's control:—											
Angel Road	...	20	...	...	...	...	...	60	60		
Want-place	...	74	...	...	...	...	...	230	230		
Meryla-street	...	106	...	...	...	...	...	329	329		
Emu-street	...	17	...	...	...	...	...	52	52		
Wolga-street	...	107	...	...	...	...	...	330	330		
Selbourne-street	...	99	...	...	...	...	...	305	305		
Eurella-street	...	97	...	...	...	...	...	297	297		
Burwood Road	...	...	...	224	...	...	...	691	1,283		
Do	...	...	...	...	192	...	...	592			
Great Southern Road	...	...	...	70	...	...	...	234	234		
	...	520	...	...	...	...	...	1,603	3,120	3,120	1,006
	...	...	...	294	...	...	...	925			
	...	...	...	...	192	...	...	592			
Under Water Board's control:—											
Victoria-street	...	...	...	213	...	...	...	639	639		
Burwood Road	...	3	...	...	...	...	...	9	841		
Do	...	...	...	123	...	...	...	369			
Do	...	...	...	...	115	...	...	463			
Liverpool Road	...	2	...	...	...	...	...	6	720		
Do	...	...	238	...	...	...	...	714			
Redmyre Road	...	4	...	...	...	...	...	12	177		
Do	...	...	55	...	...	...	...	165			
William-street	...	...	116	...	...	...	...	353	353		
Bold-street	...	44	...	...	...	...	...	136	136		
Shaftsbury Road	...	...	39	...	...	...	...	120	260		
Do	...	46	...	...	...	...	...	140			
Fitzroy-street	...	98	...	...	...	...	...	300	300		
Ethel-street	...	127	...	...	...	...	...	384	384		
Weldon-street	...	49	...	...	...	...	...	148	148		
Church-street	...	113	...	...	...	...	...	343	343		
Clifton Avenue	..	98	...	...	...	...	...	297	297		
Wyalong-street	...	97	...	...	...	...	...	295	295		
Charles-street	...	41	...	...	...	...	...	122	122		
Burleigh-street	...	56	...	...	...	...	...	170	170		
Brooklyn-street	...	80	...	...	...	...	...	243	243		
Lucas-street	...	83	...	...	...	...	...	255	507		
Do	...	...	70	...	...	...	...	216			
Do	...	...	...	11	...	...	...	36			
Queen-street	...	...	6	...	...	...	...	30	623		
Do	...	...	...	198	...	...	...	593			
Railway Terrace	...	145	...	...	...	...	...	440	440		
Parnell-street	...	73	...	...	...	...	...	223	223		
Cheltenham Road	...	167	...	...	...	...	...	510	510		
Lyndsay-street	...	99	...	...	...	...	...	301	301		
Robinson-street	...	187	...	...	...	...	...	569	569		
	...	1,612	...	...	...	...	...	4,903	8,601	8,601	2,796
	...	...	524	...	...	...	...	1,598			
	...	...	...	545	...	...	...	1,637			
	...	...	...	...	115	...	...	463			
Total for year	...	...	...	...	...	...	...	.....	.....	11,721	3,802
				7″							
	6	...	...	...	...	...	...	15	5,028	5,028	1,671
CAMPBELLTOWN SUPPLY	...	5	...	...	...	...	...	20			
	...	...	1,648	...	...	...	...	4,956			
	...	...	...	12	...	...	...	37			
Total for year	...	...	...	...	...	...	...	.....	5,028	5,028	1,671

MAINS LAID, 1888—*continued.*

District and Street.	No. and Size of Pipes. 3″	4″	6″	9″	12″	15″	20″	Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
CAMPERDOWN.											
Prior to Water Board's control :—											
Missenden Road	...	...	13	...	...	...	...	46	801		
Do	...	...	...	249	...	...	...	755			
Wellington-street	...	...	5	...	...	...	...	15	15		
Rowley-street	...	58	...	...	...	...	...	169	169		
Total for year	...	58	...	...	...	...	...	169	985	985	325
	...	...	18	...	...	...	...	61			
	...	...	...	249	...	...	...	755			
CITY.											
Prior to Water Board's control :—											
Moore Park (pond)	14	...	...	...	...	...	...	48	48		
Pine-lane	...	24	...	...	...	...	...	75	75		
Dixon-street	...	54	...	...	...	...	...	176	176		
Henry-lane	...	19	...	...	...	...	...	59	59		
Parbury-lane	...	33	...	...	...	...	...	103	103		
Beattie's-lane	...	27	...	...	...	...	...	83	83		
Barker-lane	...	14	...	...	...	...	...	46	46		
Cleveland and Castlereagh-streets	...	...	243	...	...	...	...	730	730		
Elizabeth-street	...	...	258	...	...	...	...	836	900		
Do	...	...	...	20	...	...	...	64			
Bathurst-street	...	...	233	...	...	...	...	765	765		
Duncan-street	...	...	98	...	...	...	...	307	307		
O'Connell-street	...	...	142	...	...	...	..	444	444		
	14	...	...	...	...	...	...	48	3,736	3,736	1,179
	...	171	...	...	...	...	...	542			
	...	...	974	...	...	...	...	3,082			
	...	...	...	20	...	...	...	64			
Under Water Board's control :—											
Beilby's-lane	34	...	...	...	...	...	...	102	238		
Elizabeth-street	...	...	13	...	...	...	...	40			
Do	...	...	...	...	5	...	...	36			
Do	...	...	...	...	...	5	...	60			
Castlereagh-street	...	...	29	...	...	...	...	108	217		
Do	...	...	...	18	...	...	...	67			
Do	...	...	...	...	7	...	...	30			
Do	...	...	...	...	...	3	...	12			
Market-street	...	...	14	...	...	...	...	45	45		
Park-street	...	...	...	...	...	82	...	325	325		
College-street	8	...	...	...	...	...	...	32	422		
Do	...	...	...	...	4	...	...	13			
Do	...	...	...	...	...	94	...	377			
Barrack-street	...	...	21	...	...	...	...	66	66		
Clarence-street	...	5	...	...	...	...	...	16	16		
Cleveland-street	...	...	...	33	...	...	...	106	106		
Allan and Murray-streets	...	...	17	...	...	...	...	52	52		
Fitzroy-street	...	...	...	...	...	...	129	511	511		
	42	...	...	...	...	...	...	134	1,998	1,998	521
	...	5	...	...	...	...	...	16			
	...	...	94	...	...	...	...	311			
	...	...	...	51	...	...	...	173			
	...	...	...	...	16	...	...	79			
	...	...	...	...	...	184	...	774			
	...	...	...	...	...	...	129	511			
Total for year	...	...	...	...	...	...	...	.....	.....	5,734	1,700
CONCORD.											
Under Water Board's control :—											
Crane-st. to Mortlake Gasworks	...	...	1,048	...	...	...	...	3,110	3,120		
Do do	...	3	...	...	...	...	...	10			
Wharf Road	...	...	109	...	...	...	...	330	330		
Total for year	...	3	...	...	...	...	...	10	3,450	3,450	1,160
	...	...	1,157	...	...	...	...	3,440			
EAST ST. LEONARDS.											
Prior to Water Board's control :—											
Alfred-street	...	...	50	...	...	...	...	154	154		
William-street	...	...	86	...	...	...	...	261	261		
Thrupp's Point Road	...	...	88	...	...	...	...	267	267		
Willoughby-street	...	...	84	...	...	...	...	254	254		
	...	...	308	...	...	...	...	936	936	936	308
Under Water Board's control :—											
Carrabella-street	...	...	67	...	...	...	...	201	201		
Broughton-street	...	22	...	...	...	...	...	67	67		
Pitt-street	...	64	...	...	...	...	...	185	185		
	...	86	...	...	...	...	...	252	453	453	153
	...	...	67	...	...	...	...	201			
Total for year	...	...	...	...	...	...	...	.....	.....	1,389	461

MAINS LAID, 1888—*continued.*

District and Street.	No. and Size of Pipe. 3″	4″	6″	9″	12″	15″	20″	Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
GLEBE.											
Prior to Water Board's control:—											
Bellevue-street	...	11	...	...	...	...	...	33	33	33	11
LEICHHARDT.											
Prior to Water Board's control:—											
Hatheran-street	...	54	...	...	...	...	...	164	164		
Kegworth-street	...	67	...	...	...	...	...	204	204		
Hill-street	...	51	...	...	...	...	...	155	155		
Alfred-street	...	76	...	...	...	...	...	232	232		
Marion-street	...	23	...	...	...	...	...	23	23		
Alfred-street	...	...	104	...	...	...	...	318	318		
	...	271	...	...	...	...	...	778	1,096	1,096	375
	...	...	104	...	...	...	...	318			
Under the Board's control:—											
Annandale-street	...	204	...	...	...	...	...	622	622		
Young-street	...	37	...	...	...	...	...	112	112		
Percival-street	...	37	...	...	...	...	...	112	112		
Ferris-street	...	131	...	...	...	...	...	403	403		
Mayes-street	...	59	...	...	...	...	...	179	179		
Reserve-street	...	49	...	...	...	...	...	151	151		
Emily-street	...	53	...	...	...	...	...	161	161		
William-street	...	85	...	...	...	...	...	257	257		
James-street	...	126	...	...	...	...	...	378	378		
Taylor-street	...	125	...	...	...	...	...	380	380		
Trafalgar-street	...	115	...	...	...	...	...	349	349		
Booth-street	...	...	104	...	...	...	...	321	321		
Albion-street	...	48	...	...	...	...	...	144	144		
O'Neil-street	...	33	...	...	...	...	...	98	98		
Lamb-street	...	79	...	...	...	...	...	239	239		
Joseph-lane	...	64	...	...	...	...	...	190	190		
Annesley-street	...	147	...	...	...	...	...	451	451		
Ryan-street	...	29	...	...	...	...	...	90	90		
Cecily-street	...	28	...	...	...	...	...	85	85		
Justin-street	...	40	...	...	...	...	...	119	119		
Point-street	...	40	...	...	...	...	...	123	123		
M'Kenzie-street	...	126	...	...	...	...	...	392	392		
Milton-street	...	41	...	...	...	...	...	126	126		
Coleridge-street	...	27	...	...	...	...	...	83	83		
Fowler-street	...	40	...	...	...	...	...	127	127		
Prospect-lane	...	30	...	...	...	...	...	94	94		
Wetherill-street	...	...	61	...	...	...	...	189	189		
Henry-street	...	91	...	...	...	...	...	276	276		
Marion-street	...	46	...	...	...	...	...	141	141		
Myrtle-street	...	49	...	...	...	...	...	148	148		
	...	1,979	...	...	...	...	...	6,030	6,540	6,540	2,144
	...	...	165	...	...	...	...	510			
Total for the year	...	...	...	...	...	...	...	...	...	7,636	2,519
MACDONALD TOWN.											
Swanson-street	...	...	25	...	...	...	...	79	79		
Park-street	...	...	86	...	...	...	...	251	251		
Total for year	...	...	111	...	...	...	...	330	330	330	111
MARRICKVILLE.											
Prior to Water Board's control:—											
Norwood-lane	...	32	...	...	...	...	...	97	97		
Park Road	...	71	...	...	...	...	...	219	219		
Mordialloc-street	...	23	...	...	...	...	...	70	70		
Victoria-street	...	...	215	...	...	...	...	641	641		
	...	126	...	...	...	...	...	386	1,027	1,027	341
	...	...	215	...	...	...	...	641			
Under Water Board's control:—											
New Canterbury Road	...	13	...	...	...	...	...	42	1,336		
Do	...	...	33	...	...	...	...	96			
Do	...	...	...	270	...	...	...	817			
Do	...	...	...	...	101	...	...	381			
Enmore Road	...	...	6	...	...	...	...	18	18		
Illawarra Road	...	...	120	...	...	...	...	357	363		
Do	...	2	...	...	...	...	...	6			
Renwick-street	...	...	382	...	...	...	...	1,153	1,153		
Warren Road	...	124	...	...	...	...	...	376	816		
Do	...	...	148	...	...	...	...	440			
Harnett Avenue	...	142	...	...	...	...	...	432	432		
Ivanhoe-street	...	88	...	...	...	...	...	267	267		
Carey-street	...	207	...	...	...	...	...	627	627		
Mansion-street	...	49	...	...	...	...	...	150	150		
Roseby-street	...	75	...	...	...	...	...	227	227		
Day-street	...	83	...	...	...	...	...	252	252		
Excelsior Parade	...	...	73	...	...	...	...	218	218		
Premier-street	...	136	...	...	...	...	...	412	507		
Do	...	...	29	...	...	...	...	95			

MAINS LAID, 1888—*continued.*

District and Street.	No. and Size of Pipes. 3″	4″	6″	9″	12″	15″	20″	Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
MARRICKVILLE—*continued.*											
View-street	...	32	.	...	...	...	...	96	96		
Wardell Road	...	...	165	...	...	...	...	512	512		
Vernon-street	...	64	...	...	...	...	...	198	198		
Fairfowl-street	...	59	.	. .	...	...	...	182	182		
Marshall-street	. .	66	.	...	...	...	...	205	205		
Denning-street	...	53	. .	...	..	...	...	163	163		
Glen-street	. .	56	...	...	...	...	...	168	168		
Morris and Arthur streets	...	164	...	...	...	...	...	499	499		
Calvert-street	...	96	...	...	...	...	...	289	289		
Victoria-street	...	22	...	...	...	...	...	67	67		
	...	1,531	...	...	...	...	...	4,658			
	...	.	956	. .	...	...	...	2,889	8,745	8,745	2,858
	...	.	...	270	...	...	...	817			
	...	...	. .	..	101	...	...	381			
Total for year	...	...	...	...	...	...	...	.....	.....	9,772	3,199
NEWTOWN.											
Prior to Water Board's control:—											
Edgeware Road	...	...	13	...	...	...	...	42	42	797	262
	...	...	...	249	...	..	. .	755	755		
Under control of Water Board:—											
Laura-street	...	92	...	...	...	.	...	283	283		
Hawkins-street	. .	45	...	...		...	...	139	139		
Angel-street	...	143	. .	...	...	...	...	436	436		
Juliett-street	...	83	. .	...	...	...	...	261	261	...	
	. .	363	...	. .	...	. .	...	1,119	1,119	1,119	363
Total for year	...	. .	..	...	. .	...	...	.....	...	1,916	625
PADDINGTON.											
Prior to Water Board's control:—											
Norfolk-street	...	33	...	...	...	...	...	102	102		
Elizabeth-street	...	17	...	...	...	...	...	52	52		
Suffolk-street	. .	49	...	...	. .	...	. .	151	151		
Napier-street	...	15	...	...	. .	...	...	45	45		
Oxford-street	...	13	. .	...	...	...	...	43	43		
Total	...	127	...	...	...	...	...	393	393	393	127
						20″	24″				
Under Water Board's control:—											
Glenmore Road and Liverpool-st.	...	..	...	...	...	104	...	416	416		
Dutford-street	...	11	. .	...	...	...	...	35	35		
Ulster-street	...	33	...	...	...	...	...	102	102		
Outlet to reservoir	...	...	. .	...	...	...	68	265	265		
	...	44	...	...	...	...	...	137			
	...	...	...	...	...	104	...	416	818	818	216
	...	...	...	...	...	...	68	265			
Total for year	...	. .	...	...	...	...	...	.....	.....	1,211	343
PETERSHAM.											
Prior to Water Board's control:—						18″	20″				
Wardell-street	...	53	. .	...	...	...	. .	165	165	165	53
Under Water Board's control:—											
New Canterbury Road	. .	...	20	...	...	...	...	54			
Do	...	...	...	...	161	...	...	587	928		
Do	...	...	...	...	. .	34	...	136			
Do	...	...	...	...	...	...	39	151			
Krombit-street	...	53	...	...	...	...	...	163	163		
Cobar-street	...	212	...	...	...	...	. .	643	643		
Railway Terrace	...	...	2	...	...	...	...	6	135		
Do	...	...	...	...	30	...	...	129			
Victoria-street	...	192	...	...	...	...	...	595	595		
Fairmount-street	...	91	...	...	...	...	...	278	278		
Windsor Road	. .	1	.	...	...	...	...	5	846		
Do	...	...	274	...	. .	...	...	841			
Rosedale-street	...	90	...	...	...	...	...	274	274		
Constitution Road	...	7	...	...	...	...	...	28	1,009		
Do	...		318	...	...	...	. .	981			
Denison Road	...	298	...	...	. .	...	...	911	923		
Do	...	...	4	...	. .	...	...	12			
Albany Road	. .	127	...	...	...	...	...	392	392		
Dulwich Road	...	87	.	...	. .	...	...	265	265		
Edward Road	...	58	...	...	...	. .	...	178	178		
Pigott Road	...	113	...	...	...	...	. .	343	343		
Lewisham Road	...	90	.	...	...	. .	.	275	275		
Yule Road	...	70	.	...	...	...	...	217	217		
Frederick Road	. .	58	...	...	...	...	...	181	181		
Hampstead Road	. .	91	...	...	...	...	...	277	277		
Weston-street	...	56	. .	...	...	...	...	171	171		
	...	1,694	...	...	...	.	...	5,196			
	...		618	...	...	...	...	1,894			
	...	...	...	...	191	...	...	716	8,093	8,093	2,576
	...	...	...	...	...	34	...	136			
	. .	...		...	...	...	39	151			
Total for year	...	...	...	...	...	...	...	.....	.....	8,258	2,629

MAINS LAID, 1888—*continued.*

District and Street.	No. and Size of Pipes.							Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
	3″	4″	6″	9″	12″	15″	20″				
RANDWICK.											
Prior to Water Board's control :—											
St. James' Road	...	155	...	...	...	...	...	473	473		
Gowrie-street	...	25	...	...	...	...	...	77	77		
Waverley Road	...	...	55	...	...	...	...	157	157		
Centennial Park	...	...	9	...	...	...	...	30	30		
Belmore Road	...	...	271	...	...	...	...	830	830		
	...	180	...	...	...	...	...	550	1,567	1,567	515
	...	...	335	...	...	...	...	1,017			
Under Water Board's control :—											
Belmore Road	...	1	...	...	...	...	...	3	603		
Do	...	...	123	...	...	...	...	369			
Do	...	...	...	77	...	...	...	231			
Brook-street	...	287	...	...	...	...	...	847	847		
Carr-street	...	58	...	...	...	...	...	176	176		
Coogee-street	...	109	...	...	...	...	...	334	334		
St. Luke's-street	...	82	...	...	...	...	...	242	242		
Beach-street	...	...	35	...	...	...	...	106	106		
Bream-street	...	138	...	...	...	...	...	421	421		
Perouse-street	...	173	...	...	...	...	...	543	543		
St. Paul's-street	...	83	...	...	...	...	...	251	251		
John-street	...	42	...	...	...	...	...	130	130		
Arden-street	...	36	...	...	...	...	...	110	190		
Do	...	...	26	...	...	...	...	80			
	...	1,004	...	...	...	...	...	3,057	3,843	3,843	1,265
	...	...	184	...	...	...	...	555			
	...	...	...	77	...	...	...	231			
Total for year	...	...	...	...	...	...	...	.....	.....	5,410	1,780
REDFERN.											
Prior to Water Board's control :—											
Ivy-street	...	9	...	...	...	...	...	25	25		
Thurlow-street	...	46	...	...	...	...	...	137	137		
	...	55	...	...	...	...	...	162	162	162	55
Under Water Board's control :—											
Baptist-street	...	22	...	...	...	...	...	68	68		
Telopia-street	...	70	...	...	...	...	...	210	210		
William-street	...	81	...	...	...	...	...	246	246		
Wilson-street	...	66	...	...	...	...	...	201	201		
	...	239	...	...	...	...	...	725	725	725	239
Total for year	...	...	...	...	...	...	...	.....	.....	887	294
ST. LEONARDS.											
Prior to Water Board's control :—											
West-street	...	...	117	...	...	...	...	350	350	350	117
Under Water Board's control :—											
Thrupp's Point Road	2	...	...	...	...	...	...	6	1,311		
Do	...	192	...	...	...	...	...	576			
Do	...	...	243	...	...	...	...	729			
Wycombe-street	...	149	...	...	...	...	...	447	447		
Falcon-street	...	...	...	...	...	128	...	483	483		
Broughton-street	...	66	...	...	...	...	...	202	202		
Supply and Delivery Tanks	...	...	11	...	...	...	...	36	85		
Do do	...	...	...	14	...	...	...	49			
Harriette-street	...	23	...	...	...	...	...	70	70		
Arthur-street	...	44	...	...	...	...	...	133	133		
Church-street	...	45	...	...	...	...	...	138	138		
M'Laren-street	...	63	...	...	...	...	...	191	191		
James-street	...	80	...	...	...	...	...	241	241		
Lane Cove Road	...	219	...	...	...	...	...	668	677		
Do	...	...	3	...	...	...	...	9			
William-street	...	...	...	30	...	...	...	93	93		
Mount-street	...	...	61	...	...	...	...	184	184		
Edward-street	...	4	...	...	...	...	...	16	203		
Do	...	...	61	...	...	...	...	187			
West-street	...	...	293	...	...	...	...	887	923		
Do	...	12	...	...	...	...	...	36			
Hayberry-street	...	147	...	...	...	...	...	442	442		
Burlington-street	...	146	...	...	...	...	...	441	441		
Ernest-street	...	146	...	...	...	...	...	441	441		
	2	...	...	...	...	...	...	6	6,705	6,705	2,182
	...	1,336	...	...	...	...	...	4,042			
	...	...	672	...	...	...	...	2,032			
	...	...	...	44	...	...	...	142			
	...	...	...	...	...	128	...	483			
Total for year	...	...	...	...	...	...	...	.....	.....	7,055	2,299

MAINS LAID, 1888—*continued.*

District and Street.	No. and Size of Pipes. 3″	4″	6″	9″	12″	15″	20″	Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
ST. PETER'S.											
Prior to Water Board's control:—											
Campbell-street	...	..	...	151	...	...	...	462	462		
Cook's River Road	...	.	...	...	181	...	...	768	768		
	...	...	.	151	181	..	...	1,230	1,230	1,230	332
Under Water Board's control:—											
Campbell-street	...	2	...	...	...	...	...	6	251		
Do	..	..	78	...	...	...	...	245			
Lackey-street	..	67	...	...	...	...	...	205	205		
Hutchison-street	...	119	...	..	.	...	...	365	365		
Church-street	...	107	...	...	..	..	...	333	333		
Railway Road	...	..	.	140	...	...	...	424	442		
Do	...	...	6	...	...	...	...	18			
Park-street	...	148	...	...	.	...	...	455	455		
Brown-street	...	79	...	...	...	..	...	243	243		
Sutherland-street	...	141	..	...	..	...	...	432	432		
St. Peter's-street	...	61	...	...	...	..	...	187	187		
Terry Road	..	150	..	..	...	..	...	461	461		
Unwin's Bridge Road	...	9		...	.	...	..	36	1,232		
Do do	...	...	5	..	.	...	...	17			
Do do	...	..	...	388	...	...	...	1,179			
George-street	...	142	...	...	..	...	...	436	436		
Yelverton-street	...	136	.	...	...	...	...	414	414		
Frederick-street	...	134	..	...		...	..	407	407		
Belmore-street	...	147	...	...	...	...		446	446		
Victoria-street	..	45	.	...	...	...	...	139	139		
Samuel-street	...	134	...	...	.	...		404	404		
Symerston-street	...	120	..	.	.	...	...	363	363		
Bowen Park Road	..	170	...	..	...		...	518	518		
Crown-street	...	86	..	..	..	...	.	263	263		
	...	1,997	..	...	...	...	...	6,113	7,996	7,996	2,614
	...	...	89	.	...	...	..	280			
	...	.	...	528	...	...		1,603			
Total for year	..		...	...	.		..	.....	... ..	9,226	2,946
STRATHFIELD.											
Prior to Water Board's control:—											
Torrington Road	...	123	...	..	...	...	...	381	381		
Carrington-street	...	108	..	..	...	.		337	337		
Meredith-street	...	119	...	...	...	...	...	365	365		
Abbotsford Road	...	89	...	.	...	...	..	272	411		
Do		...	46	...	..	...	..	139			
Strathfield Avenue	...	56	...		...	...	...	172	172		
Woodward Avenue	...	172	...		...	..	...	528	528		
Alviston Road	...	67	...	.	.	.	..	204	204		
Margaret-street	...	105	...	..	..	.	...	321	321		
Elwin-street	...	50	..	...	.	...	...	153	153		
Boulevarde	...	...	101	.	...	...	...	297	297		
Nichol Parade	..	.	50	..	...	...	...	155	155		
Florence-street	...	...	75	...	...		...	230	230		
	.	889		...	...	...	...	2,733	3,554	3,554	1,161
	.		272	.	.	...	...	821			
Under Water Board's control:—											
Wakeford Road	.	114	..		...	...		342	342	979	338
Liverpool Road	.	..	224	...	...	..	..	637	637		
Total for year	...	.	...	...	..	.	...	... ..	... .	4,533	1,499
VICTORIA.											
Prior to Water Board's control —											
McKenzie-street	...	27	...	...	...	...	...	85	85		
Mitchell-street	..	127	..	...	...	...	.	375	375		
Susannah-street	...	144	.	...	...	...	...	442	442		
Parker-street	..	18	..	..	...	...	...	54	54		
George-street	...	66	...	..	...	...	..	205	205		
West Crescent-street	..	55		...	...		...	171	171		
Middle-street	...	95	.		.	..	..	291	291		
Lower Bay View-street	...	95		..	...	.		310	310		
Upper Bay View-street	..	75		.	.	...	...	229	229		
Walter-street	...	29	..		...		.	88	88		
Grantham-street	...	12	...	...	...	...	...	38	38		
Union-street	..	...	187	...	.	...	...	570	570		
	...	743	..	...	.	..	...	2,288	2,858	2,858	930
	...	...	187		...		..	570			
Under Water Board's control.—											
Blue Point Road	...	53	...	.	..	..	...	163	163		
Edward-street	...	48	..		..	...	..	150	150		
Lord-street	...	46	...	..		...	..	138	138		
	..	147	.	.	...	.	...	451	451	451	147
Total for year	...	...	...	...	.	..	..	. . .	...	3,309	1,077

MAINS LAID, 1888—*continued.*

District and Street.	No. and Size of Pipes. 3″	4″	6″	9″	12″	15″	20″	Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
WATERLOO.											
Under Water Board's control :—											
Portman-street	...	21	...	...	...	...	...	63	63		
Merton-street	...	77	...	...	...	...	...	231	231		
Tilford-street	...	53	...	...	...	...	...	159	159		
Elizabeth-street	...	27	...	...	...	...	...	82	276		
Do	...	...	64	...	...	...	...	194			
M'Evoy-street	...	20	...	...	...	...	...	60	60		
Hansard-street	...	64	...	...	...	...	...	195	195		
Epsom Road	...	63	...	...	...	...	...	191	191		
George-street	...	9	...	...	...	...	...	34	304		
Do	...	...	2	...	...	...	...	6			
Do	...	...	...	11	...	...	...	33			
Do	...	...	...	...	54	...	...	231			
Buckland and Wellington Streets	...	21	...	...	...	...	...	79	516		
Do do ...	...	...	7	...	...	...	...	25			
Do do ...	...	...	...	139	...	...	...	412			
Green-street	...	52	...	...	...	...	...	156	156		
Total for year	...	407	...	...	...	...	...	1,250	2,151	2,151	684
	...	...	73	...	...	...	...	225			
	...	...	...	150	...	...	...	445			
	...	...	...	...	54	...	...	231			
WAVERLEY.											
Prior to Water Board's control :—											
Bennett-street	...	142	...	...	...	...	...	434	434		
Ruthven-street	...	107	...	...	...	...	...	326	326		
Porter-street	...	35	...	...	...	...	...	106	106		
Lugar-street	...	...	77	...	...	...	...	237	237		
Nelson Bay Road	...	...	91	...	...	...	...	275	275		
Evans-street	...	...	56	...	...	...	...	169	169		
Fletcher-street	...	134	...	...	...	...	...	401	401		
Dellview-street	...	91	...	...	...	...	...	284	284		
	...	509	...	...	...	...	...	1,551	2,232	2,232	733
	...	...	224	...	...	...	...	681			
Under Water Board's control :—											
Arden-street	...	...	106	...	...	...	...	318	318		
Chesterfield Parade	...	136	...	...	...	...	...	408	408		
Anglesea-street	...	55	...	...	...	...	...	166	166		
Birrell-street	...	...	44	...	...	...	...	132	132		
Denham-street	...	105	...	...	...	...	...	315	315		
M'Pherson-street	...	...	168	...	...	...	...	509	509		
Kent-street	...	31	...	...	...	...	...	93	93		
Carlton-street	...	29	...	...	...	...	...	91	91		
Leichhardt-street	...	64	...	...	...	...	...	195	195		
Barclay-street	...	36	...	...	...	...	...	110	110		
Fitzgerald-street	...	66	...	...	...	...	...	202	202		
Denison-street	...	23	...	...	...	...	...	70	70		
Virgil-street	...	52	...	...	...	...	...	160	160		
Brae-street	...	74	...	...	...	...	...	230	251		
Do	...	...	6	...	...	...	...	21			
Lawson-street	...	86	...	...	...	...	...	263	263		
Wiley-street	...	105	...	...	...	...	...	318	318		
Nelson Bay Road	...	70	...	...	...	...	...	212	212		
	...	932	...	...	...	...	...	2,843	3,813	3,813	1,256
	...	...	324	...	...	...	...	970			
Total for Year	...	...	...	...	...	...	...	.....	.....	6,045	1,989
WOOLLAHRA.											
Prior to Water Board's control :—											
Grosvenor-street	...	...	101	...	...	...	...	306	306		
Grafton-street	...	...	142	...	...	...	...	430	430		
Junction-street	...	...	25	...	...	...	...	75	75		
	...	...	268	...	...	...	...	811	811	811	268
Under Water Board's control :—											
Cooper-street	...	40	...	...	...	...	...	121	121		
Australia-street	...	90	...	...	...	...	...	273	273		
Short-street	...	15	...	...	...	...	...	47	47		
Small-street	...	22	...	...	...	...	...	67	67		
	...	167	...	...	...	...	...	508	508	508	167
Total for year	...	...	...	...	...	...	...	.....	.....	1,319	435

Mains Cleaned, 1888.

Street.	Length of different sizes. 3″	4″	6″	Length of street.	Total length.
City.					
Prior to Water Board's control :—					
Castlereagh-street	.....	500	588	1,088	
Thomas-street	.....	52	.....	52	
Quay-street	106	.....	.....	106	
Valentine-lane	50	54	.....	104	
Little Bourke-street	50	60	427	537	
Auburn-street	.....	80	.....	80	
Cleveland-street	40	.....	.....	40	
Woolley-street	160	.....	.....	160	
Pembroke-street	120	.....	.....	120	
Totals	526	746	1,015	2,287	2,287
Under Water Board's control :—					
Woolloomooloo-street	.....	.....	415	415	
Victoria-street	.....	512	729	1,241	
College-street	.....	131	.....	131	
Forbes-street	.....	538	183	721	
Albert-street	121	.....	.....	121	
Orwell-street	.....	192	.....	192	
Lankelly-lane	110	.....	.....	110	
Brougham-street	.....	258	.....	258	
Duke-street	240	455	.....	695	
Thomson-lane	153	.....	.....	153	
Thomson-street	209	.....	.....	209	
Pring-street	.....	57	.....	57	
Belvoir-street	140	.....	.....	140	
Beaufort-street	66	.....	.....	66	
Wilton-place	.....	102	.....	102	
Wilton-lane	60	.....	.....	60	
Sarah Ann-street	.....	173	.....	173	
Wilton-street	.....	105	.....	105	
Brumby-street	.....	55	.....	55	
Buckingham-street	.....	341	.....	341	
Bedford-street	.....	64	.....	64	
Little Buckingham-street	.....	406	.....	406	
Castlereagh-lane	.....	187	.....	187	
Adelaide and Steel-streets	.....	188	.....	188	
High Holborn-street	218	.....	.....	218	
Lansdowne-street	.....	212	.....	212	
Cleveland-street	230	270	.....	500	
Chelsea-street	.....	214	.....	214	
Bourke-street	.....	.....	536	536	
Albion-street	60	.....	.....	60	
Total	1,607	4,460	1,863	7,930	7,930
Prior to Board's control	526	746	1,015	2,287	2,287
Grand Total	2,133	5,206	2,878	10,217	10,217

5 miles 1,417 yards.

Connections made to Mains.

Municipality.	Drillings.	Extensions from existing services.	Houses supplied.	Meters affixed.	Horse troughs.	Gully shafts.
Alexandria	51	3	73	4	.....	.....
Ashfield	448	15	530	80	.....	.....
Balmain	241	62	335	30	7	.....
Burwood	270	10	361	69	.....	.....
Camperdown	28	1	33	3	.....	14
City	20	.....	24	154	.....	.....
Concord	21	.....	21	.....	.....	.....
Darlington	7	4	8	3	.....	.....
Glebe	47	.....	68	17	.....	.....
Granville	18	.....	21	2	.....	.....
Leichhardt	178	22	207	42	.....	.....
Macdonaldtown	29	8	80	5	.....	.....
Marrickville	241	17	270	40	.....	.....
Newtown	121	32	153	25	.....	.....
North Shore	199	15	314	55	.....	.....
Paddington	64	30	96	13	.....	14
Petersham	167	16	210	31	.....	.....
Randwick	83	5	107	42	.....	.....
Redfern	89	34	141	25	.....	.....
Strathfield	54	.....	57	34	.....	.....
St. Peters	195	39	281	7	.....	.....
Waterloo	29	7	37	3	.....	.....
Waverley	146	23	175	53	.....	.....
Woollahra	65	1	82	43	.....	.....
Totals	2,811	344	3,684	780	7	28

WORK DONE BY WASTE WATER INSPECTORS, 1888.

District.	No. of Inspections.	No. of Notices served. To abate waste.	To fix meters.	To remove stand-pipes.
CITY.				
Macquarie Ward.....	2,289	79	17	.....
Phillip ,, ...	1,602	63	.....	.....
Fitzroy ,, ...	159	8	4	.....
Gipps ,, ...	2,465	191	23	44
Brisbane ,, ...	560	105	14	14
Cook ,, ...	5,283	235	14	9
Denison ,, ...	1	.....	.....	1
Totals	12,359	681	72	68

D	No. of Inspections.	No. of Notices served. To abate waste.	To fix meters.	To remove stand-pipes.
SUBURBS.				
Woollahra.....	81	.....	8	.....
Waverley	242	.....	22	.....
Redfern	6	1	18	3
Randwick	.....	.....	10	6
Waterloo	2	.....	2	.....
Newtown	2	.....	.....	2
Balmain.....	.....	.....	6	.....
Glebe	.....	.....	3	.....
Stanmore	.....	.....	5	.....
Totals	333	1	74	11

D.

Sir, The Waterworks, Crown-street, 11 February, 1889.

I have the honor, in accordance with instructions of the 7th instant, to make the following Report upon the working of all the pumping engines, &c., during the year 1888.

The main pumping engines at the Crown-street works, which were erected about ten years ago, were in daily work throughout the year pumping to the Paddington Reservoir, and performed the work satisfactorily. During the year they have only required the usual examinations and repairs consistent with the constant running of the machinery. With respect to the flaw in the main shaft which I reported to the Board some time ago, I may mention that I examined the same carefully last week, and found that although the flaw was certainly more visible, showing that there was some slight deflection, yet the cracks had not extended longitudinally. Of course there is no certainty that the straps, which were put on about sixteen months ago, are sufficient to hold it together till the new machinery takes up the pumping. Still, taking in consideration the time that would be taken up in fitting the new shaft, it would not, in my opinion, be wise to interfere with the supply of water to the city and suburbs. During the year the quantity of water pumped to Paddington by these pumps was 724,914,200 gallons, showing an increase of 90,633,470 gallons on the previous year.

The Blake pumps which have been in use about seven years were in daily work throughout the year pumping to the Woollahra Reservoir. These pumps are of a design which is quite out of date. They are very much worn, and consequently require very careful handling, and are very troublesome to keep in order. The central valve chamber is liable at any time to give way, and to do away with any unnecessary delay in case of any accident, I have in readiness a duplicate chamber to replace the present one when necessary. Under the circumstances the pumps are in as fair order as they possibly can be kept, and worked during the year as satisfactorily as their dilapidated condition would permit. These pumps should be thrown out as soon as possible. During the year the quantity of water pumped by these pumps to the Woollahra Reservoir was 300,112,240 gallons, showing an increase of 110,249,540 gallons on the previous year. From the increase in the quantities of water pumped it is evident that more pumping power will shortly be required to keep up a sufficient supply.

There are three boilers at the Crown-street works supplying the main pumping engines and Blake pumps. Those boilers, with the connections, were in good working order throughout the year, only requiring repairs of a very limited nature, and worked very satisfactorily.

The pump at the Woollahra works is a geared pump, and was in almost daily work throughout the year pumping to the Waverley reservoir, and performed the work satisfactorily. The repairs to this pump during the year were of the ordinary nature necessary to maintain its efficiency. The boiler in connection with this pump was in good working order.

The pumps and boiler at the North Shore pumping works were only erected towards the latter end of the year, and consequently were working only two months of the year as required. They performed the work during that time satisfactorily.

I have, &c.,
J. FYFE,
Mechanical Engineer.

J. Trevor Jones, Esq., Board Engineer.

RETURN of water supplied and coal consumed, January 1st to December 31st, 1888.

From	To	Water pumped.	Coal consumed.
		Gallons.	Tons cwt.
Crown-street	Paddington.....	724,914,200	579 10
,, ...	Woollahra	300,112,240	1,033 15
Total pumped	.....	1,025,026,440	
Repumped—			
Woollahra	Waverley	61,236,931	181 0

Sydney: Charles Potter, Government Printer.—1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

COMMISSION OF INQUIRY

INTO THE

CONDITION OF THE PROSPECT DAM.

REPORT

OF THE

COMMISSIONERS,

GEORGE GORDON, ESQ., M. INST. C.E.,
RICHARD L. MESTAYER, ESQ., M. INST. C.E.

Appointed by the Hon. The Secretary for Public Works on 4th December, 1888.

ORDERED BY THE LEGISLATIVE ASSEMBLY TO BE PRINTED,
17 *April*, 1889.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1889.

[2*s*. 9*d*.] 80—A

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PROSPECT RESERVOIR INQUIRY.

MINUTES OF PROCEEDINGS.

MONDAY, 3 *DECEMBER*, 1888.

The Hon. J. Sutherland verbally instructed Mr. R. L. Mestayer to undertake an investigation into all the circumstances attending the failure of the embankment at the Prospect Reservoir, and to report fully upon the same, in accordance with detailed instructions which would be forwarded to him.

TUESDAY, 4 *DECEMBER*, 1888.

Mr. Mestayer attended at the Public Works Office to obtain particulars of works executed, &c., and arranged with the Under Secretary and the Resident Engineer to make the first visit to the works on the following day.

WEDNESDAY, 5 *DECEMBER*, 1888.

Mr. Mestayer proceeded to Prospect, and examined generally the whole of the works, plans, specifications, &c.

THURSDAY, 6 *DECEMBER*, 1888.

Mr. Mestayer attended at the Public Works Office, and obtained further information, plans, &c.

Letter received from Under Secretary for Public Works enclosing copy of instructions.

Letter written to Under Secretary for Public Works in reply, and asking for certain information, plans, and sections of embankment.

FRIDAY, 7 *DECEMBER*, 1888.

Mr. Mestayer proceeded to Prospect Dam.

Put down Borehole No. 1.

MONDAY, 10 *DECEMBER*, 1888.

Mr. Mestayer proceeded to Prospect Dam.

Put down Borehole No. 2.

TUESDAY, 11 *DECEMBER*, 1888.

Mr. Mestayer and Mr. Gordon met at the Public Works Office to confer upon the mode of carrying out their investigations, and afterwards at Mr. Mestayer's office, where Mr. Gordon was informed of all particulars relating to the inquiry which had been ascertained up to that date.

WEDNESDAY, 12 *DECEMBER*, 1888.

Mr. Gordon and Mr. Mestayer proceeded to the Prospect Dam.

Put down borehole No. 3.

THURSDAY, 13 *DECEMBER*, 1888.

Mr. Gordon and Mr. Mestayer attended at the Public Works Office, and were informed by the Honorable the Secretary for Public Works that, if it became necessary, steps would be taken to appoint them a Royal Commission for the purposes of the inquiry.

Mr. Gordon and Mr. Mestayer afterwards met at the latter gentleman's office, Beresford Chambers, 52, Castlereagh-street, to consider the best means of obtaining evidence.

FRIDAY, 14 *DECEMBER*, 1888.

Mr. Gordon and Mr. Mestayer proceeded to Prospect Dam, and had trenches opened up for the examination of the puddle-wall at various sections.

Observations were taken of the level, position, and condition of the puddle-wall at each place.

SATURDAY,

SATURDAY, 15 *DECEMBER*, 1888.

Mr. Gordon attended at the Australian Club, and examined Lewis P. Moline, Esq., Engineer for the Contractors, and Robert Shand, Esq., Manager for the Contractors.

Mr. Mestayer attended at his office, 52, Castlereagh-street, and examined Robert Shand, Esq., Manager for the Contractors, and Lewis P. Moline, Esq., Engineer for the Contractors.

Letters were written to Mr. Henry Murray, Contractor, requesting him to attend at Mr. Mestayer's office and give evidence respecting the work; also to Alfred Bennett, Esq., Proprietor of the *Evening News*.

Mr. Mestayer and Mr. Gordon waited on Mr. Alfred Bennett, who promised to reply by letter on Monday, the 17th instant.

It was decided to proceed to Prospect Reservoir on Monday morning, leaving Redfern by train at 8 o'clock.

Telegram forwarded to Mr. George Robinson, Forest Lodge, instructing him to meet Messrs. Gordon and Mestayer, at Redfern Railway Station, on Monday morning, at 7·45, to proceed to Prospect and take evidence of witnesses.

MONDAY, 17 *DECEMBER*, 1888.

Mr. Gordon and Mr. Mestayer, accompanied by Mr. George Robinson, Secretary and Shorthand-writer, met at the Railway Station, Redfern, at 7·45 a.m., and proceeded to Prospect Reservoir, where they had Borehole No. 5 put down.

Mr. Robert Cameron, Diver, attended and went down at section 19.

The following witnesses were examined:—Robt. H. Ryan, Esq., Government Resident Engineer; Mr. Wm. Nicholas, Government Inspector of Earthwork; Mr. Robt. Cameron, Government Diver, Harbours and Rivers Department.

A careful inspection was made of the outer slope of the embankment.

Instructions were given for the diver to be ready to go down again at another section on Wednesday next, the 19th instant, at 10 a.m., and for further borings to be taken.

TUESDAY, 18 *DECEMBER*, 1888.

Mr. Gordon and Mr. Mestayer met at the office of the latter at 9 a.m.

Letters received from Under Secretary for Public Works enclosing copies of correspondence with the proprietors of the *Eveniug News*.

Letter received from Editor of *Evening News re* appointment.

Proceeded to *Evening News* office and examined James A. Hogue, Esq., Editor of *Evening News*.

Afterwards attended at Public Works Office, and were informed by the Under Secretary that Mr. G. A. Bramston and Mr. Edwin Limond desired to be examined.

Mr. Henry Murray, Contractor, attended at Mr. Mestayer's office and was examined.

Letters were written to Messrs. Bramston; Limond; Ives, M.L.A.; F. B. Gipps, C.E.; Hon. John Davies, M.L.C.; J. Weston; and J. Rutherford, asking their attendance to give evidence; also to the Editor of the *Evening News*, for certain information.

Telegram sent to Mr. John Norton, Newcastle, asking his attendance to give evidence.

WEDNESDAY, 19 *DECEMBER*, 1888.

Mr. Gordon and Mr. Mestayer proceeded to Prospect Reservoir, where they inspected the borings ordered to be put down on Monday, and afterwards examined:—Mr. Edward Jackson, Inspector of Brickwork and Masonry; Mr. George Davis, Inspector of Puddle and Earthwork; Mr. W. Stewart Wearne, Reporter for the *Evening News;* Mr. R. Cameron, Diver, Harbours and Rivers Department.

Mr. Cameron, the diver, went down at section 44 and examined the bank and ground in the neighbourhood of the second slip, and reported result. Instructions were given for him to go down again at section 47, and also at section 16, and report at Mr. Mestayer's office on Saturday next, 22nd instant.

THURSDAY, 20 *DECEMBER*, 1888.

Messrs. Gordon and Mestayer met at Mr. Mestayer's office, Beresford Chambers, Castlereagh-street, at 9 a.m., and examined Mr. G. A. Bramston and Mr. E. Limond.

Mr. John Norton called and stated that he had not come down in response to the telegram, and that he was too busy to give evidence this week, but would write a letter stating the time when he would be disengaged and forward it this evening.

Telegram received from Mr. James Rutherford.

Telegram sent to Mr. James Rutherford.

Memo. received from Editor, *Evening News*, with information.

Letter received from Mrs. Gipps, ststing that Mr. Gipps was at present in Melbourne.

Letter received from Mr. Ives, M.P.

FRIDAY, 21 *DECEMBER*, 1888.

Mr. Gordon and Mr. Mestayer met at Mr. Mestayer's office, Beresford Chambers, at 9 a.m., and examined Mr. R. Cameron and Mr. Jas. Rutherford.

Mr. John Norton called at Mr. Mestayer's office and stated that he was too busy at present to give any evidence, but would send in a letter stating his terms and when he would be prepared to attend.

Letter received from Mr. Weston, giving information of character of work executed when he was engaged on the works at Prospect.

SATURDAY, 22 *DECEMBER*, 1888.

Mr. Gordon and Mr. Mestayer met at Mr. Mestayer's office to receive evidence from Mr. Gipps and Mr. Norton, neither of whom attended.

Letter written to Mr. Gipps, asking him to attend at the earliest possible moment.

Drafting Report, and preparing copies of evidence and other information.

MONDAY, 24 *DECEMBER*, 1888.

Mr. Mestayer attended at his office.

Letter written to Mr. R. H. Ryan for information.

Letter received from the Under Secretary for Public Works, asking for detailed estimate.

Drafting Report, &c.

THURSDAY, 27 *DECEMBER*, 1888.

Mr. Mestayer attended at his office and examined F. B. Gipps, Esq., C.E.

Mr. Mestayer afterwards called on the Under Secretary for Public Works, and was informed that Mr. Secretary Sutherland had telegraphed to Mr. Norton, and also to Mr. Maher, to attend on Saturday morning, 29th instant.

FRIDAY, 28 *DECEMBER*, 1888.

Letter written to Mr. Hogue, *Evening News* office.

Mr. Mestayer proceeded to Prospect, where he re-examined Mr. Ryan, Mr. Nicholas, and Mr. Davis.

SATURDAY, 29 *DECEMBER*, 1888.

Mr. J. J. Maher, of West Maitland, attended at Mr. Mestayer's office, and was examined by Mr. Mestayer.

Letter received from Secretary for Public Works, enclosing one from Mr. Maher.

Letter received from Secretary for Public Works, enclosing extract from *Evening News*.

Letter received from Under Secretary wishing Mr. Mestayer's attendance.

Letter written to Under Secretary for Public Works *re* Mr. Maher.

Letter written to Mr. Ryan for information.

Letter written to Editor, *Evening News*, for information.

Information received from the Secretary for Public Works that Mr. John Norton could not attend until next Saturday.

MONDAY, 31 *DECEMBER*, 1888.

Letters written to J. A. Hogue, Esq., *Evening News*.

Letters written to G. Gordon, Esq., Melbourne, with copies of evidence of witnesses examined by Mr. Mestayer.

Telegram received from G. Gordon, Esq., Melbourne.

Telegram sent to G. Gordon, Esq., Melbourne.

WEDNESDAY, 2 *JANUARY*, 1889.

Mr. Mestayer proceeded to Prospect, where he examined Mr. J. Buckett, Mr. Ryan, and Mr. Davis.

THURSDAY, 3 *JANUARY*, 1889.

Memo. written to Secretary for Works in reply to *Evening News*' leading article.

Letter received from Under Secretary for Public Works, with evidence.

Letter received from Chief Clerk for Public Works to call at Public Works Office.

Letter written to Mr. Ryan for information.

Letter written to Mr. Gordon, Melbourne, with copies of evidence taken by Mr. Mestayer.

FRIDAY, 4 *JANUARY*, 1889.

Letter written to Mr. Gordon, Melbourne, with copies of evidence taken by Mr. Mestayer, &c.

Letter written to Mr. Ryan asking information.

Letter received from D. C. M'Lachlan, Esq., Chief Clerk, Public Works Department, to examine Mr. Mackay.

SATURDAY, 5 *JANUARY*, 1889.

Mr. Mestayer attended at the Public Works Office at 10 a.m., and examined Mr. A. Mackay, F.C.S.

Letter written to Mr. Ryan *re* evidence.

Drafting Report, and preparing copies of evidence, and other information.

WEDNESDAY, 9 *JANUARY*, 1889.

Letter received from the Under Secretary for Public Works, with cutting from *Daily Telegraph*.

Letter written to Under Secretary for Public Works in reply.

FRIDAY,

FRIDAY, 11 *JANUARY*, 1889.

Letter written to Mr. W. A. Harper, requesting him to give evidence.
Letter written to Under Secretary, with report.

SATURDAY, 12 *JANUARY*, 1889.

Estimate given to the Under Secretary for Public Works.
Letter written to Mr. Ryan, for further information.

MONDAY, 14 *JANUARY*, 1889.

Telegram to Mr. Ryan, for further information.
Letter to the Under Secretary for Public Works, with Appendices to Report.

TUESDAY, 15 *JANUARY*, 1889.

Letter to the Under Secretary for Public Works, *re* Mr. Harper's evidence.
Mr. Harper, junior, called at Mr. Mestayer's office, and stated that his brother was too ill to attend at present.

THURSDAY, 17 *JANUARY*, 1889.

The Honorable the Secretary for Public Works sent for Mr. Mestayer, and verbally informed him that he wished him to confer with Mr. G. Gordon, and discuss the various matters referred to in their reports, and to submit, so far as they could do so, a joint recommendation as to the measures which should be adopted.

TUESDAY, 22 *JANUARY*, 1889.

Letter received from Under Secretary for Public Works, enclosing report and diagram from the Government Geologist suggesting possibility of a slip in the strata causing the slips at the Prospect embankment.
Letter written to Mr. Wilkinson, requesting him to call on Mr. Mestayer at his office on Thursday next.

THURSDAY, 24 *JANUARY*, 1889.

C. S. Wilkinson, Esq., F.G.S., Government Geologist, called at Mr. Mestayer's office, and discussed the possibility of the slip at Prospect having been caused by faults in the strata, and to compare the facts ascertained during the inquiry with what might have been expected to take place under such circumstances.
Letter written to Under Secretary for Public Works, *re* analysis of water from foot of embankment.

FRIDAY, 25 *JANUARY*, 1889.

Mr. Gordon and Mr. Mestayer met at the latter gentleman's office to discuss their reports and prepare a joint recommendation as to the measures they would recommend for adoption.

MONDAY, 28 *JANUARY*, 1889.

Mr. Gordon and Mr. Mestayer proceeded to Prospect to examine the works.

TUESDAY, 29 *JANUARY*, 1889.

Mr. Gordon and Mr. Mestayer met at the latter gentleman's office to consider their joint recommendation.

WEDNESDAY, 30 *JANUARY*, 1889.

Mr. Gordon and Mr. Mestayer met at the latter gentleman's office, and drew up their reports upon the works they recommended for immediate adoption.
Reports sent in to the Honorable the Secretary for Public Works.
Proofs of evidence sent to the gentlemen who had given evidence.

WEDNESDAY, 6 *FEBRUARY*, 1889.

Mr. Mestayer attended at Public Works Office with regard to Minutes of Evidence. Instructions received to write to W. E. Dunn, Esq., contractor's engineer at Prospect, and F. A. Franklin, Esq., to give evidence.
Letters written to F. A. Franklin, Esq., W. E. Dunn, Esq., and the Under Secretary for Public Works.

FRIDAY, 8 *FEBRUARY*, 1889.

Letter written to C. S. Wilkinson, Esq., *re* his evidence.

SATURDAY,

SATURDAY, 9 *FEBRUARY*, 1889.

Letter received from F. A. Franklin, Esq., stating that when he returned to town he would call.

TUESDAY, 12 *FEBRUARY*, 1889.

Message received from P.W. Office requiring attendance of Mr. Mestayer.

WEDNESDAY, 13 *FEBRUARY*, 1889.

At Public Works Office in answer to message, and saw the Under Secretary for Public Works.

THURSDAY, 14 *FEBRUARY*, 1889.

Letter written to G. Gordon, Esq., M.I.C.E., Melbourne, with information.

FRIDAY, 15 *FEBRUARY*, 1889.

Letter written to Superintendent of Telegraphs enclosing Mr. Gordon's letter.

Letter written to Mr. Bramston *re* evidence.

R. Shand, Esq., contractor, Prospect, called and arranged for Mr. Dunn to attend next week for further examination.

WEDNESDAY, 20 *FEBRUARY*, 1889.

Called on Mr. Harper *re* giving his evidence this week.

Telegram sent to Mr. Ryan and Mr. Shand, saying, "Will be at Prospect Dam to-morrow morning."

THURSDAY, 21 *FEBRUARY*, 1889.

Proceeded to Prospect, where Mr. Mestayer examined Mr. W. E. Dunn and Mr. J. Rothery.

FRIDAY, 22 *FEBRUARY*, 1889.

Letter received from Mr. Harper, saying that he would call to-day and give evidence.

Letter written to Under Secretary for Public Works, enclosing report on analysis of water from the foot of embankment at Prospect Dam.

SATURDAY, 23 *FEBRUARY*, 1889.

Letter written to Mr. Harper, appointing 10 a.m. on Tuesday to receive his evidence.

Letter written to Mr. Gordon, Melbourne, forwarding copies of the evidence of Mr. Dunn and of Mr. Rothery, taken on Thursday.

TUESDAY, 26 *FEBRUARY*, 1889.

Attended and examined W. A. Harper, Esq., C.E.

WEDNESDAY, 27 *FEBRUARY*, 1889.

Letter received from Mr. Gordon *re* Mr. Dunn's evidence.

Letter to Mr. R. H. Ryan *re* Mr. Dunn's evidence.

Telegram to Mr. Ryan requesting him to see Mr. Dunn, and ask him to call at this office one morning this week.

THURSDAY, 28 *FEBRUARY*, 1889.

Letter to Mr. Gordon with copy of Mr. Harper's evidence.

Letter to The Under Secretary for Public Works *re* Mr. Franklin.

FRIDAY, 1 *MARCH*, 1889.

Minute received from the Under Secretary for Public Works, enclosing letter from Mr. District Court Judge Murray *re* chemical changes of the clays.

Letter to Under Secretary for Public Works, acknowledging its receipt, and asking for analyses made by Mr. Mackay.

Analyses received.

SATURDAY, 2 *MARCH*, 1889.

Letter to Mr Gordon, with copies of Mr. Mackay's analyses and of Judge Murray's letter.

Letter to Mr. Dunn *re* not calling this morning.

MONDAY,

MONDAY, 4 *MARCH*, 1889.

Waited on Mr. Franklin *re* his evidence.

TUESDAY, 5 *MARCH*, 1889.

Letter from Mr. Dunn *re* his inability to attend on Saturday last.
Letter to Mr. Dunn in reply.
Letter to Mr. Ryan, coming up on Thursday.
Letter to Mr. Shand *re* Mr. Dunn.
Letter to Mr. Franklin, asking him to call on Friday.

WEDNESDAY, 6 *MARCH*, 1889.

Attended at Public Works Office *re* printing the fresh matter now ready.

Mr. Franklin, C.E., attended and informed Mr. Mestayer that, having been engaged as the professional adviser to the contractors, he was not prepared to give any evidence until he had received a reply from the contractors to a letter which he had sent them.

Preparing report on Judge Murray's letter; also on Mr. Mackay's analysis of the soils at Prospect.

THURSDAY, 7 *MARCH*, 1889.

Proceeded to Prospect, where Mr. Mestayer re-examined Mr. Dunn, Mr. Ryan, and Mr. Davis *re* shale peeling up.

SATURDAY, 9 *MARCH*, 1889.

Letter to Mr. Gordon, with copies of evidence of Mr. Dunn, Mr. Ryan, and Mr. Davis, taken on Thursday.

Mr. F. A. Franklin called and stated that he declined to give any evidence, as his clients, the contractors, did not see that any good would result from re-opening the subject.

MONDAY, 11 *MARCH*, 1889.

Letter to the Under Secretary for Public Works regarding Mr. Franklin's refusal to give evidence, and asking for instructions.

TUESDAY, 12 *MARCH*, 1889.

Letter to Under Secretary for Public Works, *re* printing evidence, &c.

MONDAY, 25 *MARCH*, 1889.

Letter to the Under Secretary for Public Works, enclosing report on analysis of soils, and Mr. District Court Judge Murray's letter on the effect of chemical changes in the material forming the Prospect embankment.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

SYDNEY WATER SUPPLY.

(REPORTS, &c., ON THE PROSPECT DAM BY MESSRS. GORDON AND MESTAYER.)

Ordered by the Legislative Assembly to be printed, 15 *January*, 1889.

[*Laid upon the Table of the House, further reports, minutes, and correspondence in connection with the Prospect Dam.*]

PROSPECT DAM.

15 January, 1889.

I HAVE carefully read and considered the reports which have been furnished by Messrs. Gordon and Mestayer in connection with this important matter. A perusal of all the correspondence will, I think, show that I have neglected no opportunity of obtaining information from every source which has been open to me in relation thereto.

I have from the first been fully impressed with the necessity of ascertaining all the facts of the case, and making them public without a single reserve, and this, I think, I have accomplished.

A perusal of the reports obtained will, I think, show that if the measures recommended by the two able engineers which I have employed are carried out no fears need be apprehended of the ultimate success of this great work. I have now to direct Mr. Hickson to carry out as quickly as possible the works recommended by these gentlemen, and if I have not an opportunity of doing it myself, I would urge my successor to place all the papers on the Table of the House at his earliest convenience. With regard to the termination of the contract recommended by Mr. Gordon, I have taken steps to secure this, but I have been met with the statement on the part of the contractors that there are outstanding claims unsettled, amounting to something like £33,000. This is the first time I have heard of their existence, and upon making inquiries of the Harbours and Rivers Department I am told that they are also unaware of it. The whole matter requires careful investigation.

JOHN SUTHERLAND.

Report on the Prospect Dam.

By G. Gordon, M. Inst., C.E., 7 January, 1889.

The points on which I am desired by the Honorable the Secretary for Public Works to report are :—

I. On the dam and subsidiary works as a whole; whether the design is in accordance with the best engineering knowledge, and whether the work has been faithfully carried out according to the design.

II. The present condition of the dam.

III. The kind of material of which it is composed, and its adaptability to the purpose for which it has been used.

IV. The cause of the movements, and their significance as bearing on the stability of the dam.

V. The best course to pursue under the circumstances.

2. Having made a personal inspection of the dam, and had levels, measurements, and borings, and an examination by a diver made in my presence, and having examined the persons named in Appendix II, and inspected original drawings, &c., I have given the subject my most careful consideration, and I now have the honor to report as follows:—

I.—The Dam and Subsidiary Works as a whole.

3. Assuming the scheme of bringing the Nepean water into Sydney, of which the Prospect Dam forms an important part, to have been, after full consideration, finally adopted as the best, I am of opinion that the general design of the dam and its subsidiary works leaves nothing to be desired. It is in full accordance with examples of similar structures by some of the most eminent engineers in England, and in some particulars, I think, it is in advance of several important modern works in Europe. It seems to me complete in all its parts, simple in design, and therefore easily worked. As far as the general design is concerned, it seems to me to have been departed from in constructing the works only in two particulars; the connecting main has been laid on the lower instead of the upper side of the dam, and the brickwork stop in the tunnel has been purposely left out. Both are, I think, improvements.

4. I shall have occasion to refer to the specification again under III; I would here remark that so far as it applies to the dam it seems to me to be rather too strict and explicit for a work of this magnitude, the conditions of which had in part to be ascertained as the work proceeded, and not to leave enough latitude to the engineer. At the same time I admit that high authorities could be cited in favour of every clause in it. But for such a work the specification should be made applicable according to the spirit or intention and object of the design, rather than to its literal expression in the specification and plan, and it seems to me that in some particulars it would under this specification have been difficult to exercise a desirable latitude without coming into collision with the contractors. Judging by the evidence, I am of opinion that the contractors carried out the work as nearly as possible according to the specification, and in fact that they were very strictly kept to it, although Mr. Ryan, the executive engineer, and other witnesses, say there was a constant battle going on between the officers of the Department and the contractors. This is by no means an unusual state of affairs on large works. All the evidence, both of contractors and others goes to prove that Mr. Ryan was unremitting in his attention to the work and scrupulously exacting as to the conditions of the specification. There are on every work some occasions on which deviations from the specification are unavoidable, owing to the weather or other accidental causes.

5. As to the tower, tunnel, and outlet works generally, I had an opportunity of seeing them in progress in August, 1884, and was impressed by their substantial character and the care that was being taken in their construction. As they seem now to be in perfect order I shall not need to refer to them again.

II.—The Present Condition of the Dam.

6. The first slip at No. 54, which began in April last and continued up to November 12th, appears now to have been very nearly stopped in its horizontal movement by the deposit of stone on and outside the lower part of the slope in the middle portion of the slip. While the filling up of the slip went on in July and up to August 6th, the forward horizontal movement was as much as 1 foot per diem. After the 7th August it averaged 1·08 inches per diem to the 31st, and during the whole of September it only moved 1 inch. In October and part of November the movement was dependent on the work of filling and trimming going on on the inner slope, the aggregate movement up to November 12th being 20 inches. Since that date sometimes no movement has been detected for days together, but the bank has not yet quite attained a state of equilibrium, inasmuch as movements of $\frac{1}{8}''$ to $1\frac{1}{8}''$ in a day have been measured, amounting in the aggregate to $6\frac{1}{2}''$ from November 12th to December 20th. The forward movement of the stone filling which was observable for some time in the axis of the slip, and which reached a total observed amount of $10\frac{1}{2}''$, has almost ceased, no motion being detected from the 27th November to the 18th December, except $\frac{3}{8}''$ on the 11th December. There is still some forward movement at the ends of the slip where the stone filling is incomplete.

7. From the sections shown to me that had been taken from time to time it is evident that this slip has a forward rolling motion, the toe having apparently resisted for some time any tendency there may have been in the lower part of the bank to slip forward. The motion is roughly indicated by arrows on the section at 54 on plan No. 1 attached.

8. As the front bank slipped away from the nearly vertical puddle wall, it is probable—indeed it may be said to be certain—that the latter subsided under its own weight into the space thus formed in front of it. It is extremely plastic, and it is recorded that the level of the top was found on the 2nd May, 1888, to have gone down 5 feet. After being remade, it went down 3 feet to 21st June, and 6 feet and upwards to 22nd September, when it was again fully rebuilt, but had subsided about 5 feet up to the 20th ultimo.

The Second Slip.

9. The second slip at T.S., No. 44, was first observed in November last, and observations of the daily movement were begun on the 23rd of that month. Before my arrival Mr. Mestayer had put down two bores, called No. 1 and No. 2, on the 7th and 10th December, respectively, at the reduced levels of 185·87 and 186·50, the water level in the reservoir being 178·79 and 178·75. On the 14th December

December I put down a bore, called No. 4, in the axis of this slip, at the R.L. of 179·517, near the water's edge, the water level being 178·72. This bore was put down to the original bottom at about 26 feet. At 14 feet (R.L. 165·57) water was met with which rose 4 ft. 6 in. in the bore (to R.L. 170·0); below that, at 16 feet, we found stiff dry yellow clay. At 20 feet it was slightly sandy. The water then rose to 1 ft. 5 in. below W.L. of reservoir or R.L. 177·22. On examining the same day No. 1 bore, the water was met (in the shape of thick slurry) at R.L. 172·62, and in No. 2 (clean water), at R.L. 177·42, with slurry at 174·25. On again trying the level of the water in No. 4 it was found at 174·24. As, in boring, this level was pierced in dry clay, and as the level of water first struck was considerably lower, also because in boring Nos. 1 and 2 no water was met with, although it afterwards rose in the bores to the heights above-mentioned, I conclude that there is no wet stratum on which the bank slides, but that the movement is in the whole mass, and the excess water is distributed through it. In all these bores the clay was generally similar, being of various colours, with a considerable admixture of white clay; in general it was stiff and dry, sometimes hard, and evidently, from the water not percolating into No. 4 from the reservoir, quite water-tight from the outside, although there is water higher up in the bank which finds its way into the bore-holes.

10. A bore, No. 3, was put into the puddle wall at the top of this slip. The puddle was thoroughly well worked, and very smooth and plastic, but to my mind not stiff enough. On the augur being withdrawn the bore-hole partly collapsed before the tool could be put down again. It is said by Inspector Davis that this was put in harder than that in the lower parts.

11. The puddle wall has subsided vertically 14·82 feet, or 12·73 below the intended ultimate level. The horizontal movement of the puddle wall has not yet been ascertained at this place, but it must have moved forward with the inner slope. The total horizontal movement of the face from 22nd November to 20th December is stated at 4·46 feet, and it was pretty uniform, averaging nearly 2 inches a day.

12. On the 19th December I sent Mr. Cameron, diver, down the slope at this place to examine the face of the bank and the toe. As well as could be measured with a steel tape down the slope from a mark above water, it was found that the top of the stone dyke had moved forward about 3 feet. The diver reported that the form of this slip is quite different from that at 54. There is no steep face to the bank and pitching near the bottom, but the toe appears to have been pushed out horizontally, the outer slope of the dyke being flatter, and the original surface of the bottom being forced forward and raised like a blister. This action extends both ways from section 44 as far as he could go, probably 200 feet on each side, but it diminishes each way, and there is more disturbance towards the east than towards the west. The broken stone between the dyke and the pitching is not thrown up or disturbed; the slope seems to the diver to be pushed out bodily, and the stones of the dyke are displaced There were a good many loose stones which seemed to have come from the rough stone above the dyke, but they may have come from the dyke itself. The top of it is not of a uniform height, being 2 or 3 feet higher in some places than in others. The diver shifted the gear to section 47, and found the toe similar to the last place, but there was less bulge in the ground. In some places the dyke is twisted. Going from section 47 towards the first slip the action seemed to die out, but there were still indications of it. The results of the diver's examination are sketched on section 44, where the disturbance is at its greatest. See sketch on drawing, Appendix E. Plan 2.

13. Although the section of this slip is quite different from that of the first, it is, I think, probable that the movement of the bank began in the same way, and is due to the same cause; but in the first slip the foundation and the toe offered greater resistance, and caused the slipping clay to rise and roll over the dyke, while in the second the toe offered comparatively no resistance to the greater weight behind it, the bank being nearly one and a half times as high as at the first slip. In both cases the bank is seeking a flatter slope.

At and near Section 18.

14. On the 14th December I desired that a bore, No. 5, should be put down next day at section 18, which is nearly the highest part of the dam, and the cores kept for inspection on the 17th. They showed that the bore went through similar clay to the former bores. The bore was about a foot above the water level. Muddy water was struck at 10 ft. (about 168 R.L.), which in about three minutes rose to the top of the hole. When the men left off on Saturday the water was about 11 in. below the surface of the reservoir. On removing the plug on Monday the water rose and ran over. At 8 to 10 ft. soft clay was met with, "as soft as the puddle in No. 3 bore," which at 4 ft. I found like soft putty, and at 6 ft. rather softer. On Monday the 17th the bore was put down to 42 ft. (the length of the rods), and finished in very stiff brown and gray clay. When the rod was taken out from 42 ft. depth the water stood at 3 ft. 6 in. from the top of the hole, or 2 ft. 7 in. below the reservoir water. I have shown this bore on drawing No. 3, as also the two additional bores Nos. 6 and 7 put down by Mr. Mestayer after I had left, in order to show the different levels at which water was struck, and at which it settled afterwards in the bores (see paragraphs 9 above and 26 below).

15. On the 17th the diver was sent down at No. 19, and reported that the toe was intact, and just the same as when he was down last for Mr. Bishop in May; but in about 12 ft. of water he came on a step or ridge in the rough stone which seemed to have been disturbed and had a wavy appearance. On the 20th the diver went down (by my instructions) at No. 17. At the bottom he found some loose stones which were not there when he was down in May last, they seem to have come from the rough stone; there are also some very loose stones in the dyke itself. Between 16 and 17 there is a great oozing out of white clay, of which the diver brought a specimen, extending some distance, and completely covering the slope. It runs over the bank "like paste" in some places, and extends pretty well up to shallow water. He noticed very little spuing at No. 19 when he was down on the 17th. He does not think this spuing runs down to the bottom. At 19 he got on the clean original bottom, and at that point there was no disturbance. He found places where there was some spuing when he was down for Mr. Bishop, but cannot remember where they are, as he made no notes at the time. At Nos. 16 and 17 he also found the ridge or step which he found at 19; it is not continuous but irregular, and not in a straight line. He did not find it where the spuing had taken place. None of this spuey material is found at the second slip, or between it and the first.

16. The puddle wall at No. 18 has subsided 4 ft. 7 in., or to 9 in. below the intended ultimate level. It has moved forward 2 ft. 4½ in. It is evident, therefore, that the bank at this place is not quite stable, although the movement is as yet very much less than at the slips. The curb at this section is

75 ft. 6 in. from the centre line, and it was intended to be 73 ft., and the line of curb seems to the eye to be somewhat bulged outward from the north end of the dam all along, but this cannot be verified by instrumental measurement, as no exact records exist of its original position. There is a curve in the rough stone toward the water side looking from the east bank, where it leaves the solid, but this is also subject to the remark just made.

At Section 5.

17. The puddle-wall is here in its right position—horizontally. It has subsided 1 ft. 9 in., that is to say, it is not yet quite down to the ultimate level, so that there is nothing to show that any undue movement has taken place at this place.

18. The rear slope of the dam seems to be in perfect order. The contractors were engaged at the time of my visits in soiling the slopes, but I could see nothing to cause any suspicion of undue or unequal settlement, nor has such, so far as I have been able to learn, ever been stated to exist.

19. The dam is at its present level quite water-tight, the leaks that have been said to exist are entirely imaginary.

20. I do not believe that the puddle-wall is fractured or cracked in any part, or that it is possible it should be.

III.—The kind of material of which the dam is composed, and its adaptability to the purposes for which it has been used.

21. The two materials we have to deal with under this head are the puddle in the middle of the dam and the clay of which the inner slope of the dam is built up. The former is made of the best, indeed the only clay available; and it has been well worked and made into a perfectly water-tight puddle. It is to my thinking not quite stiff enough; but as it is a "short" or friable clay, not in the least tough, it is better that it should be rather too soft than too stiff. I believe it would be found sufficiently dense in the lower parts of the wall. One of the difficulties the resident engineer says he had with the contractors was the too great quantity of water used in its manufacture. On the other hand, the contractors say the clay was of such a sticky and adhesive nature that the cutting and cross-cutting with spades specified and insisted on could not be done without a large quantity of water. In addition to this, the trench was subject to be flooded by leakage from the pipes supplying the water on the dam, and by the rainfall on the inner slope, which, according to specification, had a reverse slope of 1 in 12, and from which the surplus water had to be carried across the puddle before it could reach the drains in the outer slope. The contractor's engineer, Mr. Moline, also says that owing to the puddle being brought up in perfectly horizontal layers (longitudinally) it was difficult or impossible to thoroughly drain off surplus water. In July, 1885, the resident engineer wrote strongly to the contractor respecting the too lavish use of water. Although this is the only written objection on the subject, the letter implies, I think, that this had been the subject of verbal complaints. (Appendix III.)

22. I believe that though it may be liable to greater subsidence than was reckoned on in its higher parts, and may in this way give trouble, it is perfectly safe in regard to being watertight.

23. The inner slope is principally, if not entirely, composed of clay from the flat behind the reservoir. Wherever bores have been put down they show a similar material—brown, yellow, red, and white clay. It cannot be said to be a good material for a bank, even if the most objectionable part (the white clay) had been excluded; and I am informed it was so mixed up with the other that it would not have been possible to exclude it from the dam. There is better material in Prospect Hill, and a good deal of it has been used apart from that required to bare the stone in the quarry. Some of it is mixed with stone, but some is free from it. These seem to be the only materials available.

24. Had these different materials been put in alternately in thicknesses of, say 3 feet each (3 layers of 12 in.), they would I think have made a very good bank. The evidence is somewhat conflicting on the question why only clay was used. Mr. Ryan says the contractors were at liberty to use earth from any of the places mentioned in the specification. Mr. Moline, while admitting that Mr. Ryan objected to pure clay being used, says he would not allow the earth from Prospect Hill to be brought on the work in trucks, or any stony or gravelly material to be used in the inner slope, relying on clause 17 of the specification. This is one case in which I think the specification binds the Resident Engineer too much, although Mr. Ryan says his chief allowed him every reasonable liberty. There are difficulties in modifying the contract *vis-á-vis* of the contractors.

25. I think the plan of depositing the material in the bank in layers sloping inwards, 1 in 12, is not suitable to this material, because, as the outer part of the embankment was always higher than the part next the trench, all the water falling on the bank in storms, as well as that specified to be used, is confined between the puddle wall and the slope, and cannot escape except to a small extent by evaporation. The practice of engineers differs in this respect, as well as regards the use of water in consolidating earth work. I think it would have been impossible to avoid the use of white clay entirely in this bank, and, therefore, I think alternating horizontal layers of clay and a more free material should have been adopted. (See para. 24.)

IV.—The cause of the movements and their significance as bearing on the stability of the Dam.

26. I think the causes of the movements are:—First, the character of the material employed in the inner slope, which will not stand at a slope of 3 to 1. Secondly, an excess of water used or allowed to accumulate in the inner slope of the dam—its presence in excess of what the clay will retain being shown by the filling of the bore-holes from a higher level than that of the reservoir water—and the excess tending to cause the material to take a flatter slope and to do this irregularly, and, so to say, in patches. There exists an erroneous impression that the water in the reservoir is destroying the bank, and that therefore its entire disappearance or dissolution is only a matter of time. The material is not washed out (except to a small extent in the case of white clay, see para. 15), but it is shifting in order to obtain a flatter slope. I think more vertical subsidence will take place in the puddle wall than has been allowed for in the higher parts, and also generally, because it is said that the bank was not so well consolidated by carting and rolling for 3 feet or so on the inner side of the trench under the water-pipes, thus giving an opportunity for the puddle to squeeze laterally and compress this wet and ill-rammed

ill-rammed ground. Near the first slip the progress section shows that there was a deep depression here in the puddle wall, and I was informed that the water in the trench had to be dammed back in steps on the puddle, and that it sometimes got into the trench where it was being put in; and although it is possible to attach too great importance to this fact, I believe that this circumstance has increased at this place the over-saturation of the inner slope. I consider the rear slope of the dam perfectly stable; the inner slope is not so, nor is the puddle wall at present, but I think the inner slope can be brought to a state of stability, when it will serve its purpose of supporting the puddle wall.

27. In the meantime I do not think there is any risk of the dam breaking, even under a considerably greater depth of water than there is at present, or of any loss of water and consequent scarcity in Sydney.

V.—The best course to adopt under the circumstances.

28. What seems to me most urgently needed at present is the stoppage of the second slip, the first having been nearly brought to a stand-still. In my opinion this can only be done by reducing the slope of the bank, and opposing weight to its present tendency to slip. The broken stone used at the first slip would, I think, have been better deposited from a staging outside the toe, and clear of the shifted material, and I believe this is recognised by the engineers, but they were without the necessary appliances. Immediate action was needed, and it was not anticipated that new slips would take place. In deeper water I think barges or rafts towed by small steamers should be employed. It is impossible to say at present how much of this work will be needed, seeing that the place where the toe is most perfect is in the deepest part of the dam, where the work is oldest, and the greatest opportunities of slipping have existed; but there seems no doubt at all that it will be required from T.S., thirty-five, or so nearly up to the first slip, a distance of 1,600 feet, and for this part of the dam I would recommend *that the work be put in hand at once*, if it has not already been begun. I fear it will be necessary for a much greater length, for in whatever way the now slight movement at 18, and the oozing out of bad material at 16 and 17 will develop themselves. A flattening of the slope above L.W. to 4 to 1 will be necessary, and to do this under water a deposit of heavy material to form the foot of the new slope seems indispensable.

29. I regard the drawing off of the water in the reservoir as out of the question altogether; and even were it not so as regards the supply to Sydney, any incipient slip would be encouraged and new ones started—while, in all probability, the cheaper rate at which a new toe could be formed with dry materials would be more than balanced by the additional amount of damage to be made good.

30. The outer mound of stone of all sizes mixed being formed, the space between it and the present slope could be filled with a cheaper material—such as quarry-chips or screenings and strong earth deposited in bags and covered with broken stone. I have sketched the plan I would recommend on plan No. 4 attached to this report.

31. The precise mode of dealing with the bank from 15 to 20 can only be decided after the nature of the movements now beginning there have been ascertained. If the toe-dyke remains unmoved, and no bulge appears in the bank under the curb, I think the oozing can be stopped by a deposit of screenings; the slope above L.W. (170·0) to be flattened to 4 to 1, in the manner shown on plan 5 by red lines; the screenings covered with quarry rubbish and earth in bags supported by a mound of rubble 10 feet high and 6 feet wide on top; but if the bank shows a tendency to slip in the same way as at 44 or 54, then a much larger mound and a flattening of the slope under L.W. will be necessary. This I have shown on the same drawing in blue lines, and it will be seen that if it is ever found necessary it will be an addition to the deposit of screenings, which I would recommend to be put on at once unless the oozing out of clay is found to have ceased. In making this new slope of 4 to 1 above L.W. it may be possible to avoid taking up much of the pitching by giving it time to settle. It will be well not to raise the water in the reservoir higher than will give an ample reserve for Sydney, because, if raised, the water would, in my opinion, retard any movement that may be going on with the water at its present level, and make its true character more difficult to determine, while, if the movement were altogether checked by the rise of the water, it would certainly reappear on its being lowered again in summer; neither is it necessary to permanently finish off the crest of the dam. The width of the crest is reduced in front by 8 feet, but if it be desired to keep the 30-feet width on top, which, I think, is more than is necessary, it may still be got by adding to the rear slope at the top without making the slope too steep.

32. A slight movement in a high part of the dam would probably be best detected by the horizontal movement of the puddle wall, for the longitudinal cracks along the top might be caused by its vertical subsidence, especially where the trench was very deep, the added percentage having only been reckoned on the height from the base of the bank, and not for the whole height of the puddle; and I would therefore recommend that trenches be cut across the dam at every alternate T section at least, and the position of the puddle wall both as to level and horizontal position with reference to the centre line be observed daily, as also the position and levels of a series of pegs on the slope at each trench down to the curb measured and recorded in the accurate and careful manner adopted by Mr. Jacobs in observing the present slips. Beyond the water lines soundings should be taken. By this means any movement in the body of the dam, apart from subsidence, can hardly fail to be detected. (It should be stated that neither the contractors or their engineer, nor the resident engineer, suspected any slipping while the dam was being constructed. Mr. Davis, inspector, says he noticed that the inner slope took more filling than the outer, but he does not appear to have attached much importance to this.) Further, that if the services of Mr. Cameron, diver, are available, he should examine the face of the dam below water, going down at such distances as would allow him to cover the whole of the length, and reporting fully what he finds each time, and to do the whole work at least twice, and oftener if any change is observed the second time.

33. The setting of the pitching and other work on the dam should be discontinued, and I would suggest that the present contract should be terminated by mutual agreement. The work remaining to be done by the contractors is neither important nor of much value, and the bank should, while these investigations are going on, be entirely in the hands of the officers of the Department; indeed if my recommendations are adopted it would be necessary to stop traffic on account of the trenches.

34. When cracks appear they should be dug out so as to allow of their being filled in and well rammed from the bottom to the top, but I do not think this work is of very great urgency in dry weather until the slipping has stopped. It is well however to prevent any more rain-water getting into the dam.

Where

Where the cracks are caused by the subsidence of the puddle wall, *i.e.*, when they occur between it and the earth filling front or rear, I think they should be filled up by forcing the puddle to expand laterally by weighting it on the top.

35. With such a watertight material as is used in the front slope I do not think there is any necessity for the puddle wall going higher than the H.W.L. or R.L. 195·00.

Estimate.

36. An estimate of the cost of the remedial measures must necessarily be contingent on the behaviour of those parts of the dam in which the movement is as yet uncertain (see paragraph 28 above). I therefore divide the estimate into five parts, of which the first, amounting to £12,050, refers to the work I have designated as urgent (paragraph 28). The second and third are contingent on the state the dam is found in. If it slips as it has done at 44, No. 3 must be added to No. 2, not substituted for it, and that part may cost from £23,850 to £42,400. No. 4 is not urgently needed at present; No. 5 is.

37. I would state while in order to save time Mr. Mestayer and I conducted this inquiry together, as regards borings, diving operations, and also in taking some of the evidence, our joint work stopped there; and we have not conferred together on any of points III, IV, or V, referred for our separate and independent reports.

38. I have much pleasure in saying that all the persons to whom I applied for information, who were more immediately connected with the work, whether as engineers or contractor, seemed to be anxious to give all the information in their power, and I have to thank them for their willing co-operation with me in this inquiry.

Summary.

39. It may be convenient if I state briefly the results of my inquiry under the different heads.

I. *The general design of the Dam* and subsidiary works is in accordance with the best engineering knowledge, and the only ways in which the spirit of the original general design have been departed from are, in my opinion, 1st, a too close following of high authorities in the construction of such works, and 2nd, the choice of material.

II. *The present state of the Dam.*—The only part of the dam which seems to be perfectly stable is a short length at each end, and while the amount of movement in the highest part of the dam is as yet slight, it requires most careful watching. The slip at No. 54 seems to be now at rest, and that at No. 44 approaching that condition, but if the bank were made up, or the water lowered, it would probably again begin to move.

III. *The material* composing the inner slope of the dam is too clayey and, while quite water-tight, will probably cause a good deal of trouble and expense before it finally assumes a permanent form. The puddle in the wall is highly plastic and quite water-tight, but rather soft.

IV. *The prime cause of the movement* is the too clayey nature of the material forming the inner slope and the imprisonment of *an excessive quantity of water* in the bank during construction. This, I believe, can be remedied, but at a considerable cost. The state of the dam need not cause any alarm for its ultimate safety or stability, or any apprehension of a scarcity of water in Sydney, but prompt action is necessary.

V. *The best course to pursue.*—To terminate the present contract in order to allow of a thorough examination of the bank which should be undertaken *at once*; to stop the pitching of the slope; to construct at once a rubble bank from No. 35 to No. 51, or thereabouts, outside the toe and fill in behind it with suitable heavy material to a slope of not less than 4 to 1 below low-water and to reduce slope above low-water also to 4 to 1. To begin a similar rubble wall wherever there is any sign of the toe moving or of the slope bulging, and to continue in such places the treatment recommended at 35 to 51; to load the puddle wall; to let the treatment of the portions of the bank, where white clay is oozing out on the surface, depend on the movement or stability of the bank, and where there is any considerable amount of this oozing to cover it with screenings immediately; to allow the water to rise in the reservoir sufficiently to afford a proper reserve, but not higher, until the movement of the bank is checked; to use the greatest dispatch in carrying on the repairs.

G. GORDON,
M. Inst. C.E.

Appendix I.—Estimates.

Estimate No. 1.

For repairs from T.S. 35 to T.S. 51, recommended at once (para. 28).

	£	s.	d.
Rubble mound, 25,718 cubic yards, at 6s.	7,715	8	0
Screenings, 1,185 „ „ 7s.	414	15	0
Filling, 9,130 „ „ 4s. 6d.	2,054	5	0
Rubble on face, 2,667 „ „ 6s.	800	2	0
Contingencies, 10 per cent.	1,065	10	0
	£12,050	0	0

Estimate No. 2.

For flattening slopes of dam and stopping oozing out of white clay from T.S. 5 to T.S. 35 (para. 28).

	£	s.	d.
Rubble mound, 17,222 cubic yards, at 6s.	5,166	12	0
Screenings at back of do. and over 100 ft. × 500 ft. × 2 ft., 5,037 cubic yards, at 7s.	1,762	19	0
Rubble stone face, 12,333 cubic yards, at 6s.	3,699	18	0
Filling below L.W., 40,000 } „ above „ 9,000 } 49,000 cubic yards, at 4s. 6d.	11,050	0	0
Contingencies	2,170	11	0
	£23,850	0	0

Estimate

Estimate No. 3.

Repairs between T.S. 5 and T.S. 35, supposing bank shows signs of moving (para. 28), additional to No. 2.

	£	s.	d.
Rubble mound, 37,811 cubic yards, at 6s.	11,343	6	0
Screenings at back, 1,500 „ „ 7s.	525	0	0
Filling, 22,177 „ „ 4s. 6d.	4,989	16	6
Contingencies	1,691	17	6
	£18,550	0	0

Estimate No. 4.

		£	s.	d.
(*a*) Alteration of top of dam, 10,200 cubic yards, at 2s.		1,020	0	0
(*b*) Replacing puddle—				
Excavation, 5,000 cubic yards, at 2s.	£500			
Puddle, 4,000 „ at 4s. 6d.	900			
		1,400	0	0
(*c*) Trimming, &c. (say) 5,000 cubic yards, at 1s. 9d.		437	10	0
Contingencies		292	10	0
		£3,150	0	0

Estimate No. 5.

	£	s.	d.
Trenches for examination and refilling same (para.), 1,000 cubic yards, at 2s. 9d.	137	10	0
Sundries	502	10	0
	£640	0	0

Immediate Requirements.

	£	s.	d.
No. 1...	12,050	0	0
No. 2...	23,850	0	0
No. 5...	640	0	0
	£36,540	0	0

Appendix II to Report of 7th January, 1889.

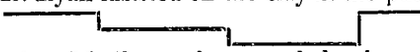
NOTES of Evidence taken *in re* Prospect Dam by G. Gordon.

1. I examined the following persons, and I give below the substance of the information obtained from them:—

1. Mr. Moline, engineer to the contractors.
2. Mr. Shand, manager for the contractors.
3. Mr. William Nicholas, who was in charge of the borings made by my orders, and was an inspector on the works.
4. Mr. Ryan, resident engineer.
5. Mr. J. A. Hogue, editor *Evening News*.
6. Mr. Stewart Wearne, correspondent of the *Evening News*.
7. Mr. Rutherford.
8. Mr. E. Jackson, brick and masonry inspector.
9. Mr. Davis, inspector.
10. Mr. Limond.
11. Mr. Weston (by letter).
12. Mr. Murray (examined by Mr. Mestayer in my absence).
13. Mr. Cameron, diver.
14. Mr. Bramston.
15. Mr. F. B. Gipps, C.E. (examined by written questions).
16. Mr. Buckett.
17. Mr. Maher.

2. The evidence, except in the case of Mr. Weston, was taken down by Mr. George Robinson, Shorthand writer, and written out in duplicate for Mr. Mestayer and myself (except that of Messrs. Moline and Shand, whose evidence was taken down by another shorthand writer). I examined Messrs. Moline, Shand, and Ryan separately from Mr. Mestayer. The others we examined together, except Mr. Murray, who was examined by Mr. Mestayer only, and Mr. Gipps, whose evidence I got in answer to written questions put through Mr. Mestayer.

3. Mr. Louis Moline, 15/12/88, stated that he took charge of the works for the contractors about August, 1884, and was there till February, 1887; when he took charge there had been a great flood, and the puddle-trench got filled with water; the same year the flume in the lowest part of the valley burst, and the trench was again filled with water; it was baled out and all the slush taken out before work was resumed; a second flume at a higher level by 14 feet was put in at sections 24 to 25; after that the bank was kept high enough to collect any storm-water that might come in; the second flume was kept in for a considerable time afterwards, the trench and bank being properly stepped down, leaving an opening for an approach to the flume; a trench was dug in the solid and filled in in 6-in. layers when the flume was removed;

removed; the channel through the rear half was filled with stone; the material for the bank was chiefly got from the flat below the dam; none was taken from the upper or water side of the dam; there was not a sign of a slip; the material varies a good deal; Mr. Ryan objected to pure clay being used, but the whole country is clay, and the contractors could not help themselves; the bank was always watered as specified; it was watered by means of water-carts; a line of pipes was laid on the inner (or north) side of the puddle-wall, and the puddle was watered by hose from them; these pipes leaked or burst sometimes; the puddle would hold water "like a cup"; the frequent storms of rain did more than anything else to put water on the bank, and after rain it would lodge in the bank; sometimes the horses could not travel over it for a day or so; Mr. Ryan insisted on the clay in the puddle-wall being brought up in quite level steps, longitudinally, thus  ; this made it difficult to drain off surplus water from long lengths; Mr. Ryan often urged that less water should be used in the puddle, but it could not be chopped with less; the centre (middle) part of the dam is harder than that put on more recently; in 1886 cracks 2 inches wide occurred, owing to the subsidence of the puddle-wall; a deep part at No. 54 was pumped out after a heavy flood; does not think that has anything to do with the slip; the filling was both rolled and carted over; the specification was adhered to—"we could not get away from it"; considers the clay chopping needless, and that more water was put into the clay than was needed; the work was nearly all day-work; the clay-puddle was all day work; contractors objected to the water being let into the reservoir so fast; thinks that if the dam had not been filled so quickly there would have been a better chance for the water to get out of the bank; thinks there was less friction than usual between the engineer and the contractors; occasionally had to appeal to the chief engineer, who upheld the decision of his officer.

4. Mr. Robert Shand managed for Mr. M'Guigan (the contractor); after his death acted as executor; previously to this had never managed a contract for M'Guigan, but was more a confidential clerk; had charge of correspondence, pay, &c.; does not know that any part of the dam is different from any other part; so far as he knows the specification was adhered to to the letter; Mr. Ryan was very strict as regards that; the bulk of the material of the bank was got from the flat; it was all pretty much the same, and it was pretty well distributed; had a scheme for running a line into the hills and bring material down on to the bank; drained the surplus water into the stone drains in the rear half of the bank; was warned to give plenty of water both to puddle and bank; unless closely watched men will put more water on than ordered for ease in chopping; there was a man (now dead) who had nothing to do but to regulate the supply of water (Barge); puddle put in under his and Davis's inspection; both men were brought out from home; contractors had only to follow their directions; the men were entirely under their orders; the weather varied—1887 was very wet, last year dry; in 1884 or 1885 were stopped for want of water; got on very well with the engineer until lately, and carried out instructions; now there is a dispute about extras; often complained of undue strictness.

5. William Nicholas, inspector, took charge, first, at the 162-foot level; was on the trench, not on the bank, on the wet season; the contractors got rid of most of the water by draining into the stone drains; sometimes work had to wait, principally in the trench work.

6. Mr. Ryan, resident engineer (from beginning of work): Did not make the design of the work it was made in the office, as also the specification. Work was carried out as far as possible according to the specification. The material of the dam at No. 18, where the flume was, is the same as the rest, and the puddle was brought up the same way; had a constant battle with the contractors; sometimes puddle was too wet; sometimes layers of banks too thick; sometimes surface soil was brought on to bank. After heavy rain men did not run water off as soon as possible. Complained of rainwater and of constant bursting of pipes flooding the work, but only once in writing (copy of memo. of July 20, 1885, attached). The slip was first noticed (22/4/88) nearly at No. 54, and bulging was noticed on the 24th; communicated with Mr. Moriarty. It was decided to change the section of the puddle-wall at the top where it was not at its full height, by making a set off of 4 feet on the inner side at 195 R.L. The puddle-wall, where settlement had long been going on, was opened on 2nd May, 1888, and found at 194·65; refilled it to 199·57; reopened again June 21st, when it was 196·39; rebuilt it then, and afterwards at different dates between September 5th and 22nd, when it was 182·70; rebuilt to 199·41; stone filling in front of slip was begun on 28th August, 1888; measurements of slip were made from nearly the commencement; no movement of stone since 26th November at middle of slip; still putting stone at ends of slip, where there is a slight movement. About 5,800 cubic yards of stone has been deposited up to 20th November; saw no sign of movement during construction of dam; were stopped for want of water previous to heavy rains in 1885 there was nothing unusual at any time; there was at 54 a quantity of water that had to be dammed back.

7. The Honorable the Secretary for Public Works forwarded to Mr. Mestayer and myself copies of correspondence that had passed between him and Mr. Bennett, proprietor of the *Evening News*, and we called on him to ask if he had any information he could furnish us with. Mr. Bennett referred us to the Editor, Mr. J. A. Hogue, and we saw him on the 18th December. Mr. Hogue informed us that Mr. J. Norton, now no longer connected with the paper, had furnished most of the information that had appeared in the *Evening News*. Mr. W. Stewart Wearne, now at Prospect, had also written several of the later reports. Mr. Hogue also gave us the names of Mr. Buckett, publican, near Prospect, Mr. Rutherford, who was a sub-contractor on the works, Mr. Ives, M.L.A., Mr. Davies, M.L.C., and Mr. Gipps, C.E., as persons who could supply information. Mr. Rutherford furnished the information in *Evening News* of 3rd December, and predicted collapse of dam. Mr. F. B. Gipps gave information on which it was stated (2nd May, 1888) that portions of the puddle-wall consisted of rubble and rubbish. Mr. J. Norton wrote all the articles up to end of June. All the information supplied had appeared in the *Evening News* of April 23rd, 24th, 25th, 28th, 30th; May 2nd, 10th, 11th, 12th, 25th (report by Mr. Gipps); June 8th, 9th, 15th, 21st; July 31st; August 1st. It was found afterwards, on going through the file of the *Evening News*, that on July 28th, November 26th, 29th, December 1st, 3rd, 7th, 10th, 12th, 13th, and 14th the subject was treated of.

8. Mr. Norton.—I sent a telegram to Mr. Norton, asking him if he were disposed to give evidence, but I received no reply until on the 21st he came to Mr. Mestayer's office. He said he was too busy to give any information until about the end of the next week, but he would send a letter and state when and on what terms he would do so. As I left Sydney on the 22nd, I have no evidence from Mr. Norton.

9.

9. Mr. Mestayer and I also wrote to Messrs. Ives and Davies; Mr. Ives replied, but he had no definite information to give as to the mode of construction of the dam; Mr. Davies did not reply.

10. Mr. S. Wearne.—On the 19th December, Mr. Mestayer and I examined Mr. Stewart Wearne at Prospect, and it appeared that most of the reports given by him to the *Evening News* were founded on information given him by Mr. Buckett, publican, and Mr. Rutherford, sub-contractor, and that he could not speak to many of the alleged occurrences from personal observation. Some of the statements, as, for instance, that the water was undermining the dam, were only expressions of his own opinion; he made no measurements of the slips, but "judged approximately"; he saw that some of the pitchers were displaced through the bulging; some dimensions (in article of August 1st) were given him by Mr. Rutherford; the statement that "the embankment was commenced straight off without cutting the natural surface" was information supplied to him (there is direct evidence to the contrary); in the paper of December 1st "leaks in the dam" were mentioned; Mr. Wearne stated that at this time a small stream of water appeared which had not appeared before (on this see Mr. Rutherford, page 22); he did not ascertain whether the small stream came from the stone drains; is not an engineer, and he wished the proprietors of the paper to send up a professional man, but this was not considered necessary. The article of December 3rd, in which it was stated that there was a small stream of water coming from the dam, was written by Mr. Norton; he is not an engineer, and knows less about the subject than he (Mr. Wearne) does; with regard to the disappearance of a horse and dray in the dam, Mr. Wearne did not see it; the horse sank up to the shoulder.

11. Mr. Wearne did not give Mr. Rutherford's name at this time, but said he would write to him for permission to do so; he had other informants.

12. Mr. Rutherford, Mr. Wearne's informant, was examined on the 21st; he was a sub-contractor, and did the pitching of the dam; he knows nothing of the construction of the dam; he did not notice anything wrong with the dam when he started the pitching; there was no bulging of the slope then; does not remember the date when he first noticed the slip; he told Mr. Copeland, one of the Inspectors, who disbelieved him; the pitching there was not finished, and he was shifted to another place; he had nothing to do with the construction of the dam, and only saw it when he rode past it; he did not see the earlier portion constructed; he did not, as stated in the *Evening News*, predict the collapse of the dam; what he said was that there would be a slip; it had begun, and he thought it would increase; has been about a year on the bank; has noticed the water very muddy for about a chain out all along the bank, when a breeze was blowing on to the bank; thinks the clay is too "soapy"; knows Mr. Wearne, of the *Evening News*, and corrected some information for him which he had got from a publican near Prospect; the information was very inaccurate; the "tunnels" spoken of are cracks, 8 or 9 feet deep; the extreme width he saw was 18 in. at the top; if anything of any greater size had opened he would have been sure to see or hear of it; has never heard of a horse and cart going down into one of the cracks, and if it had happened he must have seen or heard of it. Mr. Wearne asked him, some time ago, about the water flowing from the back of the embankment; told him he did not think it was from the dam; "it cannot be a leak"; the articles in the *Evening News* were certainly very highly coloured; they were what might be expected from a reporter wanting to create a sensation; while he was there about 20 feet of the bank (in height) was constructed, and it appeared to be done very thoroughly in 6-inch layers; nothing to lead him to believe there was anything wrong done; there were rows between the contractors and inspectors about not having sufficient water in the dry weather; there was not sufficient water in the puddle; has been on two or three dams in Victoria; never saw a bank so well constructed as this; the whole fault is in the clay; is sure the curb is not in the same position that he laid it in; thinks it fully a foot nearer the water; it was set out sometimes by Mr. Jacobs, sometimes by the contractors; thinks the contractors were compelled to do their work well, there were so many inspectors; Mr. Ryan and the contractors were always quarrelling.

13. Mr. E. Jackson, brick and masonry inspector:—The stone dyke at the toe was built simultaneously with the bank; they grew together; the embankment was made up against the dyke.

14. Mr. Davis, Inspector:—Came to the work in October, 1881; was specially brought out from England, where he had had experience in dam-making; has tested the puddled clay here under a small stream of water 1 foot high for twenty-four hours; it had then a slight dish in it; the contractors did everything we wanted, and they seemed willing to abide by the specification; we could not find much fault with them; after heavy rain the water used to lie about, but the contractors brought it into stone drains and ran it off; the (inner) bank is a watertight bank; the bank is moving; about eighteen months ago I found the bank had settled a good deal; when water got accidentally into the puddle-trench it was completely taken out; Mr. Moriarty thought we were getting the puddle too soft, but "I showed him that as the trench was rough it was necessary to be soft in order to fill in thoroughly"; his orders were to get the puddle so that the men could barely stand on it, and it was brought up soft "so that you could not sink into it with your boots"; it was made harder as it approached the top.

15. Mr. Limond was examined on the 20th December; he was on the dam from the beginning to the finish of the trench; drove the engine of the contractor's sawmill. (He afterwards said he left on 14th July, 1883.) Mr. Limond made a long statement in support of a theory of his that the puddle-trench should not have been put down lower than the water level in the ground, and that the damage is caused by this water causing the puddle to swell and lift the top; that water level was 15 feet from the surface; the water in the trial shafts was salt; thinks the puddle at the bottom of the trench is like soup; did not see how it was worked in the trench; puddle-wall and bank were about 12 or 13 feet high when he left; the puddle-wall was about a foot below the bank; saw no sign of water working up when puddle was put in; the salt water never came to the surface; it was 15 feet below it.

16. Mr. Weston stated in a letter that he was employed on the tunnel works from 1883 until their completion; he had nothing to do with the puddle-trench, but has often heard contractors complain of the strictness of the engineer as to the preparation and placing of the puddle; has had considerable experience on public works in England, and never was under an engineer so strict and attentive to his duties as Mr. Ryan.

17. Mr. Weston's name was given us by Mr. Murray, another sub-contractor on the tunnel works; I was not able to be present when Mr. Murray was examined by Mr. Mestayer; many of his statements are directly contradicted by the evidence of all the other witnesses who speak to these points; I attach no importance whatever to Mr. Murray's evidence on this account; Mr. Ryan had to request the contractors to dismiss him from the work.

18. Mr. Cameron, diver, attended on the 21st and recapitulated his report of the first two days' operations, and reported what he had found on the 20th December; I have stated fully the result of his examination of the work in paragraphs of my report, and shown it on plans 1 to 3.

Mr. Bramston attended to offer a suggestion of a mode of supporting the dam, a modification of one which, he said, had been successfully applied to a miners' dam at Eaglehawk, Victoria; he proposed a breakwater of screw-piles and cylinders or concrete blocks on the inside of the dam, and near it, but not touching it (instead of the log breakwaters used at Eaglehawk). It was explained to him that the circumstances being quite different the plan would not be applicable in this case, and he expressed himself as satisfied.

19. Mr. F. B. Gipps, C.E., was in Victoria when I was in Sydney, and I wrote to him saying I would leave with Mr. Mestayer a number of questions which I would have put to him. To these and others put by Mr. Mestayer I received Mr. Gipps' replies on the 7th instant. He had visited the dam occasionally, perhaps two or three times in the year from the beginning; he saw the puddle put into the trench; he denies entirely Mr. Hogue's statement (*see* page 16 *ante*) that he was responsible for the statement in the *Evening News* that portions of the puddle-wall consisted of "rubble and rubbish"; he never made such a statement, and says it is incorrect, having seen the puddle-wall from its inception; considers the puddle well made, and of good material; thinks decidedly that the material in the inner slope was inferior; it was almost entirely clay or soluble shale; never saw on the inner slope any layers of any great extent entirely of white clay; considers the dark clay from Prospect Hill worse than the white clay; has seen layers of both these clays in the dam, but cannot say that they extend to any great width or depth; the clays appear to be intimately intermixed; never saw the bank or puddle in a wet or sloppy condition; thought too little water was used; never noticed any tendency in the bank to slide before the first slip took place; has noticed all along the bank that the wash caused by the wind makes the water very thick; has seen nothing to lead him to suppose that the contractors had not carried out their work properly. Mr. Gipps goes on to state his theory of the cause of the slips, viz., that the ground water rises under hydrostatic pressure between the puddle-wall and the bank; this is inconsistent with the facts that water is sometimes found in the bank at a higher level than the water in the reservoir, and that on the other hand most of the bores were put down through dry clay.

20. Mr. Buckett, publican, was examined by Mr. Mestayer. Mr. Buckett's name was given to us by Mr. Hogue, of the *Evening News*. He objects to his name appearing in the papers; Mr. Buckett says that what he has to say is only what he heard from the workmen; he knows nothing about "rubble and rubbish" in the puddle-wall, and never heard of it; has seen nearly the whole of the work, but did not watch it closely; sometimes he was not on the bank for a month, sometimes two or three times a week; tells only what has been told to him; knows nothing of the work, and cannot say anything as to the truth or otherwise of what was told him; he thought the dam was unsafe when the first slip took place; he says the ground at the front too, near the second slip, was very spuey; could not ride over it in wet weather; saw trenches opened in the bank at the first slip; in some places the stuff was dry and had no solidity; thinks soakage coming from the outer toe is from the drains; never saw or heard of a stream of muddy water coming away from it; while the work was in progress the bank was often flooded, and also the puddle-trench; the puddle was so soft that the men could barely walk on it.

21. Mr. Maher was also examined by Mr. Mestayer. He knew nothing about the dam but what he had read in the papers, and had never seen it; he attended to suggest a remedy, which consisted in the application to the face of the slope of a layer of ti-tree confined between ironbark balks, kept in place by means of wood or iron "girders," and covered with ironbark slabs, 2 inches apart. Mr. Maher's suggestion is applicable to the protection of a slope from the wash of water, but would not in any way counteract the internal movement of the dam.

G.G., 7/1/89.

Appendix III to Report of 7/1/89.

MEMORANDUM from R. H. Ryan to R. Shand, Esq., for Contractor.

Harbours and Rivers Department, Prospect Reservoir Works, 20 July, 1885.

I WISH to direct the serious attention of contractor to the manner in which the puddle in embankment is at present prepared and finished. The disposition to have it imperfectly cut and the tendency to use too large a quantity of water is clearly manifest.

For contractor's information and guidance as to what is required I may inform him that the puddle, when finished in place, should be of the consistency and compactness, as nearly as may be, of well-prepared brick-clay as same is placed in the mould in the process of hand brick-making, should not be left sloppy or miry, but to finish in a tough, dense, and somewhat putty-like condition. As this is the portion of the work which must keep back the water, any divergence of the puddle from this state may have a result totally disastrous to you as also to others concerned in the undertaking.

Prospect Reservoir.

REPORT on the Embankment of the Prospect Reservoir, and Works in connection therewith, made in pursuance of instructions received from the Honorable the Secretary for Public Works, by R. L. MESTAYER, M. Inst. C.E., Hydraulic Engineer.

R. L. Mestayer, Esq., M.I.C.E., to The Secretary for Public Works.

Sir,

I have the honor to report that, upon receiving your instructions, I made immediate arrangements to inspect the Prospect Reservoir embankment, and undertake the investigation with which you had entrusted me.

These instructions (*Appendix A*) may conveniently be resolved into the following divisions, viz.:—

I. To visit the Prospect Dam and report upon its present condition.

II. To ascertain the kind of material that has been used in its construction, and its adaptability to the purpose for which it has been employed.

III. To point out:—
- (*a*) The cause of the movements that have taken place.
- (*b*) Their significance as bearing on the stability of the structure.
- (*c*) What will be the best course to take under the circumstances.

IV. To report on the construction of the dam and subsidiary works as a whole, whether the design is in accordance with the best engineering knowledge on the subject and whether the works have been faithfully carried out according to the design.

I propose to consider each division separately in the order named, and it may not be amiss for me to mention in this place that, having visited these works in March, 1887, and again early in June of last year, I had, prior to undertaking this investigation, some personal knowledge of the character of the work and the manner in which it had been executed.

I.—The present condition of the Dam.

On the 5th of December last, I visited the works, and after a careful examination of the plans, sections, and specifications of the reservoir and subsidiary works—especially of the plans and sections that had been prepared of those portions of the embankment that had given way, and the records of observations that had been taken up to that time—I went carefully over the ground with the resident engineer, Mr. R. H. Ryan, and took note of all the information he had obtained relating to the movements.

My last visit to the works was made on the 2nd instant, and the report which I now have the honor to present, is based entirely upon information and evidence obtained at various times, and from many different sources, during this period.

I found on examining the embankment, that considerable movement had occurred at three different positions, which were altogether in excess of anything which could have been produced by natural subsidence of the materials of which the embankment had been formed, viz.:—

(*a.*) The first slip between sections 51 and 55, where a large section of the water slope, about 300 feet long, had moved bodily forward 27 feet.
This forward movement was naturally accompanied by extensive subsidence of the top portion of the embankment between the puddle-wall and inner slope, and the formation of extensive fissures running longitudinally above the puddle-wall which (owing to the support from the embankment being withdrawn) had subsided about 17 feet and followed the moving portion of the embankment.

(*b.*) A second slip between sections 42 and 46, which had at that time reached a total forward movement of 1·52 feet, accompanied by subsidence of the inner portion of the top of the embankment and the formation of fissures running longitudinally over the outer and inner edges of the puddle-wall, similar, but to a much lesser extent to those formed at the site of the first slip.

(*c.*) Extensive subsidence of those portions of the top of the embankment between the puddle-wall and the water slope from sections 4 to 30, accompanied by the opening of fissures varying from a few feet to several chains in length, some of them being from 10 to 14 feet in depth, and from 1 to 18 inches in width.

The subsidence of the earth at this point, had, up to the time of my first official visit to the works, been ascribed to natural settlement of the material.

This being the deepest portion of the embankment, the results of the natural settlement would necessarily be more strongly defined than at the more shallow portions of the embankment; but, although recognizing the force of this argument, I was struck by the similarity between the fissures that had opened here and those at the other points, where decided slips had taken place, and finding that up to that date no regular observations had been taken at this latter point to ascertain whether any forward movement was taking place, I instructed Mr. Ryan to have daily observations taken for this purpose, similar to those being made at the site of the two first-mentioned movements. This has been done regularly since that date, and the result is that no movement has been detected during the last four weeks; but, in order to ascertain whether any movement other than subsidence had taken place previously at this—the deepest—portion of the dam, I have had sections taken and plotted upon the original sections to which the work was constructed, and these show clearly that a forward movement has taken place, amounting to a maximum of 18 inches at section 18, and extending right and left of this, the total length moved lying between sections 15 and 21.

The fact of this movement having occurred is further confirmed by the examination of the bank under water by the diver.

In

In order to ascertain the condition of the interior of the bank, I have had borings put down at eleven different points, and in Appendix B is given the results in detail. Generally speaking, they indicate that the bulk of the embankment is solid and dry; but in most cases there are indications of the presence of moisture in some one portion or other of the embankment in quantities more than sufficient to exercise a most injurious influence upon the materials of which the bank is composed.

As the depth of water on the inner toe of the embankment varied from 20 to 50 feet, I could not personally examine it, but the services of a diver were placed at my disposal, and with his assistance a careful examination has been made of that portion of the embankment under water, extending from section 16 to section 50.

This examination has fully confirmed the fact of a forward movement having taken place at section 18, a bulge occurring on the slope about 36 feet from the waters edge, as though the upper portion of the bank had slid forward upon the lower. No movement of the stone dyke at toe of embankment was observable at this point.

The examination of the water slope of the embankment by the diver also revealed the fact of the slip at section 44 being different in character from those at section 18 and section 54. In these two latter cases the upper portion of the bank has moved forward upon the lower portion, the plane of movement lying apparently at a point about 40 feet below the top of the embankment at section 18, and about 29 feet below the top of the embankment at section 54, the stone dyke at the toe of the embankment retaining its original position at both these sections, but at the former place (section 44) the stone dyke has been forced from its position, driving the ground before it and opening cracks of many feet in length in the solid ground in front of the moving portion, some of the cracks being, the diver states "large enough to take in the whole of a man's leg."

The stone dyke all along this portion was very much distorted, many of the stones displaced, and several of them forced completely out of the dyke, which appeared from its form to be gradually overturning.

Between sections sixteen and seventeen—almost the deepest portion of the embankment—a large amount of soft material had spued out of the bank. Samples of this were brought up by the diver, and consisted principally of white and pale yellow clay of the consistency of stiff paste.

The diver reports having seen a little of this in one or two other places, but not in noticeable quantity, as at this particular portion of the embankment.

In order to ascertain the condition of the puddle-wall I have had the ground opened and the puddle-wall exposed at different points. The original line of the puddle-wall was then set out, and measurements carefully taken to the inner edge. It was thus found that the puddle-wall at section 18 had moved inwards (towards the water) about 2 feet 4 inches and had subsided 4·59 feet, being 7 inches more than had been originally allowed for.

At section 5 it had subsided 1·73 feet, being 7 inches less than the 5 per cent. allowed for, and the centre of the puddle-wall was in its original position, showing that no movement other than natural subsidence had taken place at this point.

At section 24 the puddle had subsided 3 ft. 9 in., being 4½ inches more than allowed for in the construction of the wall.

This excess of subsidence of the puddle-wall beyond the percentage allowed, is just what might have been expected, and will go on for some time yet, as it appears from the evidence given by Mr. Ryan that the 5 per cent. addition was made only on the height of the puddle-wall above the ground line, and that no allowance was made for subsidence of the material in the trench.

This I consider an error of judgment, the portion of puddle-wall in the trench being very moist, and exposed to a pressure from the material above ground of from 2 to 5 tons per square foot, will certainly be compressed to a greater or lesser extent, especially where the strata passed through are at all porous.

Samples of the puddle-wall were taken out at each place and carefully examined. The whole of them were very uniform, and showed every indication of the puddle being of first-class quality, thoroughly well worked, but of a softer consistency than I should have considered advisable.

I have carefully examined the back of the embankment, but can find no indication in any portion of it, of any movement other than natural subsidence. Particular attention was given to the lower portion of this side of the embankment owing to rumours that had been circulated of a leak having occurred at or near the deepest portion; but there is nothing to justify any such statement—in fact everything goes to prove the direct opposite; and I have no hesitation in asserting positively that there is not the slightest leak through the puddle-wall up to the present time, nor is there anything to indicate the slightest probability of such an occurrence in the future. Dry stone drains were built in this portion of the embankment to remove the surplus water from it during the time of its formation, and to serve as outlets for the portion of rainfall absorbed after its completion. The water now trickling from the foot of the back slope at two or three places in every case issues from the outlets of these stone drains, and is not more than would naturally be looked for, considering the large area of bank exposed to the weather, and the heavy rains which have lately fallen.

When I first examined the embankment on the 5th of December last there was no flow of water from any of these drains, but on the 19th of December there was a slight stream from the two draining the deepest portion of the embankment.

The whole of the ground at the foot of the embankment, except at the outlet of these drains, is perfectly dry and firm; and none of the witnesses whom I have examined have been able to indicate any point—except the outlets of these drains—where any moisture has at any time been noticed.

When the back slope of the embankment is turfed, very little, if any, water will find its way down these drains.

In Appendix C is given the total movement at each of the places where any slip has occurred, and also the daily movement since I have had the work under observation.

II.—The kind of material that has been used in the construction of the embankment, and its adaptability to the purpose for which it has been used.

This division of my investigations has a most important bearing upon the questions I have afterwards to consider, viz., the causes of the movements and their significance—and has consequently received my most careful attention.

I have spared no pains to obtain the fullest information from all sources, and all the evidence I have obtained from persons totally unconnected with either the Government Department or the contractors, goes to confirm the particulars given me by the Resident Engineer and by Mr. Shand the contractors' representative. There is consequently no conflict of evidence so far as regards the materials used.

The puddle-wall consists of carefully-selected yellow and red clays, excavated from the flat immediately below the embankment.

That portion of the embankment next to the puddle-wall consists of selected material taken from the same place as the puddle, and consists principally of yellow and red clays, similar to that of which the puddle was formed, worked in 6-inch layers.

The remainder of the embankment has been formed of somewhat similar materials, from the same site, together with a large amount of earth from the hill at the east end of the embankment and the material excavated from the puddle-trench.

This was all carefully inspected before being deposited, the finer material being deposited on the water side of the embankment, and the stone and coarser material at the back, all of it being worked in 12-inch layers, and every endeavour appears to have been made to thoroughly consolidate each layer by rolling and diverting the traffic over every portion of it in turn.

These layers were all formed with an inclination of 1 in 12 towards the puddle-wall.

The puddle is of a quality fully equal to any I have seen in the colonies. It is not quite as tough as puddle is usually made in England; but that is to be accounted for by the different character of the clay, none of the clays that I have yet seen in the colonies being as strong or suitable for puddle as the majority of the clays found in England.

The material, however, employed here is undoubtedly of very good quality, and quite suitable for forming a sound and perfectly water-tight puddle-wall.

I have taken samples from the puddle-wall, both by means of open cuttings and by boring into the heart of it; and all the samples, although taken from very different points and from various depths, are remarkably uniform, and prove that the puddle is of exceedingly good quality; but it has been put in softer than I consider necessary.

It is with very great regret that I find myself unable to speak as well of the material used for the embankment, especially for that side of it next the water.

The bulk of this portion is clay, taken from the same site as the clay for the puddle, and all the material which was not considered suitable for puddle was brought into the bank.

I do not consider that clay alone ever makes a good bank. It would be much better if mixed with an equal bulk of coarse gravel. In this particular case a considerable portion of the material consisted of inferior clay and decomposed shale, whilst the earth from the hill at the east end of the embankment contained a quantity of what appeared to be a dark, almost black, clay, resulting apparently from the decomposition of the diorite rocks; both this and the inferior light-coloured clay from the flat are unsuitable for the water-face of the embankment, as in the presence of water they run down to slurry of a specially slippery nature.

The borings which I have taken fail to show the presence of these inferior materials in beds or patches of any depth, and from the care that has unquestionably been taken to ensure complete mixture and thorough consolidation of the whole of the materials, I should not have anticipated anything different; but as these materials form a by no means small proportion—in some places amounting to one-fourth of the whole—I cannot but believe that they have appreciably affected the water-resisting capability of the remainder of the material, and in the presence of any large quantity of water the mixed material would not naturally stand at a slope of 3 to 1.

So far as the back of the embankment is concerned, I consider the materials quite suitable for the purpose, as even if the grey and black clays existed there in a much larger proportion than in the water-side of the embankment no evil result could ensue, owing to the draining of the bank by the stone drains and the admixture of rougher and coarser materials, which would have a tendency to prevent the formation of any plane of movement such as appears to have been formed where the slips have occurred.

All other materials that have been used in the construction of these works are, in my opinion, of the very best quality, and in every way suitable for the purposes for which they have been employed.

III.—(*a*) The causes of the movements. (*b*) Their significance as bearing upon the stability of the structure. (*c*) The best course to take under the circumstances.

(a) I have no doubt that the principal cause of the movements is excess of water in the embankment, which has acted upon the inferior materials (the white and black clays already referred to), disintegrating and decomposing them, and forming a slippery surface, inclined to the horizon at an angle insufficient to support the upper portion of the embankment.

This water can have obtained access to the embankment in three different ways, viz.:—

1stly. Upwards from the ground, as suggested by Mr. Gipps, in consequence of the puddle-wall having blocked the passage for the flow of the underground water through the porous strata intersected by it, and causing an accumulation of water at a pressure sufficient to enable it to force its way between the puddle-wall and the side of the trench, or through the ground underneath the embankment.

2ndly. By percolation of the water in the reservoir through the water-face of the embankment.

3rdly. By the accumulation in the embankment of rain falling upon the working-faces during the progress of the work, and sinking into the subjacent layers, partly also from the excess of water used in forming the puddle, and leakage from pipe supplying the puddlers.

It

It was asserted by one of the witnesses (Mr. Limond) that the movement was caused by water in the ground which rose and fell as though subject to *tidal influence*, and he considered that this water was acting upon the puddle-wall, converting it into "soup," and causing the whole mass to settle down bodily. A direct settlement, however, will not account for the movements which have occurred, and would, moreover, have affected the back of the embankment quite as much as the front portion.

The oscillations of water-level referred to by Mr. Limond have not been observed by other witnesses, not even by the man who had charge of the trial-shafts, and even if existing could not have had the effect suggested by Mr. Limond.

If the movements are due to water in porous strata underlying the reservoir breaking through the ground under the embankment owing to the action of the puddle-wall in arresting the natural flow, one would expect that the movements would in all cases be alike, and that the planes upon which motion has taken place would be at or near the same level as compared with the natural surface of the ground; also that borings put down through the embankment would all strike water at the junction of the bank with the original ground surface; but so far from this being the case, the bottom is in all cases where it has been reached by boreholes, hard and dry, water being met with many feet above the surface.

If the water were finding its way up through the puddle-trench, it would be found in greater abundance in the boreholes nearest to the puddle; the exact reverse is, however, the case.

Also, at the site of the slips at sections forty-four and fifty-four, where the greatest movement has occurred, no water-bearing strata were cut through, the puddle-trench being exceptionally dry at this part.

The gravel bed in which only was any quantity of water encountered underlies the deeper portion of the embankment, where the movement has been but small; and the water in the embankment at this part is 47 feet 6 inches above the original surface.

I conclude, therefore, that the water is not coming from the ground, nor is it coming up the puddle-trench.

If the water is finding its way into the embankment from the reservoir, it would necessarily follow that the level of the water in the different boreholes would stand at the same level which should correspond with that of the water in the reservoir; also that of two boreholes on the same section, one near the water and the other near the puddle-wall, if any difference did occur, the water should stand at a lower level in the hole near the puddle-wall than in that near the water, owing to the frictional resistance of the material through which the water had to pass.

Here, again, however, the facts show the exact opposite; the boreholes on section eighteen giving a water-level in the hole nearest the puddle-wall of 9 inches *above* that in a hole 25 feet nearer the water. Again, in sinking the first borehole on section eighteen (Appendex B, Bore No. 5), the water rose above the surface of the ground, continued flowing for some minutes, and the following morning, when the plug closing the hole was removed, the water rose above the ground and overflowed, although the ground at this point was 9 inches above the level of the water in the reservoir.

This fully proves that the water met with is not forcing its way into the embankment from the reservoir.

The only remaining alternative is that the water has accumulated in the embankment during its construction, and all the facts observed in connection with the movements, together with the results obtained from the boreholes, which I have put down, can be completely explained on this hypothesis; while the evidence given by different witnesses fully establishes the fact of a very large amount of water—chiefly due to the wet season of 1887—having fallen on the exposed work.

The natural disadvantage of having such an exceptionally wet season had undoubtedly been aggravated by the unsuitable nature of some portions of the material, and also by the manner in which the embankment was formed, viz., in layers sloping inwards to the puddle-trench, in consequence of which the whole amount of rainfall was thrown inwards to find its way into the puddle-trench, or downwards into the lower portions of the embankment by absorption and percolation through surface cracks and irregularities, which were bound to exist in spite of the means taken to consolidate the material.

The difference in the height of the different planes of sliding would, in this way, be accounted for, since different lengths of the embankment having been carried up at different times, the water would manifestly settle at different levels, especially as the varying quality of the materials employed would result in the formation of layers of varying resistance to the passage of the water, and varying also very much in their capacity for absorbing it.

During the very dry weather immediately succeeding the wet season of 1887 the work on the embankment was pushed forward very rapidly, 21 feet being made up during the first seven months of 1888 at section 15 and other portions at similar speed.

This rapid piling on of pressure has squeezed the super-saturated portions of the embankment comparatively dry, forcing the water away from near the puddle-wall—where, the embankment being highest, the pressure of course is greatest—towards the water-face of the embankment. This water, forced in all directions through the material composing the embankment, under considerable pressure, has disintegrated and decomposed the weaker and inferior clays and decomposed shale; and where many of these waterways—small individually—intersected or even traversed the same plane, the cohesion of the mass of earth has been reduced to such an extent as to render it incapable of supporting the strain thrown upon it, and a forward movement has taken place.

The water having been gradually driven from the puddle-wall to the water-face is to a certain extent retained there by the pressure of the water rising in the reservoir, and that portion of the bank would consequently become more disintegrated and softened than that nearer to the puddle-wall, and its effective resistance to the thrust behind it proportionately reduced.

The mechanical action of the water has, I believe, been the principal cause of the movements that have taken place, but the evidence given by Mr. Mackay goes to indicate that this action has probably been much intensified by the chemical decomposition of some portions of the material, notably the white and black clays, which under the influence of moisture rapidly oxidise, and in so doing increase considerably in bulk. My own observations on the behaviour of these materials when exposed to the influence of water and air entirely confirm this, and the expansion of the clays, due to their chemical decomposition, would call into action a force tending to move the bank bodily towards the water, even if the angle of repose were more than has been provided for. If the movement is due to this action alone it will soon cease, and when that occurs the bank will rapidly consolidate.

From a careful consideration of all the facts I have gathered, and the evidence obtained, I conclude that the movements have been occasioned by the combined action of six different causes, none of which alone would, under ordinary conditions, have injuriously affected the stability of the embankment, but which, when found united at any particular section, would have been sufficient to overcome the natural cohesion of the material and produce a greater or lesser amount of motion, depending primarily upon the amount of moisture present, and, in a secondary degree, upon the relative intensity of the different causes, more especially upon the proportion which the inferior white and black clays bear to the bulk of the material, and the consequent energy of the action occasioned by their disintegration and decomposition.

This conclusion is, I consider, materially strengthened by the fact of the greatest movement having occurred at the site of the first slip. During December, 1887, and January, 1888, there was a large accumulation of water at this point, owing to the damming back of the water from the excavation for the puddle-trench between sections 57 and 59; this water being prevented from reaching the puddle-trench could not be drained off at all, and the whole of it had to sink into the bank or dry up. That the greater portion of it sank into the bank is certain, and I have not the slightest doubt that the magnitude of the slip, which has occurred at this point, is due entirely to the excessive saturation received by this portion of the embankment at that time.

Causes operating to effect the movements, arranged in the order which I consider best represents their relative effect.

1st. The large amount of water contained in the water-face of the embankment, arising principally from exceptional rainfall during 1887, and to a smaller extent from excess of water used in puddling.
2nd. The inferior character of some of the materials employed, more especially the white clay from the flats below the embankment, and the dark decomposed diorite from Prospect Hill.
3rd. The chemical decomposition of these materials under influence of excess of moisture.
4th. The inclination of the formation layers towards the puddle-wall by which the rainfall was directed into the work.
5th. The rapid construction of the embankment during 1888, by which the pressure was brought too rapidly upon the wetter portions of the interior.
6th. The rising of the water in the reservoir, which, preventing the gradual draining of the embankment, has increased the decomposing and disintegrating action of the contained water.

(b.) The significance of the movements as bearing on the stability of the structure.

If the view I have taken of the causes of the movements is correct there is evidently ample scope for very wide divergence of opinion as to their significance and the greater or lesser probability of their creating a permanent source of weakness of the whole of the embankment. Very much depends upon the comparative influence of each cause, and more especially upon the result of the prolonged action of water upon the inferior materials.

Before forming any definite opinion on the subject, I endeavoured to collect all the facts that could be obtained in any way bearing upon the subject, and although the time which has been occupied in this investigation has not been sufficient to enable me to assert positively that there is not the slightest fear of the movements rendering the structure insecure, there is the greatest probability, short of actual certainty, that no further movements will take place, and that no serious injury has been caused to the embankment by the present movements which will imperil its safety.

I do not consider that there is any reason to anticipate further movement through increasing the depth of water in the reservoir; on the contrary, the increased pressure brought to bear on the water-face of the embankment will be in a direction opposed to the present line of movement, and, while checking this, will also tend to compress the material, and—provided that all forward movement is arrested—will bring together the drier surfaces immediately above and below the present planes of movement, thus rendering the whole more homogeneous.

All the borings indicate that the great bulk of the material is firm and comparatively dry, so much so that it would bear the addition of much more water than can by any possibility exist in it at the present time, if only the water were uniformly distributed instead of being concentrated at a few places as at present.

I believe that this uniform distribution of the water will be effected by gradually increasing the pressure upon the water slope of the embankment, and that the excess of moisture now present at the sites of the slips, and probably also to a lesser extent in other portions of the work will, under the influence of continued pressure be disseminated throughout the drier portions of the material and gradually absorbed. There is not, in my opinion, the slightest probability of the water penetrating the embankment to any depth, the material is of too compact and non-absorbent a nature for this to be possible, and the surface being protected by the broken stone, and pitching from all wave action will be proof against the greatest pressure that can be brought to bear upon it when the reservoir is filled to its utmost capacity.

When I visited the works on the 2nd instant, a strong wind was blowing, causing a considerable wash all along the face of the inner slope. Two witnesses—Mr. Gipps and Mr. Rutherford—have stated that under similar circumstances they found the water near the bank so thick and cloudy from suspended clay that it was quite unfit to drink. I made a careful inspection of the water and did not at any place find any indication of this, the water being as clear at the edge of the bank as it was in the centre of the reservoir, showing that the lighter portions of the material which had caused the cloudiness observed by these witnesses having been washed away the surface was now quite unaffected by the wash of the water.

The spueing out of the white clay observed by the diver between sections 16 and 17, and to a lesser extent in other places, is, in my opinion, the result of the surface action of the water, owing to a larger proportion of this material being immediately underneath the broken stone at these points; and this material being the most readily acted upon by the water, has expanded and forced its way through the stones.

This action will certainly occur at all places where any of the white clay will come to the surface of the inner slope, but will not in any way affect the strength of the embankment.

That

That the movements of the embankment have not injured the puddle-wall is certain, the material of which it is composed being in such a plastic condition that it will adapt itself readily to the varying pressure without cracking.

The only portion of it which has given way to any extent is at the site of the first slip, where it has subsided and filled up the space left by the forward movement of that portion of the embankment. When this is filled up solid and the puddle-wall carried up again to its proper height, the wall will be as strong here as at any other part of the work.

Most of the longitudinal cracks and fissures that have been observed along the top of the embankment, have doubtless been occasioned by the forward movement of portions of the embankment, many however, especially those over the back edge of the puddle-wall, are due solely to natural subsidence.

The material of which this dam has been constructed is about the very worst that could have been used if a perfectly regular and uniform subsidence were to have been attained. The puddle-wall will settle gradually and comparatively uniformly, not so the embankment. The rolling, watering, and kneading it has received from the traffic has so far consolidated it that it will allow the puddle-wall to shrink completely away from it before settling.

As this occurs, gaps will be formed under the surface and down the back and front edges of the puddle-wall for many feet in depth, when suddenly, owing perhaps to rain softening the surface, perhaps to a little heavier traffic than usual, the crust of earth overlying the fissure breaks down and a crack opens of greater or lesser extent.

There is nothing to fear from this so long as the cause of the cracking is subsidence only, and since the nature of the material forbids any hope of the bank settling completely for many years, it necessarily follows that the appearance of the cracks along the top of the embankment must be expected for some time to come

Under ordinary circumstances the formation of surface cracks should not occasion any anxiety. Seeing, however, that a large portion of this embankment is in a condition of unstable equilibrium, or at all events very closely approximating thereto, any formation of surface cracks must be carefully watched, and accurate instrumental observations maintained to determine whether they are due to subsidence only, or whether they must be considered as indications of further movement in the bank.

(*c.*)—*The best course to take under the circumstances.*

In considering the various means which might be adopted to stop any existing movements, prevent others from taking place, and make good the injuries which the embankment may have sustained by those that have already occurred, it is necessary to determine first of all whether existing circumstances will permit of lowering the water in the reservoir sufficiently to expose the whole of the embankment where the disturbances have occurred.

To do this would mean practically emptying the reservoir, so far as its functions of supplying the city is concerned.

If the quantity of water coming down the aqueduct was considerably in excess of the daily consumption in Sydney—ten million gallons in twenty-four hours—this might have been done, the 30-inch main below the reservoir being capable of delivering nearly 50 per cent. more than this; but on examining the records of the intake I found that the daily supply from the aqueduct had frequently fallen below 1,000,000 gallons in twenty-four hours.

I concluded therefore that lowering the water was out of the question, and that the *best course to take under the circumstances* must be such as can be carried out successfully, without interfering with the present supply to the city.

This latter condition has largely influenced the recommendations which I have the honor to make, as, could the water have been drawn off, I should have advocated a very different method of dealing with the work.

At the site of the first slip, sections 51·50 to 55·50, the present distorted embankment should be at once cut down to an uniform slope from the top inside edge to the horizontal bench formed by the stone which has been tipped over the lower portion, the water slope to be finished to the original section down to this level; the horizontal benching, where of exposed earth, to have a 3-in. layer of stone, broken to a 3-in. gauge punned into the earth, a final layer of 12 in. of broken stone, similar to that now on the water slope, being spread over the surface.

The top of the embankment to be carefully examined, all unsound and loose parts opened up by trenches, which must be refilled with the gravelly soil from the Prospect Hill excavation, mixed with the material excavated from the trenches and from the slope of the bank, the filling to be in 6-in. layers, watered and rammed as solid as possible.

The puddle-wall where it has sunk to be brought up to the 200-feet level, thus allowing a slightly larger margin for settlement than before.

I do not consider it necessary to tip any more stone at the toe of the bank, as movement has ceased for some weeks, and the recent borings show that dry material now exists in places which were wet when the first borings were made in July last by Mr. Bishop.

The bank itself has consequently a greater resisting power than it had at that time. Added to this, the weight of stone already deposited is largely in excess of any thrust that can theoretically be brought upon it, although, owing to its being loosely packed, its effective resistance is far less than that of masonry of equal weight, or even of carefully-built dry rubble.

I do not consider that carrying up the embankment to its full height will cause any further movement other than that due to fully consolidating those portions of the embankment which have been loosened, and possibly a slight amount due to settling and compacting the stone.

At the site of the second slip, section 42 to 46, I do not think a more efficient system can readily be adopted for arresting the movement than depositing stone in front of the dyke and upon the toe of the embankment.

This stone, however, must not be tipped from the bank, but taken in boats or rafts and deposited directly on the place it is to occupy. By this means fully three-fourths of the quantity that would otherwise be required will be saved, time and expense largely economized, and the weight concentrated at the spot where it will be most effective. The quantity required will not, I believe, exceed 3,000 cubic yards, but in order to allow for the difficulty of depositing it in position I have taken the quantity at 4,000 yards in preparing the estimate of cost.

About

About 400 square yards of the pitching will have to be taken up and relaid and the top of the embankment treated similarly to that at the site of the first slip.

The movement at section 18 has not been sufficient to render any readjustment of the pitching necessary, and unless some further movement does take place—which I do not consider probable—I should not advise any interference with the present slope, but simply make up the embankment to its proper level, and open out all fissures and unsound places, making them up solid with similar material, and in the same manner as already described.

If, however, any further movement occurs at this point it will have to be dealt with in quite a different manner from that adopted in the other two cases; the plane of disturbance is about 10 feet below the present water-level, and could be reached by a trench which would allow of the water causing the slip being pumped out.

This operation would be both difficult and costly, although from the small depth at which the fault occurs it could, I am satisfied, be executed without danger. The water once removed there would be no chance of the slip recurring, and the trench could be filled in as solid as any portion of the embankment.

I have not given an estimate of this work, as it forms no part of my proposals for dealing with the embankment in its present condition, but it is put forward as the probable solution of a possible but very remote contingency.

I consider it of importance that the top of the embankment should be made sound without delay; the cracks now existing being merely blinded with loose material serve as channels to convey the rain falling on the surface into the interior of the bank, where it is not required, and can be productive of nothing but harm. A careful watch should be kept for any indications of cavities forming in future from the unequal subsidence of the materials, and immediate steps should be taken to fill them up solid with suitable materials.

This being a duty distinctly devolving upon the contractors, under Clause 24 of the general conditions of the specification, and in no sense to be considered as arising out of the movements upon which I have been instructed to report, I have not taken its cost into account in preparing my estimate. (*Appendix F.*)

IV.—To report on the construction of the dam and subsidiary works as a whole, whether the design is in accordance with the best engineering knowledge on the subject, and whether the works have been faithfully carried out according to the design.

The design of these works is undoubtedly in accordance with the best engineering knowledge on the subject, and, taken as a whole, they could not be better calculated to serve the purpose for which they are intended.

I have carefully studied the specification and contract drawings, and closely examined every portion of the works.

The specification is clear and precise in its terms, and taken in conjunction with the contract drawings, contains provision to meet any contingency liable to arise, and every particular necessary for the satisfactory carrying out of the contract.

The contractors have carried out their portion of the work in a thoroughly sound and substantial manner, and the serious disturbances which have occasioned so much anxiety and apprehension regarding the stability of the structure, are most certainly not due to any laxity of supervision on the part of the engineers, nor to any attempt on the part of the contractors to evade their responsibility.

When discussing the causes of the movements, I stated that sloping the layers of material of which the embankment is composed, inwards towards the puddle trench was, in my opinion, one of the causes which had to some extent operated in inducing them. It is but right that I should mention here that some of the first engineers in this branch of the profession advocate this particular method of forming embankments, while others of equal standing prefer to form them in horizontal layers. Taken by itself there is nothing to object to in this mode of construction, and with some soils it has decided advantages.

The special conditions which have combined to render this mode of construction so unsuitable in this present instance could not have been foreseen at the time the work was commenced.

It would, in my opinion, have been preferable to fill the deeper portions of the puddle trench with cement concrete up to an uniform level; the puddle wall would then have been of an uniform height throughout the work, instead of varying from 20 to 75 feet in depth below the ground surface as at present.

The method of working the puddle also by cutting and cross-cutting, is not, in my opinion, so well adapted as pugging to produce a puddle of first-class quality. Much more water has to be used, and there is great risk, especially with some kinds of clay, of the material becoming injured by the excess of water, and its toughness and consequent suitability for the intended purpose materially impaired.

The strict supervision on the Prospect Works appears to have been sufficient to guard against this; but the samples of puddle I examined were decidedly softer than any I have used in my own practice, and judging from them there can be no doubt that the puddle in the lower portions of the trench must be softer still.

This is to some extent an advantage in this particular case, the additional plasticity of the puddle allowing it to follow the movements of the bank without cracking, and so long as the puddle wall remains unbroken, it will be impossible for water from whatever source it may arise to penetrate to the outer slope of the embankment.

The whole of the work in connection with the outlet tunnel, valve tower, and waste weir, is of the very best description, and could not, in my opinion, be improved upon either in design or execution.

It has been my aim in the foregoing Report to comply as closely as possible with the instructions of the Honorable the Secretary for Public Works, to give "a plain unvarnished statement of all the facts," I have ascertained respecting the construction and execution of these works; and to state as concisely as possible the opinions I have arrived at upon the several points submitted to me.

I cannot conclude this report without acknowledging the great assistance I have received in making this investigation from the officers in the Public Works and the Harbours and Rivers Departments. All the resources of these Departments were placed unreservedly at my disposal, and any application I made for information, plans, or documents in their possession was fully and promptly responded to.

My special acknowledgments are due to those gentlemen who—some of them at considerable personal inconvenience—attended to give evidence on various matters coming within their personal knowledge, and it is matter for congratulation that although evidence has been obtained from so many and such varied sources, and from persons whose interests were in some instances diametrically opposed, the discrepancies are so few and unimportant in character.

I have, &c.,
R. L. MESTAYER.

11th January, 1889.

APPENDICES.

J. Barling, Esq., J.P., Under Secretary for Works,—

Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 13 January, 1889.

Re Prospect Dam, I have the honor to forward herewith the complete appendices referred to in my report on the above work, including the estimate, Appendix F, a copy of which was forwarded to the Honorable the Secretary for Public Works on Saturday morning.

I have, &c.,
R. L. MESTAYER.

APPENDICES.

A.—Instructions.
B.—Copies of Borings.
C.—Table showing Daily Movements.
D.—Section at T.S. 54.
E.—Section at T.S. 44.
F.—Estimate.

(A.) Instructions.

Minute by The Secretary for Public Works.

Subject:—Slip at Prospect Dam.

Department of Public Works, Sydney, 3 December, 1888.

With reference to the correspondence I have had with Mr. Mestayer, M.I.C.E., this afternoon, at which I requested him to visit the Prospect Dam, and make a report to me on its present condition, and to his acceptance of the Commission, I now wish to give specific instructions for his guidance. He will notice from reading the papers, and from the information which I have given him, that further movements have taken place in the Prospect embankment which have been the subject of many newspaper articles, and have caused a considerable amount of apprehension in the public mind. I have already instructed Messrs. Bennett and Whitton to report on the subject, and they have visited the dam and are now engaged in preparing their report.

As the matter, however, is so important that it would not be right for me to leave one stone unturned in arriving at the true facts of the case, I have thought it desirable to call in the aid of experts who are unconnected with the Department. I understand that Mr. Mestayer is an engineer of considerable standing, especially in matters appertaining to hydraulic engineering.

I wish him, therefore, to at once visit the Prospect Dam, and carefully examine its present condition, and also to ascertain the kind of material that has been used in its construction, and its adaptability to the purpose for which it has been used. I wish him to point out the movements which have taken place, their significance as bearing on the stability of the structure, and what, in his opinion, will be the best course to take under the circumstances.

I wish him to give me a report on the construction of the dam and subsidiary works as a whole, and whether, in his opinion, the design is in accordance with the best engineering knowledge on the subject, and whether also the works have been faithfully carried out according to the design.

In carrying out these duties, as I wish to get an entirely unbiassed opinion on the subject, he will consider himself quite independent of either the officers of the Harbours and Rivers Department or of the engineers outside the Department who have previously reported on the subject.

Mr. Hickson and all the officers of the Department will be so good as to give Mr. Mestayer every assistance in the way of answering questions he may put to them, and will place at his disposal any plans and other information which they may possess, or which may be in the Departmental records.

I wish Mr. Mestayer to undertake this work at once, and shall be glad if he will as quickly as possible take in hand the duties confided to him, in the carrying out of which I desire especially to impress upon him their great importance, and the necessity for giving a plain unvarnished recital of the facts as they present themselves to his investigation.

JOHN SUTHERLAND.

(B.)

BORE-HOLE No. 1.—Borings taken at T.S. 44, 7th December, 1888.

Hole 58 ft. 9 in. from centre of puddle trench. Reduced level of ground 185·87 ; reduced level of water in reservoir, 178·79.

	3 ft. yellow clay.
	5 ft. do shales.
	7 ft. do and blue clay
	9 ft. do do
	11 ft. do red, and blue clay.
	13 ft. do do
	15 ft. do do
	17 ft. do and red clay.
Wet clay level ...	19 ft. do do showing wet.
	20 ft. do do
	21 ft. do do
	23 ft. do do
	25 ft. do clay.
	28 ft. do do
	31 ft. do and blue clay.
	33 ft. red clay and gravel bottom.

NOTE.—At 19 ft. a narrow band of what appeared to be a dark sandy clay was met in which was moisture. December 8th, at 11·30, I put a rod down this hole and found 24 feet of slurry and water.

BORE-HOLE No. 2.—Borings taken at T.S. 44·25, December 10th, 1888.

Hole 58 ft. from centre of puddle trench, 7 ft. 9in. above W.L. Reduced level of ground 186·50; reduced level of water in reservoir, 178·75.

	2 ft. 6 in. red clay.
	4 ft. yellow and white sandy clay.
	6 ft. red and blue clay.
	8 ft. yellow and blue clay.
	10 ft. do do
	12 ft. yellow, blue, and white clay.
	14 ft. do do
	15 ft. yellow and blue clay.
	16 ft. yellow and blue clay ; particles of dark clay through.
	17 ft. yellow and blue clay.
	18 ft. yellow clay.
	19 ft. do
20 ft. 9 in. wet clay level ...	20 ft. do
	21 ft. do
	22 ft. do
	23 ft. do
	24 ft. do

NOTE.—At 20 ft. 9 in. there appeared to be wet clay showing on the rods, which did not show itself until we had bored to the 23 ft. level.

BOREHOLE No. 3—Borings taken at T.S. 44. 13th December, 1888.

Hole *on* centre line of puddle-trench; reduced level of ground, 198·77 ; reduced level of water in reservoir, 178·72.

	4 ft. yellow and blue clay, dry and loose.
	6 ft. do do do
	8 ft. do do do
13 ft. 6 in. level of puddle	10 ft. yellow sandy shale and clay, dry and loose.
	14 ft. puddle.
	15 ft. do
	16 ft. do
	18 ft. do
	20 ft. do

BOREHOLE No. 4.—Borings taken at T.S. 44. 13th December, 1888.

Hole 80 ft. 5 in. from centre of puddle-trench; reduced level of ground, 179·57; reduced level of water in reservoir, 178·72.

		3 ft. yellow and red clay.
		6 ft. do do
		8 ft. do do
		10 ft. yellow clay.
		12 ft. do and shale.
Struck water ...	———	14 ft. do (water).
		16 ft. yellow sandy clay and shale.
		18 ft. red shale and clay.
		20 ft. yellow and white sandy clay.
		22 ft. yellow, red and white.
		24 ft. yellow and blue clay and shale.
		26 ft. yellow clay and gravel (surface).

NOTE.—The water rushed in at the 14-ft. level when the rods were put down the second time.

BOREHOLE No. 5.—Borings taken at T.S. 18. 15th December, 1888.

Hole 79 ft. 1in. from centre of puddle-trench; reduced level of ground, 179·44; reduced level of water in reservoir, 178·71

		4 ft. dark black clay.
		6 ft. yellow sandy clay.
		8 ft. do (wet).
Water level ...	———	10 ft. yellow and black clay and ironstone gravel water.
		11 ft. red and blue clay and gravel.
		14 ft. red, blue, and yellow sandy clay.
		16 ft. yellow and blue sandy clay.
		18 ft. do do
		20 ft. yellow, blue, and white clay.
		22 ft. yellow, red, and brown clay and shale.
		24 ft. do do
		26 ft. do do
		28 ft. do do
		30 ft. do do
		32 ft. do do
		34 ft. yellow and blue sandy clay and gravel.
		36 ft. yellow and blue sandy clay.
		38 ft. do do
		40 ft. do do
		42 ft. yellow and sandy clay and gravelly loam.

NOTE.—At 10 ft. upon drawing the rods the water rose with a rush, ran over the surface of the hole, and continued running about 3 minutes. Dec. 17.—Upon drawing plug the water ran over surface of hole and rose about 9 in. from 1 o'clock to 2 p.m.

BORE-HOLE No. 6.—Borings taken at T.S., 18, December 27th, 1888.

Hole 30 ft. from centre of puddle trench. Reduced level of ground, 196·56; reduced level of water in reservoir, 180·79.

		4 ft. yellow clay and gravel.
		7 ft. do and brown clay.
		10 ft. brown sandy clay.
		12 ft. do gravelly clay.
		14 ft. do clay.
Wet clay level	———	16 ft. do and yellow clay and gravel.
		18 ft. do do do
		20 ft. yellow sandy clay.
		22 ft. do do
		24 ft. do do
		26 ft. do do
		28 ft. do do
		30 ft. do do

December 28th.—At 15′ 6″ upon putting the auger down brought up soft mud and water which rose to 15′ 7″.

December 31st.—Slurry 15′ 4″ from surface.

January 2nd, 1889.—Slurry 15′ 9″ from surface.

January 3rd.—Slurry 15′ 8″ from surface.

BORE-HOLE No. 7.—Borings taken at T.S. 18, December 27th, 1888.

Hole 55 ft. from centre of puddle trench. Reduced level of ground, 187·73. Reduced level of water in reservoir, 180·79.

		3 ft. yellow and black clay.
		5 ft. do do
		7 ft. do do sandy clay.
		9 ft. do sandy clay.
		11 ft. do do
		13 ft. do and black sandy clay.
		15 ft. do sandy clay.
		17 ft. do do
		19 ft. do do
Wet clay level		20 ft. do do

December 27th.—Cut the water at 19′ 6″, and it rose to 8 feet from the surface.
„ 28th.—Water 7 feet 10 inches from surface.
„ 31st.—Do 7 „ 3 „ do do
Jan. 2nd, 1889.—Do 7 „ 1 „ do do
„ 3rd. „ Do 7 „ 1 „ do do

BORE-HOLE No. 8.—Borings taken at T.S. 24, December 28th, 1888.

Hole *on* centre line of puddle trench. Reduced level of ground, 195·17. Reduced level of water in Reservoir, 180·79. This boring was put down to determine the depth of puddle. Puddle was struck at 8 ft. 6 in.

BORE-HOLE No. 9—Borings taken at T.S. 24, December 28th, 1888.

Hole 30 ft. from centre of puddle trench; reduced level of ground, 195·17; reduced level of water in reservoir, 180·79.

		4 ft. yellow sandy clay.
		6 ft. yellow and black clay.
		8 ft. yellow clay.
		10 ft. do do
		12 ft. do do
		14 ft. yellow and blue clay sandy.
		16 ft. do do
		18 ft. yellow clay sandy.
		20 ft. do do
		22 ft. do do
		24 ft. do do
		26 ft. do do
		28 ft. do do
		30 ft. do do

BORE-HOLE No. 10.—Borings taken at T.S. 54. 2nd January, 1889.

Hole 73 feet from centre line of puddle trench; reduced level of ground 188·20; reduced level of water in reservoir 180·89.

		3 ft. red clay.
		5 ft. yellow, red, and white clay.
		7 ft. yellow, red, white, clay, and shale.
		9 ft. yellow, and blue clay.
		11 ft. yellow, red, and blue clay.
		13 ft. red clay and gravel.
		15 ft. red clay and gravel.
		17 ft. yellow and red clay and gravel.
		19 ft. yellow and brown clay.
Water		20 ft.
		21 ft. yellow, red, and blue clay.
		22 ft. yellow and red clay and gravel.

Height of water in hole at 73 feet.
January 2nd, at 2 p.m. = 12′ 6″
„ „ „ 5 p.m. = 12′ 3″
„ 3rd, „ 10 a.m. = 12′ 3″
„ „ „ 4·45 p.m. = 12′ 3″

BORE-HOLE

BORE-HOLE No. 11. Boring taken at T.S. 54. 2nd January, 1889.

Hole, 46 ft. 6 in. from centre line of puddle trench; reduced level of ground, 190·71; reduced level of water in reservoir, 180·89.

	3 ft.	yellow and blue clay.
	5 ft.	do do
	7 ft.	do do
	9 ft.	do do and shale.
	11 ft.	do do
	13 ft.	do do
	15 ft.	do do
	17 ft.	do do and shale.
	18 ft.	do do
	20 ft.	do do
Bottom ...	21 ft.	red clay and gravel.
	22 ft.	do do

This clay was quite dry.

(C.)

MOVEMENT of Inner Slope at T.S. 44·15.

Date.	Daily Horizontal Movement in inches.	Total Horizontal Movement in feet.	
1888.			
December 3	.....	1·52	
„ 4	2·00	1·69	
„ 5	0·00	1·69	
„ 6	4·25	2·04	
„ 7	0·00	2·04	
„ 8	1·75	2·18	
„ 10	3·25	2·45	Movement for two days.
„ 11	1·50	2·58	
„ 12	2·75	2·81	
„ 13	1·75	2·97	
„ 14	2·375	3·17	
„ 15	0·75	3·23	
„ 17	6·625	3·78	Movement for two days.
„ 18	2·25	3·96	
„ 19	3·125	4·22	
„ 20	1·00	4·30	
„ 21	0·00	4·30	
„ 22	0·125	4·31	
„ 24	1·00	4·39	Movement for two days.
„ 27	1·375	4·51	Movement for three days.
„ 28	0·625	4·56	
„ 29	0·875	4·63	
„ 31	1·00	4·71	Movement for two days.
1889.			
January 2	0·00	4·71	Movement for two days.
„ 3	0·375	4·74	

MOVEMENT of Inner Slope at T.S. 54.

	Daily horizontal movement in inches.	Daily horizontal movement in feet.	
1888.	.....	27·35	Up to December 3rd, 1888.
December 4.....	.....	27·35	
„ 5.....	.....	27·35	
„ 6.....	.....	27·35	
„ 7.....	.....	27·35	
„ 8.....	.....	27·35	
„ 10.....	.....	27·35	
„ 11.....	0·375	27·38	
„ 12.....	.....	27·38	
„ 13.....	.....	27·38	
„ 14.....	.....	27·38	
„ 15.....	0·5	27·42	
„ 17.....	0·375	27·45	
„ 18.....	.....	27·45	
„ 19.....	0·125	27·46	
„ 20.....	.....	27·46	

No further movements have occurred up to January 3rd, 1889.

(F.)

ESTIMATED cost of work required to be done at the embankment of the Prospect Reservoir in making good the injury occasioned by the slips that have occurred up to the present date 11/1/89:—

		£	s.	d.
5,060 cubic yards.	Filling in embankment, rammed in place as specified, @ 2/- ...	506	0	0
820 cubic yards.	Excavation in cutting bank to original section, @ 2/-	82	0	0
500 lineal yards.	Opening up fissures and filling same, rammed solid as described in report, @ 10/-	250	0	0
1,153 cubic yards.	Puddle in raising wall to 200 feet contour, @ 4/6	259	8	6
814 square yards.	Broken stone, 3 inches thick on horizontal benching, at sections 51·50 to 55·50, rammed into surface, @ 9d.	30	10	6
814 square yards.	Broken stone, 12 inches thick, packed on said surface, @ 1/6...	61	1	0
2,430 square yards.	Pitching on slopes, 1 foot 6 inches thick, including 6 inches broken stone under pitching and kerb, @ 7/6	900	0	0
400 square yards.	Taking up and relaying pitching where displaced, @ 5/- ...	100	0	0
4,000 cubic yards.	Stone deposited at toe of bank at sections 42 to 46, @ 15/- ...	3,000	0	0
	Contingencies, 10 per cent.	518	0	0
		£5,707	0	0

R. L. MESTAYER, 11/1/89.

PROSPECT DAM INQUIRY.

Evidence of Witnesses examined by George Gordon, Esq., M.I.C.E., and Richard L. Mestayer, Esq., M.I.C.E., separately or conjointly.

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4. R. H. Ryan, Esq., Government Resident Engineer	36, 47, 52, 59
5. Mr. R. Cameron, Diver	37, 41, 43
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Mr. W. R. Weston	66
C. S. Wilkinson, Esq., Geological Surveyor	77

SYDNEY WATER SUPPLY—PROSPECT RESERVOIR.

MINUTES OF EVIDENCE.

SATURDAY, 15 *DECEMBER*, 1888.

Lewis P. Moline, Esq., Engineer to the Contractors, examined by Mr. Gordon :—

L. P. Moline, Esq. 15 Dec., 1888.

1. When did you take charge? About August, 1884. I was there till February, 1887.
2. Was the puddle trench filled in when you took charge? There had been a great flood and the puddle trench was filled with water. The contractors were in a fix. Mr. McGuigan died, and the contract was transferred on account of the flood upsetting the whole of the arrangements. In the same year the flume burst and filled the trench with water. We had to bail out and take out the slush before commencing operations. A flume at a higher level was constructed to provide against future storms. The water was running 18 inches deep and 40 feet wide for a considerable time through the second flume.
3. Was that second flume above the surface or just at it? It was 2 or 3 feet below the surface at section 24·50—just 14 feet above the last level. After that we could keep the bank high enough to collect any storm-water that might come.
4. At that time the bank must have been in its deepest part about 14 feet? Yes. The flume at peg 25 was left open for a considerable time after the bank was raised and a depression was left. We were at the bank for months—after the gully was formed. It was about 15 or 20 feet. The natural surface rose pretty rapidly about the flume.
5. As a rule, was the specification strictly carried out except in the case of the horizontal layers being stopped by gap at flume? Yes; except at that place.
6. There were proper steps I suppose? Yes. There was a depression at that flume before it was removed.
7. Was there any hurrying in making up that? No; we had lots of time. There was a trench 24 inches deep cut in the solid, and they were putting in 6-inch layers in that trench. The channel through the outer slope was filled up entirely with stone.
8. Was the material chiefly got from the lower excavation, *i.e.*, below the flat? Yes, where the excavation is. There was none above the water side. I know the bottom was untouched, unless it was to do what was necessary for grubbing, &c., but not for the purpose of making the dam.
9. Is the material from below the dam pretty much of the same character? It varies very considerably, and is mostly shale and clay.
10. Dark clay? Yes. But Mr. Shand could give you more information about that.
11. Who is Mr. Shand? He was virtually the contractor. He was in charge of the works throughout. He was in entire charge of the work when Mr. McGuigan died.
12. During the progress of the work were there any slips beyond the ordinary subsidence? Not a sign or shadow of anything. Since this occurred I have been unable to explain why some of the pegs* did not agree with the measures I put them into. I could not understand the difference. It never struck me that such a thing was likely to occur. I never noticed anything during the progress of the work.
13. Was the result of the bore a fair sample of the material of the inner slope (Borehole No. 4)? It varies a good deal. Mr. Ryan objected to pure clay, and rightly too. The whole country is clay; we could not help ourselves. It was principally yellow clay in the last bore I saw nearly opposite the first bend—deep excavation.
14. Was it specified that the bank was to be watered? Yes, clearly so, and it was done invariably.
15. Was a row of pipes laid along the puddle trench? The pipes were laid first resting on timbers. The bank itself was watered by means of water-carts. The puddle wall was watered by hose from the main pipe which ran along from end to end.
16. Did you have any bursts? Yes; the pipes would give way occasionally. We got the water into these pipes by pumps, and the water that could come out was only what was in the pipes if it occurred at night. If it occurred at daytime we stopped it at once. I ought to say we connected our line of pipes with the 30-inch main afterwards. Then they were always charged, and if a burst happened at night more water would get in. The puddle-wall would hold water like a cup. The rainfall did more than anything to put water on the bank. There were frequent storms. When the rain fell it would lodge on the clay. Mr. Ryan insisted on the puddle-wall being level longitudinally.
17. Did you notice whether the bank was boggy or not during these heavy rains? The horses could trample very well over it generally, but in some places they could not. The new material put on would be soft. The centre part is harder than that made more recently.
18. What was the subsidence in the puddle trench? We could not tell what subsidence there might have been, during the progress of the works, in the clay puddle.
19. When was that? In 1886. A deep part of the trench at section 54 was pumped out after heavy flood. I do not think it has anything to do with the trouble that has taken place.
20. Was the clay rolled or carted over? Both; but not over the puddle trench.
21. Was it done according to specification? Yes; we could not get away from it. The clay-chopping business I considered a farce. There was more water put into the clay than was needed. In 1885 we had to stop, there being no water.

22.

* Mr. Moline afterwards said he was rather uncertain about this, and did not attach much importance to this recollection of his.

L. P. Moline, Esq. 15 Dec., 1888.

22. Where did you get your sand from? Liverpool, on the Southern Railway line. There was no sand near the dam.

23. Did you sub-let the work? It was almost all day work. The contract was sub-let for driving the tunnel. We objected to water being let in at the rate it was. If the dam had not been filled so quickly there would have been a better chance for the water in the bank getting out.*

Lewis P. Moline, Esq., Engineer for the Contractor, examined by Mr. Mestayer:—

24. During what time were you engaged on this work? From August, 1884, to February, 1887.

25. What was your position? That of Contractor's Engineer.

26. During the time that you were there was the work carried out strictly in accordance with the specification? Yes; in all cases the Government Inspectors were exceedingly strict, far more so than I thought was necessary.

27. Was there any exceptionally wet weather during the time you were on the works? No; nothing sufficient to interfere in any way with carrying on the work.

28. Was any provision made for carrying or draining the water off the embankment? I do not remember any instance of difficulty having occurred by rainfall, and which required special drainage.

29. Do you remember any suggestion being made by the contractors for using the refuse from the quarry and the gravel in forming the embankment? The refuse from the quarry was allowed to be put in the outer slope; but I prepared a plan showing the tramway we proposed to put in to bring the material to the bank. We proposed to tip the dirt on each side of the bank out of the waggons and then cart it over the bank in the usual way, but we were not allowed to put rails on the bank.

30. This was not approved of by the Department I believe? No; I know that they refused to allow it to be done, but I do not remember any reason having been given.

31. With regard to the puddle wall; there having been many statements made as to the enormous quantities of water used for the puddle, can you give me any information on this point? No more water was used than was necessary to make the puddle in the manner provided for in the specification. If pugging had been allowed, as suggested by the contractors the puddle could have been put in much drier; but the whole of the clay had to be cut and cross-cut by spades. Less water was used at first, but it was found necessary to increase the quantity as the men could not draw the spades clean from the clay. There was consequently much loss of time and labour besides the work could not be properly done. The quantity of water was increased until the spades could be drawn out quite clean.

32. How was the embankment worked up? The excavated material was brought up the sides in drays, there inspected by the Government officials, who would reject any they considered unsuitable, and either have it taken off the work altogether, or if it were suitable for any other part of the bank, they would have it taken there. All the material when approved by the Government officials was deposited in layers never exceeding the specified thickness, and the traffic was diverted from time to time by timber and other means so as to ensure every portion of the bank being thoroughly traversed and worked down. Water carts were kept constantly working backwards and forwards over the whole embankment to moisten the material and ensure its thorough consolidation.

33. Were all the layers of material put in sloping towards the puddle wall? Yes.

34. In wet weather did not this cause a large accumulation of water in the puddle trench? I do not remember any accumulation of water occurring from this cause for more than a day.

35. Did you at any time see the embankment, more especially at the water side, too wet for traffic to be carried on? No; immediately after heavy rain it might have been difficult to work the traffic, but I do not remember any stoppage occurring from this cause.

36. If any such accumulation of water had occurred at the puddle trench in consequence of the slope of the layers towards it, could the accumulated water have got down the side of the puddle wall to the lower portions of the embankment? No; I consider this would have been impossible, the puddle being thoroughly consolidated and driven into the banks at each side.

37. How was the stone dyke at the toe formed? It was built of dry rubble masonry, and the embankment worked up to it.

38. Have you any other information that you can give us, or any suggestions that you can make respecting this work? I think not.

Robert Shand, Esq., Manager for the Contractor, examined by Mr. Mestayer:—

R. Shand, Esq. 15 Dec., 1888.

39. Were you the contractors' representative on this work? Yes.

40. How long have you been here? From the commencement of the work.

41. Have you any statement which you would wish to make as to the manner in which the work has been carried out? The contractors have throughout endeavoured to carry out the work in the very best manner, and any instructions of the Government Resident Engineer were immediately attended to.

42. With regard to the material employed in the embankment, did not disputes occur between the contractor and the Government representative with regard to its quality? None of any importance. Occasionally a load of material brought on to the work would be rejected by the Inspectors as being unfit for the work, and it was then taken away. Sometimes the material which had been brought up by the contractors for one portion of the bank was rejected as not being sufficiently good for that portion, but it was allowed on the back of the bank or on some other position, and no objection was taken by the contractors to its disposal in this way. The contractors had suggested to the Government representative that it would be better to mix refuse from the quarry and coarse gravel which was removed from the bank in opening up the quarry, with the material of which the embankment was being composed, but the suggestion was not accepted.

43. It has been suggested that one cause of the slip is a layer of the white clay having been deposited in a portion of the bank; can you inform me whether at any time this white clay has been deposited in bulk at any one portion of the bank? No, I am certain that in no instance was any quantity of this white clay deposited

* In my own notes I have also "Ryan often insisted on less water being used, but it could not be chopped without.' "Left the work in February, 1887." "Less friction than usual (between engineer and contractor) occasionally appealed to the chief."—G.G.

R. Shand, Esq.
15 Dec., 1888.

deposited in any one place. There is more or less white clay throughout the whole of the embankment; but as it came out of the excavation mixed with the other red and yellow clays it could not possibly have been put in any one place by itself in the bank.

44. Was the embankment carried up strictly in accordance with the specification? Yes; and the Government Inspectors took very good care that we should not deviate from the specification in the smallest particular.

45. After wet weather did the material in the embankment become somewhat boggy? No; we drained the water off over the embankment across the puddle trench into drains in the opposite side of the bank. It was contrary to our own interests to allow water to lie sufficiently long to render the embankment boggy, as it would have cost us so much more in working the traffic over the softened earth.

46. Was any provision made for draining the bank on the water side, other than what you have already mentioned? No; and there was no possibility of draining this part of the bank properly, because water was allowed to rise in the reservoir and so prevent the escape of any water that might have lodged in the bank.

47. Some articles which have appeared in the papers allude to an excessive quantity of water having been used in forming the puddle and putting it in the trench,—will you describe the manner in which this puddle was formed? The clay after having been excavated, turned over, and sufficiently exposed to the weather, was brought to the puddle trench, it was then cut and cross-cut by spades and well worked with water by the men until there was the proper consistency to satisfy the Government Inspectors. No more water was used than was really necessary for the purpose. The contractors suggested that the clay should be worked in a pugmill; but this suggestion was not approved of by the department. Working it in the manner required—that is, cutting and cross-cutting it with spades—involved the use of much more water than if it had been pugged, as unless excess of water was used, it was impossible to draw the spade clean from the clay.

48. Was any exception taken by the department at any time to the quantity of water that was being used in the puddle trench? No; the Government wished to have the puddle well watered.

49. Was any difficulty experienced in rolling and thoroughly consolidating the embankment right up to the puddle trench? It was very difficult to ensure this part of the bank being thoroughly consolidated, in consequence of the formation of the puddle wall, but a special gang of men were engaged ramming the earth all along the puddle trench. The carts, also, that brought the puddle, in all cases were close up to the trench, and were backed right up to it when depositing the clay. I do not think that this part of the work is less consolidated than any other part of the embankment.

50. You have had assistants at work for some time taking levels and sections of the bank at different points. Do your observations agree with those taken by the officers of the department as to the amount of the movement and its character? Yes; generally there is no discrepancy between our observations so far as I can ascertain.

51. Have you ascertained from your own observations whether there has been any movement in other parts of the bank—other than the two slips at sections forty-four and fifty-four? The observations we have taken do not indicate any movement on the top of the bank except settlement over the puddle, which has taken place more or less along the whole length of the bank; but I am under the impression that a movement has taken place along the straight, as the kerb is not in the same position as when it was put in.

52. Is there no means of checking the present position of the kerb to ascertain whether it has shifted at all? Yes; the kerb was put in to pegs at a fixed distance from centre line of puddle trench. Many of these pegs are still standing, and the distance shows an increase of between 2 feet and 3 feet;—that is, these pegs have moved waterwards by this amount.

53. Have you any further remarks to make for our information, as to the construction, the slips, or anything? No; I have no further information to give you. I have given you all I can think of at present.

Robert Shand, Esq., Manager for the Contractors, examined by Mr. Gordon:—

54. You were manager for Mr. M'Guigan? Yes; I acted under Power of Attorney for him.

55. Were you there at the beginning of the work? Yes; I acted for him while he lived.

56. What were you after his death? I managed for a while as executor.

57. You were still in charge of the works? Yes.

58. Had you ever been in charge of similar works before for Mr. McGuigan? I was never looked upon as manager; I was a sort of confidential clerk, managing corespondence, pay, &c., &c., on other contracts.

59. Is there anything in connection with the construction of the dam you would like to mention? I do not know that any particular part is different to any other part.

60. Was the specification adhered to as closely as possible? So far as I know, to the letter. We trusted to dray traffic more than to rolling. Mr. Ryan was careful to see that the work was properly carried out, even if further expense were incurred by the contractor.

61. As regards material, it was practically all got from the excavation on the lower side? The bulk of it was got from the flat.

62. Was the material all pretty much the same? Yes, and it was pretty well distributed.

63. What system did you wish to adopt with regard to material? We had a scheme under which it could be run on level instead of climbing up the roads. Our idea was to run straight into the hills. In fact, we went to the trouble of sinking shafts for a certain distance. We have had no suspicion of a movement We never dreamt of such a thing happening.

64. There was an allowance for subsidence? No; it was to the contractor's interest to avoid that sort of thing. There has been a difference of opinion as to whether the chopping could not be done with less water. Unless very closely watched a man may be inclined to put more water on than ordered. There was somebody to regulate the water.

65. Who was that? He was a man from England who is now dead, and also Mr. Davis. We had nothing more to do with him than to carry out his instructions more or less.

66. What sort of weather had you? The first year was very dry. In 1887 we were troubled with very wet weather. On an average we did not work half-time then. As far as I can remember we had a lot of rain in 1886.

67. Was this year (1888) a dry one? Yes; the preceding one was a wet one.

R. Shand, Esq. 15 Dec., 1888.

68. One year you had not sufficient water to go on with? That would be very early. We had to stop some work for want of water.
69. I suppose there is no sand in the neighbourhood? Nothing suitable for mortar in connection with the masonry. It is only good for blinding purposes. There is a coarse kind of sand in the quarry. We were allowed to use that sometimes for joints of rough pitching.
70. Is there any schedule price of this kind of work? For blinding 3 inches deep 1s. square yard (12s. per cubic yard).
71. Then the puddle was constructed as nearly as possible level right across the length of the dam? Yes, it was perfectly level.
72. Had you any trouble to get the water out on the occasion of a flood at one time? If any water came in we lifted it out with a crane. At peg 15 we had to use a pump. We have had flood waters, but it was only a matter of a day or two to bail it out.
73. Did you get on harmoniously? Up to now we have got on very quietly, and have carried out instructions. Now we are asked to do something beyond the contract. We consider we have finished, and what we are now asked to do we consider an extra.
74. You have no reason to complain of undue strictness? We have complained often enough, and appealed to the Engineer-in-Chief, but the only reply we could get was that the work was to be carried out to his satisfaction. We thought money was being thrown away in cutting and cross cutting clay so often.

MONDAY, 17 *DECEMBER*, 1888.

Mr. William Nicholas, Inspector of Earthworks, was called and examined :—

Mr. W. Nicholas. 17 Dec., 1888.

75. Were you Inspector in charge of the bank? Yes.
76. When did you take charge? When the work was at the 162 feet level.
77. What sort of weather did you have at that time? I believe it was rather a dry season. I was not on the bank in the wet season, but in the tunnel.
78. Did the contractors take any measures to get rid of the rainfall that collected on the work? They got rid of a portion of it by draining.
79. Were the works stopped through the water not being drained off? Once or twice we had to stop work until the water got away;—this was in the trench work.
80. How did the contractors remove the water from the bank? The water was led across the puddle trench into stone drains built in the embankment on the back or land side of the puddle wall.

Robert H. Ryan, Esq., Resident Engineer, called and examined by Mr. Gordon :—

R. H. Ryan, Esq. 17 Dec., 1888.

81. *Mr. Gordon.*] You have been here from the beginning of the work? Yes; from the commencement.
82. Did you make the design of the dam or did the office? It was made in the office, but I was in and out during the time it was being made.
83. The specification was made in the office as well? Yes.
84. The specification was adhered to as closely as possible? Yes.
85. There were very slight deviations, and only such as could not be avoided? Yes.
86. Except these slight deviations which could not be helped, there were no alterations made? As far as we possibly could do so we adhered to the specification, and carried out the work according to it.
87. At the time water was let off was the puddle in the trench up to the surface? The low level flume was fixed across before the trench was opened, and it was kept so until the puddle was brought up to it underneath.
88. It was a large flume? About 60 feet wide.
89. At what section was this? At section 18. A second flume was fixed across the trench at a later date, and on higher ground; that is, at section 24.
90. Was there any difference between that part of the dam and any other? No; it was the same material that was used.
91. The puddle was brought up the same way? Yes.
92. Then you began at the toes? Yes; we commenced to build the embankment at the toe.
93. Did you find the contractors as willing as they generally are to carry out work according to specification? It was a constant battle right through from beginning to end.
94. What were they principally remiss in. Did they put in too little or too much water? The puddle was sometimes too wet; the layers of the banks at times were too high above that allowed by the specification. They sometimes brought surface-soil on to the bank; after heavy rain it was some time before the water would go off the centre. My directions were to have the men, during the time of rainfall, to run the water off as soon as possible. This they never carried out, so far as I know.
95. Did you ever complain of the excessive amount of water? I complained of the rain water, and of their pipes constantly bursting and flooding the ground and puddle, frequently, verbally, but I think only once in writing. They were mostly verbal complaints; but I have a memorandum I wrote in July, 1885, about the puddle.

Harbours and Rivers Department, 20th July, 1885.
Prospect Reservoir Works,

Memorandum from R. H. Ryan to R. Shand, (for Contractor).

I WISH to direct the serious attention of contractor to the manner in which the puddle in embankment is at present prepared and finished. The disposition to have it imperfectly cut, and the tendency to use too large a quantity of water, is clearly manifest. For contractor's information and guidance as to what is required, I may inform him that the puddle, when finished in place, should be of the consistency and compactness, as nearly as may be, of well prepared brick-clay as same is placed in the mould in the process of hand brick-making; should not be left sloppy or miry; but to finish in a tough, dense, and somewhat putty-like condition. As this is the portion of the work which must keep back the water, any divergence of the puddle from this state may have a result totally disastrous to you, as also to others concerned in the undertaking.

96. That implies that you had frequently spoken to them about it? Yes, frequently.
97. Then about that part of the bank immediately along the puddle wall, under the pipes, not having sufficient rolling, do you think there is much water there? I think a piece about 3 feet in width did not

R. H. Ryan, Esq. 17 Dec., 1888.

not get the same amount of rolling as the outside. About 20 feet of the upper part was put in during the dry weather. I am under the impression that the 3 feet at the side accounts, to some extent, for the puddle wall going over on the main portion of the embankment; being of a light material would also affect it.

98. About getting rid of the water after heavy rains, did they do it well? They cut drains across the puddle-wall into stone drains at the back. In the heavy section, they put in 21 feet between December and August, that is, in about eight months; up to July, about the deepest part, they put in 20 feet in seven months (from December, 1887, to July, 1888). Over 15 feet was put in in six months; and 12 feet in five months. This was the heaviest section.

99. What is about the present water level? 179·28 this morning.

100. Can you show me the progress section (longitudinal)? [*Working plans shown*].

101. Where was the movement first noticed? As near as possible at section 54.

102. And when? On Sunday, April 22nd, 1888. This was the top settlement but no bulge apparently visible.

103. When did you first notice the bulge? On the following Tuesday (the 24th), and I sent a telephone message to Mr. Moriarty.

104. What did you do then? Mr. Moriarty and Mr. Darley came up, and we decided to change the upper section of the puddle-wall. In some places the puddle-wall was at its full height, and covered up; but where it was not at its full height the section was changed. We made a set-off of 4 feet at 195 feet R.L., but where the wall was above that level we did not cut it down. The set-off is at the near or water side of the puddle-wall.

105. There is another section? That is another section at the same place, 54 section shown. I got authority to open it up and inspect the puddle. We found it considerably down, and we started two set-offs, so that the puddle-wall would be 8 feet wide all the way down.

106. How much did you find it had come down, and at what point? We opened it on May 2nd, 1888, to the deepest point, 194·55 R.L., refilled it to the original height, R.L., 199·41; it had subsided again, when we reopened it to 196·39 R.L. on June 21st; rebuilt it, and afterwards at different times, extending over a fortnight (between September 5th and 26th) when it was 182·70 R.L., we re-built it to 199·41 feet.

107. What is it now? It is covered up now, and we have not taken it since that date.

108. When was the stone-filling at toe of section 54 commenced? On August 28th, 1888.

109. When did you commence to make your measurements of the horizontal movement? From the commencement cross-sections were at once taken to determine the extent of movement, and daily observations were commenced on 4th May, 1888. [Copy of measurements read. *See Appendix.*]

110. Does that include the movement of the stone? Yes, when we got our points fixed on the stone.

111. Are you still putting stone on? No; it is about three weeks ago since we put any stone on, as we had to remove our railway. There is no movement of the stone now—not since 26th November. I was still putting stone at the end of the slip, where there is a slight movement, before this work had to be stopped, as above-mentioned.

112. *Mr. Mestayer.*] Is this an extra? Yes.

113. How much does each truck carry? 23 cubic feet, about.

114. Do you take it just as it comes? Yes; small stones fill up the spaces between the large ones.

115. Will you show the plan of the spot where the material was taken from for the dam? (This spot was shown on working plan).

116. You have not detected any movement lately at section 54? No.

117. There was no sign of movement while the dam was going on? None that we could see.

118. Do you remember what season it was when you were stopped for the want of water? It was previous to heavy rain falling in June, 1885.

119. Did you notice anything unusual at any time? No; at section 54 there was a quantity of water which was dammed back by the contractor to prevent it getting into the trench further on. It did not extend up to the second slip.

Mr. Robert Cameron, Diver in the Harbours and Rivers Department, called and examined:—

Mr. R. Cameron. 17 Dec., 1888.

120. *Mr. Gordon.*] What did you find in your examination this time? I went down at section 19 and carefully examined the bank in various directions. The condition of the toe of the embankment is just the same as when I went down before for Mr. Bishop. There has been no displacement or movement of the dyke. There are a few loose stones about, which appear to have come from the spalling, but no loose stones in the dyke itself, nor any bulging of the dyke. There is about an inch of mud on the ground at the bottom.

121. How does the face of the embankment look? On the face of the embankment where the water is about 12 feet deep, there is a bulge, as though the upper portion were sliding over the lower portion, similarly to the slip at section 54. It forms a ridge about 2 feet high on the face of the embankment.

TUESDAY, 18 *DECEMBER*, 1888.

James A. Hogue, Esq., Editor of the *Evening News*, examined:—

J. A. Hogue, Esq. 18 Dec., 1888.

122. We have been instructed by the Honorable the Secretary for Public Works to examine and report on the alleged defective state of the Prospect Dam, and wish to know if you would have any objection to giving the names of those who wrote the various articles in your paper? Mr. John Norton, who is not now in our employ or under our control, knows more about the work during its progress than any other person who has been in our employ, and he wrote the greater portion of the reports. Mr. W. Stuart Wearne, who is now at Prospect, has written some of the later reports; Mr. Buckett, publican at Prospect, I am informed also knows a good deal about the work; he was there almost every day during its progress, and I understand is very much concerned about its safety, as if the dam gives way he expects to suffer very severely; Mr. Rutherford, who was a sub-contractor there, and is now a contractor for Mr. Bennett, at

J. A. Hogue, Esq. 18 Dec., 1888.

at Mundarrah, Little Coogee, can give information, as he was on the job nearly all the time. He gave some information at one time and said that his name might be given up to the Government as the authority if it were necessary to do so. It did not, however, become necessary to divulge the informant's name. Mr. Ives, M.P., who lives up that way, and Mr. John Davies, M.L.C., might also be able to give some information which might be useful. Mr. F. B. Gipps, C.E., is another who examined and reported on the dam for this paper. The whole of the information which we have obtained at various times has been published in the *Evening News* on the following dates:—April 23 and 24, April 25, April 30; May 2, 10, 11, 12, 25; June 8, 9, 15, 21; July 31; August 1; of this year.

Mr. Henry Murray, Contractor, examined by Mr. Mestayer:—

Mr. H. Murray. 18 Dec., 1888.

123. When were you on the works? At the time I was there the tunnel which brings the water through to the syphon was being built. It is of the horse-shoe shape.
124. What were you doing on the work? I had a sub-contract from Messrs. Shand & Co., for the brick-work of the tunnel.
125. Do you remember the date? No; but I can give it to-morrow. I think it was about the end of 1883 or beginning of 1884. While I was there I looked about me all over the place. The puddle-wall was always a long way below the bank.
126. How much below? Sometimes between 30 and 40 feet.
127. Was it not kept slightly below the bank? It never got as high as the bank, and was generally about the depth mentioned below the bank.
128. What was your opinion of the work put in the puddle-wall? My idea of puddle was very different from their idea, for I considered the clay should have been milled.
129. Do you think that too much or too little water was used in the puddle trench? The puddle trench was one floating mass of mud, and the men had to work in long boots. There were millions of gallons of water constantly in the trench.
130. Were you the contractor for this tunnel? No, there were two or three contracts for building this tunnel, and I had one of them.
131. The specification provided for the puddle to be cut by spades? Yes, I believe so.
132. We are informed that a suggestion was made to mill the clay? I know nothing about that.
133. The statement that I have from one witness is, that a great deal more water than usual was necessary for the spades? Yes, and the way it was done would require a much greater amount of water. The inspectors insisted on its being used.
134. Did you ever hear the inspectors complain about so much water being used? No, I never heard them.
135. Do you know as a fact that a great quantity of water was used in the trench? I do, and I was constantly wondering what would become of it.
136. Did you notice any means that were taken for draining the bank, in the event of heavy falls of rain? No, only cuts. There was nothing done to take away the soakage.
137. Was the water rising in the dam? It was rising when I came away.
138. Did it come in from the aqueduct? No; I do not think that any water came in except from the water-shed.
139. The bank would not be very high then? Oh, yes, the bank was about 30 or 40 feet, and I reckon the dam was a long way on towards completion before the Nepean came into it.
140. That relates to the puddle trench? Yes.
141. Do you know anything about the material the bank was made of, and the way it was worked up? What I saw of it was in no way different to the ordinary railway bank.
142. Did they use rollers? Sometimes they did, but very seldom, as the traffic of the drays was supposed to dispense with the roller. I do not think there is enough slope in the bank.
143. How was this (Prospect) work done? The earth was simply tipped on the top and lowered down into the trench without having undergone any process before being let down, and the puddle was manufactured in the trench and, of course, required much more water than if it had been pugged before being lowered into the trench.
144. The specification provides for the puddle being cut and turned over; was this not done? It may have been done; but it appeared to be simply raw clay when it was put down the trench, for the water had all escaped from it when it was tipped on the bank, and very little, if any, of the gases had escaped out of it.
145. Did you notice the material which was put in? It was principally clay.
146. There has been a theory advanced that this white clay has been put in as a bed by itself? I did not notice it myself, and I cannot see how they could do it. There is a little pipeclay in the cutting; it is a horizontal bed, and they could not separate it.
147. Mr. Ryan says that in this bank somewhere about one-quarter of the material is pipeclay? I think he is about right there; in fact, it is very difficult to get any clay in this country without getting pipeclay in it.
148. You say you were employed on the Loch Katrine works; what material was that? I saw the material put into that bank. It was so rich that they had to mix loam with it.
149. Did they mix any gravel with it? Yes, and also turfed the outside as they went along.
150. Did you notice whether the bank (at Prospect) was thoroughly consolidated right up to the puddle trench? Well, you could hardly see the face of it, because the puddle trench was so thickly timbered inside.
151. How long was this puddle trench kept so much below the bank? All the time I was there. For a time the contractors were not allowed to put any more on the bank until the puddle came up.
152. How was the puddle trench timbered? It was a mass of timber, and the timber was too light to give the strength to work up to. I consider the puddle trench should never have been more than 3 or 4 feet below the bank.
153. Now, in your statement, it was not kept only a little below the bank, but between 30 and 40 feet? Yes.
154. Then, this part of the specification was not worked up to? No.

Mr. H. Murray. 18 Dec., 1888.

155. And you think that this accounts for the puddle-wall leaving the bank as it sets? Quite so.
156. What sort of weather was it when you were there? It was variable weather. Sometimes we had heavy rains.
157. Did the bank become slippery after these rains? Yes; and there was great difficulty in working the traffic over it owing to its being so slippery.
158. The contractors say that the wet on the water side was drawn across to the stone drains which were let to drain the water from the back of the bank? I never saw any stone drains, and only saw it run across the top by cuts. The water would have to go down 40 feet before they could take it away.
159. During that time the water could only flow into the trench? Yes.
160. You know for a fact that a great deal more water got into the puddle trench than was necessary? Oh, yes; I should reckon four times as much as was necessary.
161. Is there anything else you know of in connection with the work that went wrong? No; I took notice of the lightness of the timber propping, and they could not roll up to it properly owing to this lightness.
162. Do you know when the toe was put in? The toe was put in after the bank was up between 30 and 40 feet, or possibly 50 feet. When I was there nobody would walk about at night for fear of falling into the puddle trench.
163. The whole of the time the bank was being brought up to this height the puddle was kept at this great depth below it? Yes.
164. Were there many disputes between the contractors and the engineers at that time? Yes; they were continually wrangling.
165. What was generally the difficulty? I could never get to know. It seemed always centred upon the puddle. There was a line of inspectors always on the bank finding fault.
166. Who were the principal inspectors? I almost forget their names. There was a Mr. Davis from England who had a son there also; Mr. Jackson, over the tunnel; Mr. Ryan, the resident engineer, and his assistants, besides others whose names I cannot recollect.
167. Was there any difficulty about the tunnel work? Occasionally there was, but nothing of any moment. I think if the work were all as good as the tunnel there would be nothing to fear.
168. The tunnel is well done? I think they threw away too much money on it in concrete.
169. Do you know any one who can give us information? There is a man named M'Coy who was on the works much longer than I was on them.
170. What was he doing? He was in the tunnel, and also kept a boarding-house.
171. Do you know where he is to be found? I have no idea where he is now.
172. That is a very important statement of yours about the puddle trench being kept so much below the bank? I knew a great many of the men who were working in the trench by sight but not by name, and they could tell you the same. I think the contractor had a great deal to put up with from the Engineer and his assistants. Nothing was right, they seemed to be always at loggerheads. Whenever they put any earth down the inspectors would inspect it and try to find fault. They would worry the contractors over trifles, whilst they neglected important things. Mr. Ryan was also on the same line to find fault with things that were of little consequence; Inspector Lackey was there but left. There were one or two broken legs caused by the boxes in which the clay for puddle was being lowered coming down by the run.
173. Will you let me have the date when you were on the works? I will send it to you.

WEDNESDAY, 19 *DECEMBER*, 1888.

Mr. Edward Jackson, Inspector of Brick and Masonry, was called and examined :—

Mr. E. Jackson. 19 Dec., 1888.

174. Was the dyke built up with the bank? Yes; the dyke and the embankment were built simultaneously. The embankment was made up against the dyke.
175. Do you know a man named Murray who was on the works? Yes.
176. What was he doing? I had always thought and understood that he was a foreman bricklayer; but we found out after sometime that he was a sub-contractor. It was difficult for us to know who were workmen and who were not. The contractors dismissed him at Mr. Ryan's request. The specification gave us the power to have a person dismissed although we could not dismiss him ourselves.

Mr. George Davis, Inspector of Puddle and Bank, was called in and examined :—

Mr. G. Davis. 19 Dec., 1888.

177. When did you come on the work? I came here in October, 1881. I was specially brought out from England for this job.
178. Where had you been before? I was in the employ of the Corporation of Huddersfield for eleven years, and made three dams during that time,
179. What were you employed at? I was looking after the clay, making the embankment, and doing anything else that I was instructed. Mr. Stanway was engineer, and Mr. Crowther head engineer.
180. How was that embankment formed? The Huddersfield work was quite different to this.
181. Did you see the specifications? No; I had to work by the engineer's orders.
182. How did you put the clay into the trench? We put it in in 3 feet tips, right up to the puddle-wall on both sides. The puddle was put in, chopped, and cut. We could take the puddle out of the field, and bring it on to the platform. It was put in to the trench just as it came from the field. I have tested this clay by placing it under a small stream of water, a foot high, for twenty-four hours, and then found that it had a little bit of a dish. That was after it had been soaked. It was what I would call finished clay.
183. *Mr. Mestayer.*] What sort of material was the bank at Huddersfield formed of? It was composed of stone, shale, clay, and anything that we could get, mixed with earth, or we could not have got it to stand.
184. What kind of stone did you use? The stone was exactly similar to what we are getting here, and the quarry was in about the same position as this one.
185. What kind of a tunnel did they put in? They would not have masonry put in, but made a brick conduit.
186. *Mr. Gordon.*] Have you made any other dams besides that of which you have spoken? I helped to make one near my home in a similar way at Colay for the Bristol waterworks.
187. *Mr. Mestayer.*] How far is that from Bristol? About 14 miles. The material for it was brought in carts. We took the facing out of the lower bank at the water side. It was run out of the drays on to the bank. There was no consolidation except the traffic from the sides.
188. Was the puddle brought to the bank line? Yes, as far as possible.

Mr. G. Davis. 19 Dec., 1888.

189. How was it put in? It was put in in foot layers and thoroughly rolled, and we shifted the rollers in every way.
190. *Mr. Gordon.*] In this work did the contractors seem willing to do what was required? Yes; they did everything that we wanted, and they seemed willing to abide by the specification.
191. Had you any fault to find with them? We could not find much fault with them. We always have trouble with contractors. In England they do not take contractors without they (the contractors) can prove that they have had previous experience in the particular kind of work.
192. Was the puddle often very wet (say) after heavy rains? After heavy rains the water used to lie about but they always brought it into the stone drains and ran it away. The bank is a perfectly water-tight bank.
193. *Mr. Mestayer.*] Then how do you account for water being found in the bores put down? I account for it because I say the bank is moving. If you take the solid bank you will not find water; it is perfectly water-tight. I found about eighteen months ago that the bank had settled a good deal.
194. *Mr. Gordon.*] Have you ever worked under Bateman, in England? Not directly. I was at Marsden Tunnel, at Holmforth, and I would not live under it for a £1,000 a year.
195. When they accidentally got water in the puddle trench was it taken out again? Yes; every bucket was taken out. Mr. Moriarty thought we were getting the puddle too soft; but, as I showed him, our puddle trench being very rough, it was necessary to be soft in order to fill in thoroughly. My orders were to get the puddle so that we could barely stand on it, and it was brought up soft but so that you would not sink into it with your boots. We made it harder as we came to the top.

Mr. W. Stewart Wearne, Reporter for the *Evening News*, examined:—

Mr. W. S. Wearne. 19 Dec., 1888.

196. *Mr. Gordon.*] In the *Evening News* of July 28th last a paragraph appears, which says: "The section of the near half of the dam, extending some 70 yards in length, subsided bodily a depth of over 4 feet." Did you write that? Yes; I saw that it had gone down. I may as well tell you that a person gave us information, and I was simply sent up here to verify by my own observation what was stated.
197. Can you tell us who gave this information? It was given by a person who was in daily observation of the work. He is a good and thoroughly practical man.
198. Did the report appear before you came up here? No; it did not appear in the newspaper until after I had seen that it was correct.
199. Did you see it subside? No; I did not see any actual perceptible progress of the subsidence though it was going on during the time I was there.
200. But the report would make it appear to have subsided suddenly. How long did it take? I think the largest amount of subsidence took place within twelve hours.
201. Can you give us the name of your informant? No; I am not at liberty to give his name without his permission, as it might be injurious to him in his occupation. I spoke to my superiors in the office about giving his name, but I cannot give it until I see him, for at present he would not care to have it known.
202. But if he does not wish his name published we can withhold it? I do not think he would have any objection to giving evidence, though at present he may not wish his name known. I also have other informants.
203. The article says further on: "Cause of subsidence—water undermining the bank?" Yes; that was the theory he and I believed correct.
204. Again: "Pitchers bulging out and some coming out completely." Did you see these yourself? I saw the pitchers about 8 feet from the water-level.
205. Did you measure their height? I made no actual measurement, but judged from careful observation I saw the position they were in, and they were raised so much that, though actually not burst out, very little would have turned them over.
206. They were out of their places then? Yes; very much so indeed.
207. The article of August 1st gives certain dimensions of the slip. Did you give them? No; but the dimensions are fairly accurate, and were given by my informant.
208. "The puddle-wall had gone in"—how? It had gone in towards the water—subsided towards the water's edge.
209. How did you know this? Because when they tried to find the puddle it could not be found in its proper place and distance.
210. "A gully is said to be at this point, &c., &c." How did you get this? It is actually known that between these two places there was a watercourse. It is between the extreme limits of the two slips; so people who were working here at the time told me. It was presumed that the slip was at this point.
211. "Construction of the embankment was commenced straight off without cutting the natural surface level?" This was information supplied to me. So far as I can recollect no objection has been taken to the contractor's work by the *Evening News*.
212. By the same informant? Yes.
213. The article of December 1st, "about leaks in the dam." This was soakage, I suppose, after rain? At this time there had been no rain for a long time, and there appeared a stream of water flowing from the back of the dam which had not appeared before.
214. *Mr. Mestayer.*] Did you ascertain whether it came from the stone drains? I would have to get that information from an interested party. I am not an engineer, and I wanted them to send up a professional man; but they did not consider it necessary to do so. My examinations were undertaken just when I was sent up, and were not continuous.
215. The article of December 3rd said "there was a small drain of water coming from the bank," and suggested driving piles? I know nothing about that. It was written by Mr. Norton, I believe.
216. *Mr. Gordon.*] Was this his own idea? No, it was not. It was suggested to him. He is not an engineer, and possibly has less knowledge of the subject than I, as I had a good amount of experience in surveying.
217. *Mr. Mestayer.*] Did you write the leading article of December 7th? No; I do not write leading articles.
218. *Mr. Gordon.*] Was the article meant to convey the meaning that the dam was not built strong enough to bear a greater pressure of water than was then in it? I think so. It had 12 feet of water in it; and instead of increasing it to 15 feet they reduced it to 9 feet, which was indisputable evidence of its weakness.

Mr. W. S. Wearne. 19 Dec., 1888.

219. Do you think that was the reason of the reduction in the water level? Yes.
220. *Mr. Mestayer.*] But is not indisputable rather a strong word to use? I cannot say so. I judge from the information I gathered, and cannot argue whether the word is strong or not.
221. *Mr. Gordon.*] Why do you think that the subsidence would increase? This was the opinion of my informant. With respect to the horse and cart, it sunk up to its shoulders. I did not see it myself.
222. *Mr. Mestayer.*] Will you see your informant and ask him to communicate with me? Yes.

Mr. Robert Cameron, Diver, Harbour and Rivers Department, called and further examined, after having been down at section 44:—

Mr. R. Cameron. 19 Dec., 1888.

On coming up he reported as follows:—"I went as far as I could on each side. The face of the bank is not disturbed but the dyke has been forced out from its original position, and is pushing the ground before it; in some places the ground has been raised 6 feet; it is hollow at the bottom and then comes up as if lifted by a spade."
223. *Mr. Mestayer.*] Is the spalling shifted? No; the bank appears to have gone straight out.
224. *Mr. Gordon.*] The face of the bank has not bulged as at the other slip? No; it is totally different. There are large cracks in the ground, some of them large enough to take the whole of a man's leg.
225. *Mr. Mestayer.*] Are these cracks in the solid ground in front of the dyke? Yes. The dyke has moved forward pushing the ground up before it, cracking it in all directions as if a charge of dynamite had been exploded.
226. *Mr. Gordon.*] Has the dyke gone over? No; but in some places the top appears to be curling over; the dyke is very much twisted and many of the stones are so loose I could take them out with my hand.

[Mr. Cameron was instructed to go down again at section 47, also at section 16 and report at Mr. Mestayer's office on Saturday, the 22nd inst.]

THURSDAY, 20 *DECEMBER*, 1888.

Mr. G. A. Bramston called and examined:—

Mr. G. A. Bramston. 20 Dec., 1888.

227. *Mr. Gordon.*] We have been informed that you have some information which you wish to give us respecting the Prospect Dam? Yes; it is simply an idea that I have that the dam could be made more secure than it is at present. I think I know what would stop the slip and make the bank perfectly secure.
228. Your information, then, does not relate to the construction of the work? No; I do not know anything of the construction of the dam. I am not an engineer, but have had some experience with dams on the gold-fields—at Eaglehawk, near Sandhurst, in Victoria, and at other places. I think the remedy for this dam will be to relieve the water pressure on the face.
229. How do you propose to do that? By making a breakwater of timber some little distance from the bank. We had a lot of trouble at Eaglehawk, and this is how we cured it.
230. How was the breakwater made? It was made funnel-shaped to guide the water to the outlet and keep the pressure off the face. In the case of the Prospect Dam I would make the breakwater of timber secured to screw piles or cylinders filled with cement concrete built inside the dam and near the bank, but not touching it. This would prevent any more slipping.
231. *Mr. Mestayer.*] Then, if I understand you aright, you think that the pressure of water in the reservoir is causing the bank to slip, and that if the pressure of the water be kept off the face of the embankment, there would be no further movement? Yes; and I would keep it off by a timber breakwater.
232. Your idea, then, would be to put this timber breakwater the whole length of the dam? No; only where the heaviest portion of the water is.
233. *Mr. Gordon.*] You do not propose to prevent the water from getting between the breakwater and the embankment? No; but to fix the breakwater so as to take the pressure off the water.
234. *Mr. Mestayer.*] Were these breakwaters put in to prevent slips? Yes; in the early days of sluicing we had a great deal of trouble with dams slipping; but after we constructed these breakwaters we never had any slips.
235. *Mr. Gordon.*] But if any water space exists between the two, the pressure will be the same as if there were no breakwater there; the breakwater would only check the wave action, not reduce the pressure? I thought the breakwater would take the pressure off the bank altogether. It certainly answered at the dam I referred to at Eaglehawk.

Mr. Edwin Limond called and examined:—

Mr. E. Limond. 20 Dec., 1888.

236. You were on the Prospect Reservoir works, I believe? Yes; I was there from the commencement to the finish of the trench.
237. What were you doing? I was foreman and manager at the saw-mill for Mr. M'Guigan.
238. We are informed that you can give some important information with regard to the dam. How long were you there? About nine months.
239. Were you there when the trench was commenced? Yes, I was there before the trench was commenced. I cut the timber for it while it was being built.
240. Where was the saw-mill situated? Close to the trench.
241. We understand that you can give us the reason for the defect in the dam? Yes, I can tell you what causes the failure of the dam. People have been looking for the cause at the top, but it is not there, it is below. I went up to Prospect last week, was on the top of the dam at 4 o'clock on Sunday morning, and saw that it was just as I had predicted five years and a half ago—that it would not stand. I have had a lot of work of this kind in New Zealand.
242. What caused you to predict that it would not stand? I could see from the first, when they went down 15 feet further than the original specification level, that it would not stand.
243. From what original level? Before the trench was commenced there were trial shafts sunk from 30 to 60 feet deep, and in every one of these shafts water rose to about 15 feet from the surface, the original level of bottom of puddle trench was above this water. I built the mill near one of these shafts, close to

Mr. E. Limond. 20 Dec., 1888

the place where the by-wash is now, with the intention of using the water for the engine; but I found, after working a couple of days the water was so salt that I could not use it, and had to stop until they carted fresh water for me. I noticed also that the water in these shafts, during the day, would rise and fall, and we would have to lower or raise our pump as required to get the water.

244. How did it rise and fall? It rose and fell like a tidal water, and there must be some influence working on it to cause this rising and falling. The original specification was that the puddle trench should be sunk 15 feet.

245. The specification says 15 feet or more [*specification read*], so that it was optional how much deeper he went in order to find a solid bottom? Yes; but if they had not gone below the 15 feet the dam would have stood, as they would have had a dry bottom. In the first contract the specification said it was to be sunk 15 feet.

246. There was only this specification which says 15 feet or more? There was another specification which said 15 feet.

247. Did you see that specification? No; but Mr. M'Guigan told me that it was all it had to be sunk. As it was they sunk (say) 10 feet below the water level on to a rotten reef, and on that reef the water comes.

248. What was the clay like that was put in? The clay was not all totally wet or pugged in as you make bricks; and as soon as this water got to the puddle clay it would swell considerably.

249. *Mr. Mestayer.*] Did you see the puddle-wall put in? Yes; and when I left the wall and bank were a considerable height above the surface.

250. It was level with the bank? It was a good deal higher than level. I spoke to Mr. M'Guigan one evening about the depth they were sinking the puddle trench, and he said that he did not think it would stand; but, he added, there is the specification for it.

251. Was the puddle put down on a wet bed? It was put down on as dry a bed as it was possible to obtain.

252. *Mr. Gordon.*] How do you account for the bank slipping? I know that it is this water coming upon the rotten reef that causes the bank to slip. You can find it out by putting a bore in, and you will find the puddle at the bottom like soup. The clay is expanding through this water getting into it, and it is lifting the whole of the top bodily.

253. But it is sinking down instead of lifting up? Yes; the bottom is sinking down whilst the clay is still lifting up.

254. How do you account for the top sinking, then? The moisture from the top comes in, and then it shrinks again.

255. *Mr. Mestayer.*] If a bore were put right down in the centre of the bank you would expect to find water? Yes.

256. I have put some bores down in the bank without finding water, how do you account for that? Yes; but there is water there. I know it.

257. *Mr. Gordon.*] What did you see in the puddle trench; how was it done? The material was carted in from the flat, and partly taken out of the trench itself, was it not? The clay was ploughed and dug and carted into the trench.

258. *Mr. Mestayer.*] Did you see how it was worked in the trench? No; I did not.

259. You say you thought at the time by the depth of the water rising in these shafts, that the puddle would never stand? Yes; I did.

260. *Mr. Gordon.*] Were you there when the flume broke? Yes; my engine was taken to work the pump that pumped the water out.

261. Had they not engines on the trench? Yes; they had two small engines; but I do not know what kind of pumps they had.

262. How long did it take you to pump the water out? It took twenty hours.

263. What kind of a pump did you use? A Tangye pump.

264. Do you know what kind of pumps they were using in the trenches before this break took place? No; I do not.

265. When did you leave the works? I left there on the 14th July, 1883.

266. Was that before or after Mr. M'Guigan died? It was before he died.

267. Do you know if there were any complaints about the size of the timber for the trench? There were complaints at first that the timber was too small.

268. What size was it? It was cut five by three, the proper size, but they wanted it bigger.

269. Did you cut the props? No; I did not. They used bush timber for the props. The reason the row took place over the timber was because I was making too much money and they wanted me to reduce my price. They afterwards gave me weekly wages.

270. Do you know of any accidents having taken place? There were none at the mill, but there was a man killed in the tunnel, in the chamber underneath the tower.

271. It has been said that men had their legs broken by the buckets in which the puddle was lowered into the trench—do you know of any such accidents? No; I never heard of any accidents except at the tower. I know of no broken legs or other accidents at any other place. In the tunnel where the man was killed they opened up for some distance without timbering the ground, and the man who was killed was picking overhead when about a ton of stuff came down on him.

272. *Mr. Mestayer.*] You say that all this water was extremely salt, and you could not use it? Yes; after two days the engine was in a fearful state owing to the water. Mr. John Rothery, engineer, of 158 Harris-street, Pyrmont, and Mr. Price, overseer of works, can confirm this. Mr. Price said at the time when they sunk into this drift that the dam would never stand.

273. Did you say that the men in the lower tunnel were working upwards instead of downwards? Yes; they were opening up the chamber and picking the roof down.

274. What height was the embankment when you left? The embankment was, along the flat, about as high as this room, and the puddle about the same height.

275. How far did they keep the puddle trench from the surface? About a foot.

276. Did you see any sign of water working up through the bed when they put the puddle in? The bed was always wet.

277. *Mr. Gordon.*] Did you see the pipes burst in the trench? The pipes used to burst sometimes.

278. How did they get the water away? They have stone drains in the back part of the bank, and the water

water was taken across to the drains. The mistake that has been made was in sinking the trench to the depth they did. Mr. E. Limond. 20 Dec., 1888.

279. *Mr. Mestayer.*] Did the salt water come up to the surface? No, it remained at from 12 to 15 feet below the surface.

280. Did you ever see it rise higher than 15 feet? No, it remained at about that height.

281. *Mr. Gordon.*] Were you there when the embankment was built? Yes.

282. Do you think it was well rolled? They had drays on it to carry the material, and I think it was pretty well trampled all over with the number of drays they used.

283. Did they use rollers? The drays were much better than rollers.

284. Do you think the contractors did their work properly? I consider that the contractors did their work, as far as I could see, well and to the best of their ability. All that I can say is that if the original depth of 15 feet had been adhered to the dam would have been perfectly safe.

285. Was Mr. M'Guigan laid up much before he died? Well, I may say he was always ailing, and was often very bad. If ever they get a heavy rain, and a great pressure of water by the dam filling up it will go like a pile of salt.

286. Then you consider that the bank is not safe? I am sure the dam is not safe. We may expect heavy rains, and they cannot let the water off fast enough, so the dam must fill up and give way.

287. Have you any further information you can give us, or suggestions that you can make? No; I gave information to the *Evening News* on Monday last, but they did not publish it.

FRIDAY, 21 *DECEMBER*, 1888.

Mr. Robert Cameron, Diver, Harbours and Rivers Department, called and examined:—

[I have been down at sections 47 and 16, and have come to report myself.]

288. *Mr. Gordon.*] You went straight down the slope with the chain on Wednesday? Yes. Mr. R. Cameron. 21 Dec., 1888.

289. The first measurement you gave us was to the top of the dyke? Yes.

290. The second was to the foot of the dyke? Yes; on the bed as it were.

291. Was that part of the dyke altered in shape? No, it seemed to be cutting into the lake; burst up, I may say. It has come out more flat, and great big rents appear for about 14 feet in the solid ground. It rises 2 or 3 feet. It went down the outer slope.

292. How did you measure it? It was a little more than two lengths of the pricker, and the pricker is 6 feet long.

293. Where is the hump you spoke of? On the outer slope of the bulge, it felt as if it were a blister. I followed it and found the dyke as if it were curling over, and the stones were displaced. It seemed as if the bottom of the dyke was going away ahead of the top. There were a good many loose stones lying about.

294. Where do you think these stones came from? They probably came from the shingle. The top of the dyke is not of an uniform height. It is pretty flat on the top as if it had sunk down. In some places it was just as it had been built. In some places the dyke is 2 or 3 feet higher than in other places.

295. How far do you think this irregularity extended? It extended as far as I went at that time. It got less as I went along. It was not so much as I got near the solid where it apparently died out. I could feel indications of it all the way along. The bulge extended to a little beyond where I could get from section 41½. It seemed to taper away, and there was more of it to the right than to the left. On the valve tower side it was worst, but it extends to the other side. I then shifted the gear along to section 47, went down again and found that it tapered out somewhat like the other. In some places it was hard to find the place where the toe was. There is not so much bulge there as at other places. There were some stones in this place which had fallen in or sunk. In some places the dyke is much higher and twisted. Going away from the tower, from section 47 to the breakwater the bulging seemed to die out, though I could feel some indications of it. It was so dark that I could not see whether it disappeared or not. I was down during that heavy thunderstorm. The gully spoken of is a good distance out from the bank and is said to have been a creek. It is near section 19. The shingle slope seemed to have been disturbed—it seemed wavy and in some places was very rough. There is a sort of steps as though it were moving. I saw that on Wednesday. I shifted the gear yesterday to section 17. Down at the bottom there is a quantity of loose stones. I found this stuff [*stuff produced*] up the bank, it seems to have oozed out of the bank. This was between sections 17 and 16, and extends some distance. I did not go to the end of it. There are other places in the dam which are oozing out.

296. Did you see them yesterday? No; I saw them when I was down before, but I cannot recollect where, because I took no notes at the time. [*The specimen shows nearly all white clay, mixed with a little yellow.*] This was spewed out in many places, and runs over the bank like paste in some places. It extends pretty well up to shallow water. The water was higher in May than it is now. When I went down for Mr. Bishop there was no displacement near the spot where I saw the stones yesterday. There were no stones there on my previous visit.

297. Are there many loose stones? There are not a great number now, but there are more than when I was down before. They are more like round stones used for the slopes. There are some loose stones on the dyke which I could pull out with my hands. I went from section 47 as near as possible to, and examined the dyke; but I did not go as far as I would have done, on account of the severe thunderstorm which caused me to come up as the men were exposed.

298. Was there any spewing out at this point? There was no spewing up from section 45 towards the first slip. Going from the bank you can find a little puddle, but nothing to speak of.

299. Did you examine the step referred to in your former evidence? Yes. I came across it again and went along it. The bottom seems pretty sound. It is between sections 17 and 16 that the oozing is seen. The step runs along to section 17, and in some places was more defined than in others.

300. Did it run straight along? It did not appear to run straight but diagonally along the bank. I found the ridge at section 17 very irregular; it is either curling over or it is very uneven.

301. Do you know how far it extends? I have no idea how far along the bank it extends, but I found it as far as I went.

302. Were the stones on the slope displaced? I found none of the stones loose in walking down the bank itself. They seemed bedded in the bank.

303.

Mr. R. Cameron. 21 Dec., 1888.

303. Was there any spewing at section 19 when you went down? I noticed very little on Monday but there was a greater quantity nearer in, and I saw it the whole distance I travelled. At section 19 I got on the clean, original bottom, and at that point there is no sign of any disturbance.
304. How far does the spewing extend? It runs a good way down from the shallow water (say) 5 or 6 feet downwards. There was some spew at about that distance from the surface, and it became worse in deeper water.
305. Was there any ridge where you brought this stuff from? No; it was quite smooth all the way along. In some places it is like light ironstone gravel, in others like paste. I do not think the stuff runs to the bottom. I know there are other places where spewing is taking place but I have not been near these places this time. I found them when I was down for Mr. Bishop, but I cannot remember where they were as I took no notes at the time.

Mr. James Rutherford, Contractor, called and examined :—

Mr. J. Rutherford. 21 Dec., 1888.

306. *Mr. Gordon.*] We have been informed that you can give us some information respecting the Prospect Dam, and shall be glad to receive it. What were you doing there? I am a sub-contractor for the pitching of the dam.
307. When did you first go on the work? I was on the work from the beginning, and did the pitching of some sections of the aqueduct.
308. Do you know how the dam was constructed? No; I know nothing of its construction.
309. Were you at work there in the year 1883? I was in No. 10 and No. 1, and afterwards in No. 8 and No. 9 sections.
310. Who did you take the pitching sub-contract from? From Mr. Shand.
311. *Mr. Mestayer.*] Are you doing the pitching now? I am doing the pitching of the embankment now.
312. *Mr. Gordon.*] Did I understand you to say that you had been there from the beginning of the work? From the beginning of the pitching.
313. Does your contract include the loose work? No; it does not include the putting on of the loose work. I did the pitching from the kerb upwards.
314. You had to put the layer of spalls in? Yes, 6 inches of metal and spalls.
315. Did you notice anything wrong in the slope of the bank when you started the pitching? No; the pitching was done before there was any slip.
316. Was there any bulging of the slope? No; there was no trace of the bank shifting then. When I first noticed the slip I told Mr. Copeland, one of the inspectors, that there was a slip and he laughed at me, and told me I was mad. I then told Mr. Davis, another of the inspectors. He went to Mr. Ryan who was ready to eat him. The slip however increased.
317. Do you recollect the date on which you first noticed this slip? No, I do not; but the pitching was not finished and we were shifted to another part of the bank.
318. Do you think it would be in April? Probably it was in April.
319. What we particularly wanted to know was whether you knew anything about the construction of the dam itself. No; I was not there at that time. I was not working at it, and only saw it as I rode past it.
320. *Mr. Mestayer.*] I think what you have said throws a little light on an article which appeared in the *Evening News*, and said that a correspondent had predicted the collapse of the dam. I wrote to the editor and he gave me your name as the correspondent alluded to? That is not correct. It was before the slip really occurred that I told them that a slip would occur. It had begun to slip and I thought it would increase.
321. Where did the cloudiness of the water principally occur in windy weather? The water was very thick for about a chain all the way along the bank whenever a breeze was blowing. I consider the clay was too good for the purpose, and a rougher material would have done.
322. *Mr. Gordon.*] How much do you think was made after you went on to the work? 15 or 20 feet were made. The pitching was begun rather late. We have shifted the tram line twice since I began; it was on what was the top of the bank first, now it is on the finished portion. I did not see anything of the construction of the earlier portion of the bank.
323. *Mr. Mestayer.*] You can notice the water quite thick even now after rain or when it blows? Yes; especially when the wind blows towards the bank. There has been very little rain since I have been there.
324. How long have you been on the bank? About a year.
325. Did you consider that the material used in the bank was unsuitable? I think the clay was too soapy, and when wet would go away to nothing.
326. How is the pitching laid in the aqueduct? The pitching in section 1 this side of the reservoir is pitched for a slope of one to one. It is laid on clay footed against the bottom of the excavation. The bed is coarse gritty sand and rotten rock, and the pitchers are first set on the puddle.
327. Do you know Mr. Wearne? Yes; Mr. Wearne is a reporter for the *Evening News*, and I corrected some information for him which he had received from a publican living at Prospect. The information was very inaccurate.
328. Mr. Wearne informed us that he had received some important information from a gentleman, but that he could not disclose the name of his informant because of certain circumstances which made it inadvisable at present; but in a month or two there might be no objection. He, however, would call on his informant and endeavour to get consent. Are you the gentleman? and have you any objection to your name appearing in print in evidence? No; it was not I, and I have no objection to my name appearing in connection with this information.
329. Do you know of a horse and cart falling into one of these fissures? I have not known or heard of any horse or cart going into one of the cracks, and if it had I would either have seen or heard of it. In various places there were cracks 8 or 9 feet deep, and extending 200 or 300 yards. I have seen them working at these.
330. *Mr. Gordon.*] What do you think was the width of these cracks? 18 inches was the extreme width. I saw the bank go down at least 6 feet on the morning after the slip had taken place. They commenced at the top of the slope and shot the ballast out of the truck to strengthen the toe of the bank. They have put some thousands of yards of metal there. It was the bank that went down. I think they should have commenced from the bottom and worked upwards with their ballast.
331. *Mr. Mestayer.*] There is a statement made in one of the *Evening News*' articles that the banks were honeycombed

honeycombed with tunnels large enough for a man to walk through? I never saw any fissure more than 18 inches wide, except at the slip. If anything of any size had opened I was sure to have seen or heard of it. I saw some of Mr. Wearne's articles in the paper, and they were certainly slightly coloured. Mr. J. Rutherford. 21 Dec., 1888.

332. *Mr. Gordon.*] Then you think these articles were somewhat exaggerated, and were what might be expected from a reporter wanting to create a sensation? Yes; if they got hold of a word or two they made much more of it.

333. What height has the bank been raised while you were there? The bank was raised about 20 feet whilst I was there, and everything appeared to have been done thoroughly. It was done in 6-inch layers.

334. *Mr. Mestayer.*] Did you see anything to lead you to believe that the contractors did not do their work properly or according to specification? There was nothing to lead me to believe that anything wrong was done.

335. Do you know if the inspectors had any trouble with the contractors about the quantity of water used? There were rows between them about not having sufficient water.

336. Did you think there was sufficient water used? Well, really there was not sufficient water used for the dry weather.

337. Do you think the bank is well made? I have never seen a bank so well constructed as this one. It was all put in in 6-inch layers next the puddle-wall, and the rest in 12-inch layers.

338. Was there any distinction made between the forming of the slopes? I saw no distinction between the inner and the outer slope. It was all well carted over and rolled.

339. You have had some experience in dam construction? Yes; I have been on two or three dams in Victoria, amongst them the Gong Gong, Kirk's Dam, &c. I do not think there is any fault to be found with the construction of the dam. I think the whole fault is in the clay, and the spall packing not being heavy enough. It is only 12 inches thick. The contractors were up to the specification in every case.

340. This scarcity of water to which you alluded would be in watering the bank? Yes.

341. What sort of condition was the puddle-wall kept in? I do not think they had sufficient water in it. They did not keep bags on it, as is generally done in such cases, but they simply had men told off to give it a watering. Young Mr. Davis, a son of the inspector, was looking after the water on the puddle-wall, and they had the water in accordance with the specification and under his orders.

342. We have heard that the water-pipe conveying the water alongside the puddle-wall was very leaky, and kept the place constantly in a state of slush? I have never seen that. It was only a 2-inch pipe of wrought-iron, and it had to supply water for everything—men, horses, bank, &c.

343. Then in your opinion there is nothing to justify the statement that the puddle was kept in a state of flood? The puddle, in my opinion, was not kept sufficiently damp.

344. *Mr. Gordon.*] Did you do the puddle-wall at Gong Gong? No; I only carried out the pitching.

345. *Mr. Mestayer.*] Did you ever say anything to Mr. Wearne, or to any one else, about the water flowing from the back of the embankment? Mr. Wearne asked me some time ago about it and I told him I did not think it came from the dam. We tasted the water, which is bitter, and tastes of cement; so it cannot be a leak from the reservoir or it would taste like the water in the reservoir.

346. *Mr. Gordon.*] How do you think the contractors did their work? I think the contractors were compelled to do their work well. There were so many inspectors about that it was almost impossible for them to do the work badly. They had to do it all well, or there would have been a row.

347. How did you get on with the contractors? I got on very well with the contractors except that we were always quarrelling about the measurement. They quarried the stones and I set them. I put all the kerb in except about 300 feet near the towers. It is put in parallel to the centre line of the puddle-wall.

348. *Mr. Mestayer.*] Have you seen anything which would lead you to believe that the kerb is not in the same position as that in which you laid it? I am sure that it is not in the same position. Three weeks ago I looked at it, and it had shifted about a foot outwards at the site of the second slip.

349. Which way has it gone? It has come out towards the water.

350. How long ago is it since it was put in? About five months ago. The kerb was put in about the commencement of my work.

351. Has the water been any higher than it is at present? I think it was about 3 or 4 feet higher.

352. Did it come over the kerb? It has been over the kerb and some 6 feet up the slope.

353. How much nearer do you think the kerb is now? I think it is fully a foot nearer the water line than it was at site of second slip.

354. During the last three weeks daily observations have been taken, and no movement has been detected. Can you indicate the exact position in which you placed it? No; Mr. Jacob gave me the centre line sometimes, and sometimes the contractor; and there was frequently a difference of 6 inches in the pegs.

THURSDAY, 27 DECEMBER, 1888.

F. B. Gipps, Esq., C.E., was called and examined by Mr. Mestayer :—

355. In connection with this inquiry into the condition of the Prospect Reservoir, Mr. Gordon, who has had to leave again for Melbourne, has given me a few questions in writing to which he would like your answers, and which I will forward to him? I will answer to the best of my ability; but I have only visited the Prospect Dam now and again during its progress—perhaps two or three times a year. Mr. F. B. Gipps. 27 Dec., 1888.

356. You have visited it occasionally during the time it was being built? Yes; two or three times a year.

357. You visited the dam several times during its construction? Yes, from nearly the inception of the work.

358, At what stages of its construction? At various stages.

359. Did you see the puddle put into the trench? I saw it being put in, and again when it was half full. I saw it before the embankment was being raised above the original surface.

360. In what respect do you think the puddle is faulty? In no respect so far as I could see. It appeared to me to consist of good clay, and was well puddled. Perhaps I would have adopted a different method in filling it in, that is to say, filling in the trench. It was filled by throwing the puddle down from a great height. Still I believe it was well worked after being put down into the trench.

Mr. F. B. Gipps. 27 Dec., 1888.

361. Where is the place, or where are the places (referred to in a leading article of the *Evening News* of the 2nd May last, and for which Mr. Hogue says you are responsible) at which the puddle-wall is composed of rubble and rubbish? Did you see any rubbish or rubble put in? I did not say that. I never gave Mr. Hogue any authority whatever for making that statement. I deny the statement entirely. I have seen the puddle-wall from its inception, and I distinctly say that the statement is incorrect.
362. This article appeared on the 2nd May, and your report appeared about the same time? The *Evening News* asked me to give them a report on the dam; I accordingly visited and examined it, prepared my report, and handed it in to the *Evening News* about the 3rd or 4th of May; but there was not a word about the puddle-wall being composed of rubble and rubbish, and I am not responsible for that statement in any way.
363. Do you think the first slip is due to the caving in of the puddle-wall owing to its bad construction? The puddle-wall was not of bad construction, but the material in the front face of the dam I decidedly think was inferior.
364. Did you visit the dam while the inner slope was being constructed? Not often. I visited the dam only about two or three times during the year.
365. You mention in the report published in the *Evening News* of the 25th May that the inner slope is composed almost entirely of clay? I saw the inner slope from its very start, and I was very much surprised at the light material being put in. I noticed that after being sprinkled with water, when it dried it blew off with even a light wind as very fine dust, showing that there was very slight cohesion in it.
366. That is the clay in the slope? Yes.
367. Where was the large quantity of earth put that was excavated from the hill at the east end of the works? I do not know where it may have been put. I cannot say of my own knowledge where it was put.
368. When you were there the material made use of in the embankment was clay? It was almost entirely clay or it was soluble shale.
369. Was the clay well levelled and carted over in forming the dam? That I cannot say because at no time was I long enough on the dam to form any opinion. I have certainly seen on one occasion shortly after the commencement that the slope was being brought up in layers of from 18 to 24 inches at a time, but these layers may have been levelled out thinner before being rolled.
370. Was that at the back or front? The front.
371. Was that close up to the puddle wall? No.
372. The specification provides that one portion may be laid in 6-inch layers and another in 12-inch layers and the whole is to be well rolled. The general tendency of the evidence of what you have seen would lead you to think the contractors had done their work properly? I have seen nothing to lead me to suppose that they had not carried out their work properly.
373. Did you ever observe any tendency to slide in any part of the dam prior to the slip at the bend? No.
374. Did you see the puddle-wall being made, and of what consistency was the clay when put into the trench of the puddle-wall? It was of the consistency of pretty thick pug.
375. It did not go in a very thin state? No; it was more like a thick pug as far as I saw it. I was only there on different occasions and did not stop long.
376. Do you consider the puddle-wall well made and of good material? Yes.
377. Did you ever see in the inner slope any layers of white clay entirely? No layers of any great extent. On the occasion when I visited the dam on May 1st, I took samples of the different clays which I saw on the front slope. I noticed a thin layer of white clay and one of dark clay like that on the side of Prospect Hill, which is, of course, detritus of diorite rocks, and is more unreliable than the white clay. When I tested it in water I found the capillary action as strong nearly as in very porous sandstone, and it quickly melted away like sugar.
378. Did these layers extend over half the width of the bank? I saw layers of both white and dark brown clay; but I cannot say that they extended to any great width or depth.
379. There were patches of both kinds of clay? Yes; simply patches.
380. There were no layers of (say) 300 feet in length? No, I cannot say that I saw any of that length.
381. You have seen no layer of that size? I have seen no layer of such an extent as you suggest. At the same time whenever I visited the dam the clays and shale alluded to appeared to be intimately intermixed with and to form part of the material in the water face of the dam.
382. Was the slope of the layers from the face downward toward the bank maintained? I cannot tell, as I was not on the work except on different occasions for a short time.
383. Did you ever see the bank after heavy rain? I have seen it after rain.
384. Did the workmen lead the surplus water across the puddle-wall to the drains in the rear half-width? I did not notice and cannot say.
385. Did you ever notice the work in a wet or sloppy condition? I did not notice it.
386. Did you ever see the bank or the puddle while the work was going on in a wet or sloppy condition? No. In fact as I saw it in the beginning, I particularly noticed that there seemed to be too little water, and they did not seem to be able to get sufficient water for the work.
387. That would leave the bottom part in a very porous condition? Yes.
388. And when they got heavy rain in 1887, the water would naturally accumulate in that part? Yes.
389. Are there any points respecting the mode of construction of the bank, or respecting the materials employed in any part of the work, that came under your own observation, and that you think of interest in this inquiry, and that you could mention? The chief points which came under my notice were the characters of the clays on the front face. I found that the white clay was soluble, and the dark-brown clay, which they looked on as a heavy clay, and was expected to give weight, was very porous, and when broken up it had no cohesion at all. This appeared to me, when I visited the dam in May, to be the cause of the slips, but from a recent examination I think I may have been somewhat premature in attributing the slips wholly to the clay, and I am now inclined to think that it was due as well to leakage from the puddle trench, which is, so to speak, curling or blowing up the dam. [*Plan shown.*] This puddle-trench cuts right across the natural flow of the water in the strata which has only a dip varying from 20 to 35 feet per mile, and this flow being stopped by the impervious puddle-wall the water from the porous strata is accumulating, inducing a constantly increasing pressure which is gradually forcing its way up the side of the puddle-wall or through the ground immediately connected with it, and is undermining portions of the embankment.

390.

Mr. F. B. Gipps. 27 Dec., 1888.

390. You consider that this water is forcing the clay up then, and is throwing the whole bank out? Yes. My impression is that these slips will continue, because I do not think there is sufficient weight to overcome them.
391. What then is your idea of the slip? I am inclined to think, as in my first report, that the slips are greatly due to the clays, which are very easily soluble and have melted away, leaving no weight to overcome the pressure of water as aforementioned. The dam is largely kept in its place by the water in the reservoir. If that were withdrawn the embankment would probably fail. The clays in front are very weak, more especially the dark ones.
392. You think then that the water which is in the strata cut across by the puddle trench is now pushing itself up in the puddle trench? Yes, the crust of the original surface has been broken, and the front face being the weaker side, it is being blown up.
393. Then you would expect that when any bores were put down into the sides of the slope you would get a large quantity of water? Yes, at the bottom.
394. But if the puddle-wall were properly made and compressed the puddle should seal out the water? Yes; but we know that in several instances of coffer-dams, water has forced its way right up through weak or broken surface strata through puddle. In this case a good deal of the rock was blasted with heavy blasts, and this would tend to break up or disturb the super strata.
395. Then you contend that putting in the puddle-wall has stopped the natural flow of water through the porous strata intersected by the dam, and the water is accumulating behind it? Yes.
396. But a head of even 40 feet should not produce any effect on a properly made puddle-wall. I have never known it to do so, and I have put them down in all varieties of porous and water-bearing strata. If the puddle were bad I could understand it, but the samples we have taken out are of very good quality? No doubt of it; but I contend that the ground and super-strata have been broken and shaken by blasting, and that the hydrostatic pressure of the water in the large area drained by the porous sandstone intersected by the puddle trench is sufficient to force its way up through the ground and attack the clays in the front embankment. Of course if the front embankment had sufficient weight it would overcome this, but it has not nearly sufficient weight. In California, in the San Francisco Water Supply Works, the Pillarcitos reservoir went in a very similar way, and there it was found to be due to a leak just between the inner face of the puddle-wall and the trench.
397. When you saw the embankment being put in was it put in with layers sloping in towards the puddle-wall? Yes.
398. Did you ever see the face of the dam being brought up to any considerable height above the puddle-wall? Yes; I forget to what depth I saw it, but it was a good depth.
399. The specification states that the embankment may be kept a little above or a little below the surface of the puddle-wall, and we would like to find out exactly what was done? When I saw the light clay aforementioned the inner face of the embankment was going up, and the puddle-trench was not anything like filled up. The embankment on that occasion was started before the puddle-wall was near the surface.
400. One witness we had before us said he had seen the top of the bank 30 or 40 feet above the level of the puddle? I suppose when I was there the puddle in trench was nearly that depth below the surface slope.
401. But was the embankment carried up right to the edge of the trench while the puddle was so low? That I could not say.
402. So far as the construction of the trench and the slope are concerned, did you see anything to lead you to think that there was any bad workmanship in it? Decidedly not.
403. Did you see the stone-dyke at the inner toe of the embankment being put in? No; I saw the stone dyke, but I did not see it put in.
404. We have been told that the embankment was built some 30 or 40 feet high before the toe was put in? That is nonsense.
405. The dyke was put in and the embankment worked up to it? Yes; it was one of the first things I noticed at one of my visits.
406. There is no doubt that these clays are very poor? No doubt whatever.
407. You took some samples of the clay to try them yourself? Yes.
408. How did you test them? I tested them with different quantities of water, and noticed their conditions. The white clay melted away to a paste, and the brown or dark clay absorbed a large quantity of water, and then caved and fell to pieces as fine sand.
409. Did you try to mix the white and yellow clays? No; but I tried the yellow and the red, and found they were the only clays that could be trusted. The white goes into a thin paste, but the dark-brown clay is much worse than the white. It is very sandy and rotten, which may be imagined by the slips to be seen on Prospect Hill. It is not a true clay, but only detritus from the diorite rock above it.
410. I believe you have said that sometimes when the winds was blowing towards the embankments the water gets so thick that it cannot be used? That is not in my report. I have, however, noticed it myself.
411. At which part of the bank? It was very near the first slip that I took notice of it.
412. That would be around the bend? Yes.
413. Have you noticed it any other place? Yes, I have noticed it in other places all along the embankment.
414. Was that after rain? No, it was in dry weather. It was due to the wash caused by the wind. The wind always induces a current right along the face of the dam.

FRIDAY, 28 *DECEMBER*, 1888.

Robert H. Ryan, Esq., Resident Engineer, was called and re-examined :—

R. H. Ryan, Esq. 28 Dec., 1888.

415. When was the stone-dyke put in relatively to the bank? The toe was put in first and the bank worked to it and carried up uniformly with it.
416. How far was the puddle-wall allowed to be kept below the bank? That portion alongside the puddle-wall was never more than a few inches. The banks outside the select material were allowed occasionally to be ahead about 2 feet in advance.
417. Was the puddle-wall at any time 30 feet below the surface of the embankment? Never. 418.

R. H. Ryan, Esq. 28 Dec., 1888.

418. Was the timber of the puddle trench sufficient for the purpose? Yes, generally. At times its insufficiency had to be brought under contractor's notice.
419. In adding 5 per cent. for the subsidence, was the depth of the puddle trench below the ground level taken into account? No, only the height above the ground was considered when the 5 per cent. was added.
420. Did the water in the reservoir have access to the bank before the broken stone was put on? No; but the contractors did not carry on the spalling as fast as I wished, and I had to write and hurry them on with it. At times the waves washed over the top of the stoning.
421. Did you ever notice a rise and fall of the water in the trial shafts on the site of the works? No; but Mr. Nicholas, who had a great deal more to do with these trial shafts, would be in a better position to give you any information on that point.
422. When the puddle trench was excavated did any considerable amount of water come through the rock? No; generally it was exceedingly dry. It was only where the gravel bed was cut through that we had any considerable quantity of water to deal with in the puddle trench.
423. Did the gravel bed occur at either point where the slips have taken place? No; the strata cut through in this case had no gravel, and the rock was not of a porous nature and did not give out any water.

Mr. William Nicholas, Inspector of Earthwork, called and re-examined :—

Mr. W. Nicholas. 28 Dec., 1888.

424. Did you notice the water in the trial shafts and the depth it stood below the surface? I cannot remember exactly, but as near as I can recollect, the surface of the water was about 14 feet below the ground; not less.
425. During the time these trial shafts were open did you ever observe any rise and fall (like a tidal influence) of the water? No, I am sure that no such rise and fall took place or I should have seen it.

Mr. George Davis, Inspector of Earthwork, called and re-examined :—

Mr. G. Davis. 28 Dec., 1888.

426. When excavating the puddle trench from about section 40 past and round the bends where the slips have taken place, did you find any water coming in from the rocks that were cut through? No; this part of the trench was very dry, no water whatever came in through the rocks.

SATURDAY, 29 *DECEMBER*, 1888.

Mr. James J. Maher was called and examined by Mr. Mestayer, who first showed Mr. Maher, the drawings of the Prospect Dam in order that he (Mr. Maher) should understand the subject :—

Mr. J. Maher. 29 Dec., 1888.

427. Will you make a statement, as you propose, and I can afterwards question you? Yes; I think that may be the best way of proceeding. With respect to the dam, I have not seen it and am not acquainted with it, nor have I any knowledge of the clay which is used. I saw several articles in the paper on the subject, and one very sensational article. This induced me to write on the subject, as I have had a large practical experience in making dams, and I fully believe that I have found out the defect. I believe that I found it out through the loss of a shaft; in fact, I have proved it. We lost a shaft, and when we lose a shaft we sink another. In doing so, we draw the timber of the lost one. The first shaft we had was about 4 ft. 6 in. by 2 ft. 6 in., and required puddle clay to keep the water back. Slabs were laid down level, with two holes in each side, and the puddle was well rammed. In this the back water rose and drove us out, and when drawing our timber we found that both above and below the puddle the slabs were safe, but on the puddle they were bent. This was owing to the clay swelling. I recollect a river embankment being built, where they were putting in a puddle-wall. I asked them what facing they were going to put on it, and was told clay and stone. I said it would not do, as the first flood that would come would sweep it away. Since that time it has been swept into the river five times, and they have now repaired it with rubble stone shot over the face.
428. What was this embankment for? To stop the overflowing of a river when flooded. The bank kept slipping away, and they put up a puddle-wall and faced it with rubble stone.
429. It was an embankment to a river? Yes, but it keeps slipping, and is now being repaired for about the tenth time.
430. Do you not think puddle is a good thing to keep water back? I do not think it is the best. If I were doing it I would ram the clay well and allow it to puddle afterwards, with the face protected.
431. Where do you think the defect in the Prospect Dam lies? It is in my opinion under water that the slip takes place and not at the toe of the bank. If the clay is not well rammed it will absorb water. It is wonderful how much it will absorb. When the clay has been dry and gets wet again it will shoot out like a gun and break everything in its way.
432. The puddle is not wet, the water has not yet got into it. We have opened the puddle-wall in several places and have had excavations made in the sides with a view of ascertaining what condition it is in, and we find that wherever we have taken the clay from it it is like pug-clay both above and below? Well I looked at the bursting of our slabs as evidence that water getting into the puddle will cause expansion of the clay. I believe that this slip takes place from the saturated clay expanding straight out. It throws out from the centre although for 20 or 30 feet above and below it may be perfect. In this case it will be impossible to test the toe of the bank except by diver or by running all the water out of the dam.
433. We have had the diver at work on various occasions and he has made a report [*explained.*] *Mr. Maher*: When I wrote the letter in June last to the *Evening News* I said that it would always be a source of danger, and I then maintained that unless the face was secured it would slip again. You cannot tell where the slip may occur; but in my mind it is under water, and this of course brings the chasm at the top in view. I know of a waterworks which was constructed with a puddle-wall and whilst it was being built I said if ever there is a heavy rain or flood it will bulge the stone out. This has actually occurred.
434. Was that an embankment? It was in a waterworks lately constructed.
435. You have had a good deal of experience with puddle clay? Yes; I have had so much experience with

Mr. J. Maher. 29 Dec., 1888.

with it, to my cost, that I know its capacity in these cases. In some cases in my experience it bent the slabs, in others it not only bent but burst them, sending the whole face out, and even closing the shaft.
436. That was puddle behind the slabs? Yes; for instance, in ramming ordinary puddle you will ram 10 feet of it into a space of 3 feet.
437. The method adopted here was this: The clay was cut and left on the surface for a few days; then cut again and put into the trench where it was cut and cross-cut with spades? Yes; but I look upon it that the heavy stamping and treading down of the puddle is injurious, because when the puddle becomes dry and then wet again it will absorb more water.
438. Then you think that the treading down of the clay has injured it? Yes; I think so.
439. The object of this was, of course, to bring it down to an uniform consistency? Yes; but it has always proved a failure. I was at Snowy River, which had its course turned by bags of sand, and there was no leak. Yellow clay is an excellent material, but must be restrained.
440. About 50 per cent. of this puddle is yellow clay? Yes. In the place of which I was speaking we were working perfectly safely until the water flooded us, and in about a fortnight the yellow clay had bursted our slabs and closed our shaft.
441. Was this rammed? It was worked up with a rammer just as we would ram a post-hole. I feel perfectly convinced that if puddled clay is rammed as tight as possible, and then water is put on it, it will burst up anything that comes in its way. In my letter to the Honorable the Secretary for Public Works, I also said that I felt convinced that this was the case in the Prospect Dam, and I also felt convinced that I could suggest a remedy.
442. We shall be glad to receive any suggestion you can make, our object being to obtain the widest information as to the cause of the defect, and any suggestions that may be made will receive every consideration? I have not seen the dam, and do not know whether my suggestion would be practicable or not. I have only formed my opinion from what I have read in the newspapers.
443. We will receive your suggestions, and even if they cannot be made use of in their present form they shall receive careful consideration? May I ask what is the depth of the water.
444. The deepest part is 85 feet from the top of ground line? Well, I would propose, and I am fully convinced that I can save the dam at a very small cost, that ironbark girders be laid from top to bottom on the face of the dam, across these I would fix either wood or iron girders grooved.
445. You would place them longitudinally? Yes. This would leave a cavity between them which I propose to fill up with ti-tree scrub.
446. What depth would you make you girders? About a foot deep. I would fill all the cavity between the ironbark girders with ti-tree, and then place the iron girders over them with planks over the ti-tree resting in the grooves of the iron girders.
447. Along the top of the ironbark beams? Yes; the iron girders would be fastened to the ironbark beams in order to retain them in their places. I would then cover the whole with ironbark slabs about 2 inches apart.
448. Then you would first lay down ironbark beams, fill in the spaces with ti-tree scrub, covered longitudinally with iron girders and finally cover the whole with ironbark slabs? Yes; so that no debris could come out. It would then form a drum.
449. But this would be simply covering up the moving mass? No; it cannot move any further as it is constrained. It cannot then force the face out.
450. It would carry the foot with it? No; it cannot, for there is a foot allowed for the expansion of the clay, and it cannot shift the face.
451. If this were done the timber would actually be fastened to a place which is moving? No; it would fasten itself just in the same manner as a brick arch binds a chimney face.
452. How would you fasten the ironbark beams to the dam? I would not fasten them to the dam. The girders would fasten the beams as they went round and would become a drum, and I think that this would render the face secure. I have proved ti-tree to be a perfect pulverizer. It strains the water and collects the dirt, so that it soon becomes like a cement. I have used it in turning the Snowy River. When casually going along we would thrust ti-tree into the little holes which were seen between the upright timber and the bags of sand, and after a flood it was that hard that it required a pick to break and remove it.
453. How thick did you use them? The upright timber to hold the ti-tree scrub was only about as thick as my arm, and I believe it is all there now. There were three or four well-known men in the company which diverted the Snowy River.
454. Have you any idea of the cost of such an arrangement as you suggest? No; I have not. It is more a question for the engineer who may carry out the work; but I do not think it would cost very much. I would, however, stake my life that it would be a perfect cure for the dam.
455. But the plan you suggest involves emptying the reservoir, and that is a thing which cannot be done, as Sydney is depending entirely on this reservoir. It very often happens, however, that there are more ways than one to accomplish the same object, and we must look for the best means to adopt as well as the least expensive? Yes; of course, it might be done by divers, but it would be expensive. I think the girders might be brought up and laid down without the divers, but they would have to go down and fasten them.
456. In the deepest portion there is about 50 feet of water over the toe of the embankment, and it would be very difficult to lay these girders under water even at a lesser depth, by divers? Yes; it would be difficult; but I do not think that they would have to be laid by the diver, although they would have to be secured by him. At the same time I think that the work could be done for £100,000 less than another scheme which I saw proposed. Wherever there is puddle clay it must be constrained, as there is rain water from the back, from the top, and many other ways, always liable to get into it.
457. In fact the object of your arrangement would be to tie the face in one solid mass? Yes; it would be like a drum and bind itself. I believe they have found ironbark timber in wells, and perfectly sound after one hundred years. It would require a skilled engineer to say what size the beams should be, and also the size and weight of the slabs.
458. The ironbark girders and slabs you propose to use are such as are usually in the market? Yes; you can get them in the mills at any time. I should suppose that the slabs required would be about 4 inches thick, and they would make a very pretty face. The size of the slabs would depend upon the length they were laid upon the face—20, 30, or 40 feet in length, as might be arranged.
459. How would you fix the slabs? The top beam could be made with a groove, so that the top of the slabs would be encased in them, and the iron girders I know can be got at any engineering shop.

Mr. J. Maher. 29 Dec., 1888.

460. There would be no difficulty about the material, as it is of every day use? It is in general use, and for the constraining of the wall I would depend upon the ti-tree, simply because I have proved it to be almost as good as a filter, and it retains the dirt. It gathers the dirt as it washes up and down, and retains it.

461. There is an exceedingly small quantity of sediment to be found in these waters; the water comes from such a long distance that the sediment is deposited before it reaches the reservoir? Yes; but windy weather will make it rise a little.

462. Yes; but it does not affect the clay sufficiently to cause a deposit such as you would require. I have never seen the water in any state but that you could dip it up at any spot and drink it at once. If you saw the dam you would be able to judge for yourself? I do not think that, after the reports I have seen in the papers, even a sight of the dam would alter my opinion. In one claim in which I was engaged the clay had actually closed the shaft completely after bursting up. Several of my mates in this claim can testify to this fact.

463. With regard to the river bank which you mentioned a short time back? Some persons maintained that the water in this case was coming from the bottom and so causing the slip; others maintained that the water actually came from the swamps some 4 miles away, sunk down perpendicularly to a certain distance whence it found its way horizontally to the bank of the river. I opposed this idea and offered to prove that they were wrong by sinking a shaft at any place or places they would point out, and show them that there was no water between these swamps and the bank of the river. In the early days we would often sink alongside of a river and then drive right under it without getting water. I would here draw your attention to a paragraph in the *Evening News*, which says "the plan will have to be adopted which we suggested." Now, in no article that I have seen do they suggest any plan until after my letter appeared, on the 9th June last, in their columns.

464. We wish to get any suggestions or information from anybody, and we shall be glad of any further information or suggestion you may be able to give us. You must understand that we went to Mr. Hogue, the editor of the *Evening News*, and asked him for any names of his various informants, and though he gave us a number, your name was not one of them. It was through the Honorable the Secretary for Public Works that we got your name?

Mr. Maher: In the letter I wrote to the *Evening News* I did not sign my name, only the initials. I am not an engineer, and hope it will not be considered presumptuous in me to give my opinion.

Mr. Mestayer: We would rather have the experience of a practical man in this class of work than we would have a dozen theories, so you need not think yourself presumptuous in placing your own experience and practical work before us.

Mr. Maher: I thank you. I contend, as I have already explained, that the dry clay rammed hard would have been far better than any puddle in building this dam. With face of dam constrained as I propose dry earth rammed would be sufficient.

Mr. Mestayer here explained the form of the puddle-wall, &c.

Mr. Maher: I am very pleased with the very courteous manner in which you have received me, and the kind way in which you have examined and listened to my explanations. It gave me more confidence in making my views plain to you, and I still feel that I have stated the true cause of the defect and also the remedy.

WEDNESDAY, 2 JANUARY, 1889.

Mr. John Buckett, jun., Publican, was called and examined by Mr. Mestayer:—

Mr. J. Buckett, jun. 2 Jan., 1889.

465. Your name has been mentioned to us in connection with the dam, and we are told that you can give us some information respecting it? What I have to say is only what I obtained from the workmen who were working on the dam, and I have not made it my business to follow it up.

466. Have you seen the cracks yourself? Yes; I have frequently seen them, and I have gone some scores of times on to the dam.

467. Did you hear anything or did you see anything at any of these visits which would lead you to believe that there was any defective workmanship in the work? No, I have not, but I have heard experienced men say that a mistake had been made in not stepping the rise to bind it.

468. That is to say it has been worked on the flat instead of having steps put in? Yes; steps put in on the rise. I heard this from a man who has worked on some of the largest dams and reservoirs in the old country, and who was a ganger here.

469. There was a statement made in the *Evening News* a short time ago that some portions of the puddle were made of "rubble and rubbish." Do you know who gave this information? No; I know nothing about that. I know that the Government inspectors have condemned puddle which I thought was quite good enough, and better than some which they put in.

470. You have heard nothing of this "rubble and rubbish"? No.

471. Where did they put the condemned stuff? They put it on the water side. I do not think they gave it sufficient time to drain first.

472. You think that the moisture from this condemned stuff has been draining into the bank? Yes; I do think so.

473. And you think that it should not have been put there whilst it was so wet? No; it should not.

474. How long have you been here, from the commencement of the work? No; I have been here about five years.

475. Then you have been a close and constant observer of the work all that time? I have seen nearly the whole of the work done during that time, but I have not watched it closely. Sometimes I have not been on the bank for a month; sometimes two or three times a week when I have taken friends or visitors on to explain and show them the work.

476. Do you know Mr. Wearne, of the *Evening News?* Yes.

477. He told us, in his examination, that he had obtained a lot of his information from a gentleman who did not wish his name to be published; is that gentleman yourself? No; it is not.

478. Have you any objection to your name appearing, as it has been decided to print all the evidence given during this investigation? I do not care to have my name appearing in the papers, as it might injure my business. What I have told you is just what I have been told by the men working on the job. I have not much knowledge of public works, and cannot say anything as to the truth or otherwise of their tales. I followed mining chiefly when at work. 479.

Mr. J. Buckett, jun. 2 Jan., 1889.

479. What have you heard, or seen, which led you to believe that the dam is unsafe? The shrinkage of the water side and the bursting up of the cubes. When the slip first took place it burst the cubes up everywhere, just like an explosion, then after earth had been put on them they would drop down again bodily.
480. Was this at the first slip? Yes; at the first slip. This dropping down continued, but nothing serious occurred until the second slip took place.
481. Did you notice many cracks between the first and second slips? Yes, they extended from the top right down the bank. There were cavities 10 to 12 feet each way, in which men could walk. No later than yesterday a driver told me that he had let a man down a crack which was 10 or 12 feet deep.
482. Was that yesterday? No, it was some weeks ago, but it was yesterday the driver told me of it.
483. These are the cracks in the side of the first slip? Yes; those caused by soakage.
484. These cracks are all at the site of the first slip? Yes; from near the hospital to the first slip it is like a rotten layer and was constantly giving way.
485. The shafts which were put down into the rotten layer were in the bank? Yes.
486. Was that after the slip had occurred? Yes, about a month ago when they opened up the bank to find the puddle-wall and they could find no puddle.
487. Were not these trenches; not shafts? They were trenches cut in on the batter side. This information I got from the men who were working there. When the toe was put in I said it would not resist any great weight.
488. The toe is just a rubble bank? Yes, and the ground all around the front is very spewy. I have often seen horses bogged in this rotten soil.
489. That would be round about the deepest portions of the bank? Yes, and more so toward the top end of where the second slip has occured. There was a gully there.
490. It was at that point that the ground was so bad? Yes; I have had to get off my horse when riding there, owing to the spewy nature of the ground.
491. The ground would be really boggy in wet weather? Yes; a man would sink down to his knees if walking on some parts of it.
492. Did you see any of the trial shafts put down? No; I have seen the trenches put down near the cracks. I have known them to be 17 or 18 feet deep, and they were rammed up with clay again.
493. Was that at the site of the slips or at this end? At the site of the slip, and a great part along the bank.
494. And those cracks which went down 17 or 18 feet were at the site of the slip? Yes; they opened the ground up right along to see how far the cracks went. In some places they were only 5 or 6 feet deep, and in others from 10 to 20 feet deep. The stuff was dry and powdered and had no solidity at all. They had to keep the trenches closely timbered to keep the sides up as it was always on the move.
495. Have you seen any movement on this side? There has been no movement at all on this side except a very little which was caused by the shrinkage.
496. That was on the water side, and there has been none on this side? Nothing of any consequence.
497. Have you noticed the soakage on the bank at this side? Yes; but I think that is through the drain wells on this side.
498. The soakage that I meant was that coming from the toe of the embankment? Yes.
499. Have you ever seen a muddy stream running? No; I was only one day there and I saw the soakage.
500. We have heard that some person saw a muddy stream coming away? I have never seen or heard of it coming through in that form.
501. So far as you know there has been no soakage except this from the drain? No; this is how they account for it.
502. Have you ever seen it coming from any place except the drains? No.
503. Do you know a man named Price, who was one time a mason on the works? There was a man here of that name.
504. Do you know what is become of him? My brother-in-law saw him some nine months ago in Sydney. He was superintending some stone work there.
505. You do not know where he is to be seen or heard of now? No.
506. Did you ever see any wide cracks at this end? No; none wider than would admit your leg—say 18 inches or so.
507. At the deep part of the bank? Yes; they said that the extent of the cracks could be seen better in the early morning than later on, and I have gone across in the early morning and lain down to look down the cracks. The inspectors used to go along and kick the dirt into the cracks in order to blind them.
508. Did you see the dyke being built up? Yes.
509 Was it built up before the bank? Yes; it was built up before the bank.
510. Did you ever notice any great quantity of water lying about the work whilst it was in progress? Yes; it was often flooded. There has been 20 or 30 feet of water in the puddle trench, and right along the bank, and it could not be got out until after the rain ceased. They then used a Tangye engine to pump the water out of the trench.
511. Then I suppose all the water was carefully taken out before the puddle was put in? Yes, as far as they could get it out; but the puddle was always wet and I think there was a little too much water used in working the puddle. They would puddle it in the flat, and when cutting it the hose would be going all the time and the men would be standing up to their knees in mud or slush.
512. It was so soft that they could hardly walk over it? Yes.
513. I understand you to say that there was often a lot of water on the bank? It was not left on any longer than whilst it was raining.
514. It was very soft sometimes? I had drays at work for me, and sometimes the men would bring them home and say that it was too soft to work. I have gone over and seen horses sink up to their bellies.
515. On the water side of the bank? Yes; where all the selected stuff was put, and it was two or three weeks before they could work it properly.
516. Do you from your own personal knowledge know that water was soaking down? Yes; there must have been a large quantity of water soaking down.
517. Was the water rising in the reservoir at the time? Yes; it has been rising between three and four years.

Mr. J. Buckett, jun. 2 Jan., 1889.

518. The water was actually rising in the reservoir while this water was soaking down into the work? Yes.
519. Do you know a Mr. Norton who was up here for a newspaper? Yes.
520. Did he stay here with you? Yes; he always stopped here, sometimes a week or two at a time.
521. Did he get his information from you or from the men? From the men and from what he saw himself.
522. Have you anything else to tell us with regard to the work, as I do not think I have any more questions to ask you? I think I have told you, in reply to your questions, all that I have either heard from others or that I have seen myself.
523. Do you know what reason was given for the prediction that the dam would never stand? They reckoned that the clay was too soluble; that the dam was filled up too quickly; was not given sufficient time to consolidate; when they got fine weather they put the material in too quickly for it to become solid, and it was not of a sufficiently binding nature. In fact at one time they talked of stopping the work owing to its being put in so fast.
524. When was it that they talked of stopping the work? About twelve or eighteen months ago.
525. They were getting near the top and making more progress? They made more progress in the last eighteen months than in the whole of the previous three years.
526. You say the reasons given for the prediction that the dam would not stand were that the material used was not of a sufficiently binding nature; that it had no time to consolidate; that the dam was filled up too quickly, and that the material was put in too fast to allow it to become solid? Yes.
527. So far as your opinion goes these are the causes which led to the prediction? I got these opinions from two or three of the "bosses" who had had good experience in England and other places. Some of them had worked on the same jobs as Mr. Davis had been on in England. These men are now scattered all over the colonies, some in Queensland and some in Victoria.
528. So far as your own knowledge goes the work has been well done? Oh, yes; so far as I could judge. They worked very strictly to the plans, and the men told me that they worked very closely to the specifications, but they thought that the stuff was not sufficiently binding in its nature, and that steps should have been put in. In large railway embankments they cut steps on the rise and fall of the ground to keep them from slipping. The man who told me about the stepping has been all his lifetime working at this kind of work, as was his father before him.

Robert H. Ryan, Esq., Resident Engineer, recalled, and further examined :—

R. H. Ryan, Esq. 2 Jan., 1889.

529. Was there any stepping done for the bank to work on on the hill side? No, the bank was simply worked up to the hill.
530. How far did the selected material come back? About 22 or 23 feet at ground level.
531. Were the trenches, which were opened in order to see the extent of the cracks, rammed when making the ground good? Yes, they were well rammed, and they took more material than had come out of them. G. Davis, Inspector, had charge of this work.
532. Have you filled in the cracks which have not been wide enough to open up by trenches? I have not made them good yet. The bank at these places has been left until the time comes to open them up. In filling up the cracks a little water was used; the material placed on top, and well rammed; then more water and another layer of material and well rammed. Much more material was used to fill these trenches than had come out of them.
533. One witness spoke of your going down 20 feet or more to find these cracks? No, we did not go down more than 14 or 15 feet at the most. We followed them down till they disappeared; then we commenced and filled the trench in again.

Mr. George Davis, Inspector of Earthwork, recalled, and re-examined :—

Mr. G. Davis. 2 Jan., 1889

534. When you opened the trenches along the deeper parts of the dam did you, when filling them in again, see that the earth was thoroughly well rammed? Yes, it was all thoroughly well rammed.
535. Were the trenches on the cracks filled up again as solid as you could make them? Yes, they were well rammed and much more filling was put into them than came out of the cracks.
536. It was watered and rammed? Yes; we had two rammers to every filler, and the men on top filling in were sometimes stopped in order to allow the ramming to be completely done. The water was put on first, then a layer of 6 inches of stuff was put on and well rammed; then more water on the top of this and another layer of stuff well rammed before each alternate watering and layer of material was put down.
537. Your son had charge of part of the puddle trench? Yes; he had charge of the puddle and the work of the bank as well. He has been at this work along with me some sixteen or seventeen years.

SATURDAY, 5 JANUARY, 1889.

A. Mackay, Esq., F.C.S., examined by Mr. Mestayer in regard to the chemical nature of the clay and soil used in the formation of the Prospect Dam, taken at the Public Works Office.

A. Mackay, Esq. 5 Jan., 1889.

Mr. MESTAYER pointed out to Mr. MACKAY that there were one or two points in connection with his report, in reference to which he would be pleased to be furnished with further information.
538. *Mr. Mestayer.*] Is the clay to which you refer as being of a poor character as illustrated by its contact with water of a gray or pale yellow colour? Yes, it is a peculiar clay of the Wianamatta shale formation.
539. Did you see the excavation from which it came? Yes; it is on the flat below the outside embankment. I consider the trouble of a chemical before it becomes of a mechanical nature.
540. Do you consider the yellow and the red material of a poor character? It depends upon the amount of oxidization that has taken place.
541. Having observed their action with water I have had an opportunity of watching their behaviour. I found that they settled quickly, forming a tough impervious mass? Yes, because they have not been oxidized or changed by contact with air and water. 542.

542. A similar portion mixed between the fingers was of a greasy character? The best way is to grind them down; and if we were in a laboratory I would illustrate to you that the material would give way under the action of water. A. Mackay, Esq. 5 Jan., 1889.
543. Then you think when water has access to the material, decomposition would take place? Yes; the water would cause a complete separation.
544. Have you considered how the water could reach the clay? Yes; it is bound to reach the clay under the process of oxidization going on, and especially in the earth embankment facing the water.
545. But would there be sufficient water under this process to cause such mischief? Yes; in time there will be. If water come into contact with the clay, it is bound to swell and break everything it comes into contact with.
546. There is no doubt in view of the evidence taken that a large quantity of rain fell on to the bank, and has never got thoroughly removed, the material then in the bank being of a non-absorbent nature. During the year 1888, the bank was erected very rapidly, and was very nearly at its full height when the slip began to occur. Do you not think that the pressure of this dry portion of the bank upon the moist, and in some parts sloppy, material down below would have a tendency to accelerate the decomposition? Decidedly.
547. And under the influence of the water there would be a tendency of the upper portion of the bank outwards? Yes, and the movement is increased by the chemical changes going on below.
548. We have ascertained by borings where the movements are, but the principal one has stopped altogether for some time? The mischief in the embankment is increasing by the oxidization of the clay. The swelling taking place under these natural agencies is what nothing as a rule will stop. I could show at once that, on the clay being exposed, by being alternately dried and moistened by the weather, it can be knocked to pieces with a stick. The first rain that comes will wash the lighter, the true clay part of it, away.
549. Then you agree with me that the upper portion of the embankment has a tendency to slide owing to the mechanical effect of the contained water? The chemical action below the water-line is causing the trouble. The tendency of the heavy silicious material separated by decomposition of the clays will be to sink downwards. I calculate the weight of the heavier matter to be 130lb. to the cubic foot. There should be no greater pressure put on the top of the embankment than can be helped. To protect the bank, I think the stone-pitching should be removed, and hardwood slabs substituted until all action has ceased, and the material has completely consolidated by natural action. It would then be permanent and never move again.
550. Have you examined samples of the puddle? The puddle is an impervious mass, and cannot be affected by either air or water. The change of the colour of the clay from white to yellow and red, and ultimately black, is due to the presence of iron. There is a continual alteration taking place where the stuff has not been puddled, as the case is in the sloping embankment next the water, so that any weight presses the lighter material outwards. That lighter stuff is scarcely heavier than water. It weighs about 70 lb. per cubic foot.
551. Have you noticed the black or very dark material found on the Prospect Hill where the excavation took place? Yes; it is of volcanic formation. The same process of oxidization can be seen going on in the blue metal, but the soil is oxidized completely, and should be perfect material for an earthwork into which water penetrated.
552. Twenty feet below the surface there is not a drop of water to be found. From your knowledge of the character of these clays do you think it is at all probable that the water in the reservoir has got through the face? Yes, I am perfectly certain it has. It must of necessity. I do not think it is impervious to water. The swelling is increasing. If there is pressure enough, the heavier portions will tend downwards and the lighter portions work out under the chemical action. I would suggest adopting the natural plan of keeping the bank damp. When once it settles it will never move. When the two firm portions unite it will form a completely solid stratified mass.
553. Do you then not think it would be advisable to stop the action? It cannot be stopped.
554. Then you would encourage oxidization by artificially moistening the bank? Yes. The chemical action is at the bottom of the whole thing; this chemical action causes expansion.
555. We have it in evidence that when there is a heavy wind blowing the water becomes so cloudy as to be undrinkable. On one occasion when it was very rough I went along the bank and found that the water was perfectly clear. My explanation of this is that the inferior clay has been washed off leaving a purified bank? Yes; but the oxidization is not yet complete. By removing the pressure, the oxidization is allowed to go on in its natural way. The more it is pressed the more the lighter clay matter will be pressed outwards. The silica will never become so hard as when the separated material comes together. The best thing to do is to bring about a natural amalgamation of the material. I would suggest that the bank should be kept moist with water, without pressure, thus encouraging oxidization in the most natural manner, which in my opinion will improve the general condition of the bank and prevent cracking in wide gaps or rents.

PROSPECT DAM.

MINUTES of evidence given by Mr. Limond, at the Public Works Office, on 3rd January, 1889.

Present:—Mr. Barling, Under Secretary for Public Works; Mr. Bennett, Commissioner and Engineer-in-Chief for Roads and Bridges.

556. MR. BARLING, addressing Mr. Limond, said:—You have expressed your willingness to give evidence to the Minister on the subject of the slip which has occurred at the Prospect Dam, where I believe you have been working, and you have attended before Messrs. Gordon and Mestayer for the purpose, but not being satisfied with the way you were treated by those gentlemen, you have attended, at the request of Mr. Sutherland, to give your evidence here. I may mention that Mr. Sutherland has been called away to the Executive Council, and is, therefore, unable to examine you personally, so he has asked me to take your evidence, which he will read after it has been transcribed. Mr. Bennett is here to ask you any questions upon engineering matters. I may add that any expenses incurred by you in coming here will be cheerfully paid. Will you now be good enough to state what you know about the matter. Mr. Limond. 3 Jan., 1889.

Mr.

Mr. Limond. 3 Jan., 1889.

Mr. Limond said:—Here is the reference I received from Mr. McGuighan, for whom I went to work at the Prospect Dam about Christmas, 1882. The puddle-trench was then about being commenced. I was engaged to build a saw-mill for cutting timber, required for the trench and the buildings. I chose a site for the mill about 2 chains from the puddle-trench, in order that I might get water from one of the trial-shafts that was there, several of these shafts being about 50 feet deep, so I was told. In all these shafts there was water about 15 feet from the surface. I got the engine in position and started to work, but was unable to use the water for more than a week, as I found it was salt; but during the time we did use it we had to raise and lower the pump by which it was obtained several times, as the water rose and fell, as if under tidal influence. I then stopped using the water, and had fresh water brought to me for the engine. They kept sinking the puddle-trench. I was told by Mr. McGuighan the depth was to be 15 feet, but I was astonished afterwards to see them sinking deeper and below the water-line in the trial-shafts. One day I spoke to Mr. McGuighan about it, and asked him if they were not doing wrong going so deep; he answered and said he thought so too, but he was going according to the specifications. So they sunk to about 30 feet, some parts more than this, down to the silicate reef, engines being kept all the time pumping to keep the trench clear of water. Having got to the reef, the puddle was put in with clay, carted in with drays. When I left in July, 1883, the wall or embankment was up to a considerable height above the level of the ground. Therefore, I say, the puddle-trench was made too deep; the bottom is like soup, being thoroughly impregnated with the water which is there, and the moisture rising through the heavy dry clay, upwards, is causing it to swell and shift; it is that which is moving the whole of the bank. Any working-man who has worked upon clay-works will see in a moment that what I am stating is a fact. The only way to prove it is to sink a trial-shaft in the side of the by-wash, and drive in the level of the puddle-trench to the bottom of it, and see if my words are not true. If they are not true, I will forfeit my life. I am positive that, allowing for soakage and drainage, there is at least 10 feet of water standing at each side of the walls. I also noticed that in the heaviest rains the water never rose in the shafts to the surface.

EDWIN LIMOND,
4/1/89.

557. *Mr. Bennett.*] What were you engaged at previous to your going to work at the Prospect Dam? I was previously, for fifteen years, in New Zealand, on the diggings, and on water-works, road-making, and bridge-building.

558. What big dams were you employed upon? Waimea Water-race and Reservoir, the Leviathan Dam and Water-race, and Hohnnui Water-race and Dam. At the Waimea Water-race one of the dams was over 100 feet high and built of stone, and another was considerably higher. The other two were of clay and about 60 ft. or 80 ft. in height, the facings of the dams being of piles with clay thrown on the surface.

559. What have you been doing since you left the dam? I left to manage a mill, and in the interval I went to Spears', at Woolloomooloo Bay, where I lost two of my fingers. I then went 'bus-driving. Afterwards I was with Hudson Brothers for about four or five months. Since then I have been driving a cab, which I am now doing.

560. With reference to the rise and fall of the water in the trial-shafts you spoke of, did you attribute it to tidal influence? Yes.

561. Did you observe any alteration in the time of the rise and fall? Yes; it shifted every day like the tide. Others observed it besides me. One was Mr. Rothery, an engineer and fitter, who is still on the works.

562. *Mr. Barling.*] You were saying to me this morning that you considered the shingle met with in sinking the puddle-trench to be the bed of an old river or creek? Yes.

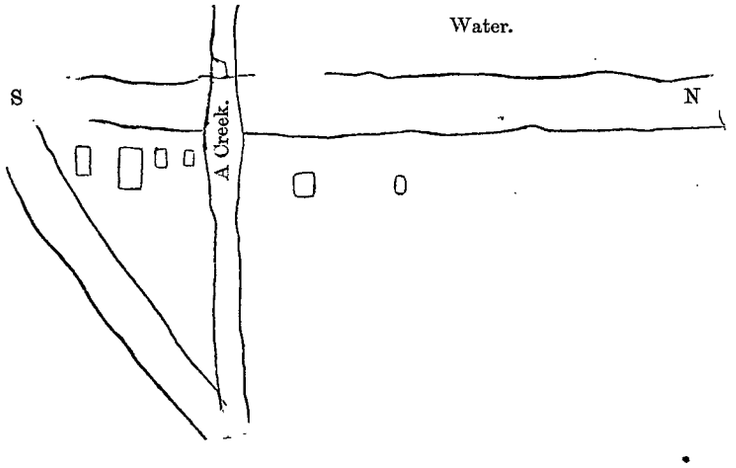
563. What was the width of it? The width of the old creek-bed was about 5 or 6 chains, cutting the dam at right-angles.

564. What do you consider should be done to remedy the matter? In my opinion nothing can be done to save the old wall. I suggest that a wall 8 or 10 feet thick be built 30 or 40 feet in front of the present embankment, the outside of stone and the inside of concrete, the foundations to be sunk 10 or 12 feet; it should be built at an angle of 1 in 4 or 1 in 5, and be well backed up with earthwork. I estimate the cost of this at from £70,000 to £80,000. I am positive that the influx of water after a heavy rainfall will cause the bank to give way, as the outlets are not sufficient, and before the by-wash could be reached the dam would be gone.

MINUTES of further evidence respecting the Prospect Dam, given by Mr. Limond before the Honorable the Secretary for Public Works and the Under Secretary for Public Works, at the Public Works Office, on Monday, 7th January, 1889.

Mr. Limond. 7 Jan., 1889.

565. *Mr. Sutherland.*] Since giving your evidence in regard to the slip at the Prospect Dam you have visited the dam, and you now wish to correct some of the evidence that you gave. Will you now state what you wish to correct, or desire to add to your previous statement? In stating the depth of the trench I made an error; I said 35 feet, but I find from the plans in the possession of Mr. Shand, which have been shown to me by that gentleman, that the depth varies from 45 feet to 75 feet, and a depth of 45 feet at the bed of the old creek of which I have spoken.



With

Mr. Limond. 7 Jan., 1889.

With regard to the wall I suggested should be built, I desire to say that I abandon that idea altogether, unless it is carried the whole length of the embankment. I think the securing would be better done from the inside. When I was at the dam yesterday I found that water was oozing from the embankment near the scouring outlet close to the bed of the old creek. I took a bottle of the water, which I have brought with me.

EDWIN LIMOND.

By the directions of the Minister, an officer of the Department was instructed to accompany Mr. Limond to Prospect, and obtain a properly-certified bottle of the water he referred to as oozing from the embankment. This was done on the 8th January, and the water so obtained was sent to Mr. Hamlet for analysis on the 9th January.

THURSDAY, 21 *FEBRUARY*, 1889.

William E. Dunn, Esq., Engineer to the Contractors, called and examined by Mr. Mestayer:—

W. E. Dunn, Esq. 21 Feb., 1889.

566. Your name is? William Edward Dunn.
567. You are engineer to the contractors? Yes.
568. Have you been on the works from their commencement? No; I have been here since January, 1887.
569. Was that the year in which there was so much rain? Yes
570. With respect to the rain which fell on the bank during this wet weather, we understand that this water was conducted from the water-slope across the puddle-trench and into drains on the land side? Yes, that is so.
571. Was the work stopped at any time in consequence of the ground being too wet or soft to work on? Several days after heavy rains it was more or less soft on the surface, and we occasionally stopped for a day or two owing to its being so wet.
572. Then we may take it as a fact that there was a great deal of water which could not be carried away? Yes, a large quantity.
573. You have seen our reports which have been published? Yes; I have read them over very carefully.
574. You have seen the conclusion to which we have come? Yes.
575. From your own knowledge of things here, do you think the conclusion is sound? Yes, very largely so. I attach much importance to the fact that the water was rising in the reservoir during the progress of the works, and that to my mind is one of the principal causes of the defect or slips which have occurred.
576. When you came, what was the height of the bank and the height of the water? The bank was up to the 175-foot contour, and the water at 166 feet.
577. When you came the bank was nearly finished? There was about 28 feet to be added to the height throughout.
578. And the water continued steadily rising with it? Yes—in fact, in some cases it rose quicker than the stone pitching could be put on, and washed over the top of it.
579. During the progress of the work, did anything come under your notice which would give you the slightest idea of a slip at any place? No; I do not think there was anything that came under my notice, but there was one thing which I took notice of, and made me wonder if we had come to a water-tight bottom: In one short length of the puddle trench, after the puddle had been put in a day or two, the bottom of the trench flaked up, and we had to take the puddle out and remove the loose bottom.
580. What was the cause of this? I could see no exact cause for it, but it might give a reason for something. It had also occurred during the time of some of my predecessors. The only place that this occurred within my own knowledge was at pegs 71 and 72. It was supposed to be a perfectly sound rock on which we laid the puddle. After it stood for two or three days we found that the bottom had peeled, and we had to lift some 3 chains of the puddle. As a matter of fact, it was lifted back 50 or 60 feet. It came off in flakes.
581. Did you notice any water breaking through at this point? None whatever.
582. It was from pegs 71·5 to 72 that the bottom lifted about 60 feet, and had to be reformed? Yes.
583. About what time did this occur? I think the date was in September, 1887.
584. Was that the only case which came under your personal observation? Yes, but others had noticed it previously.
585. Was there much remaining to be done when you came on to the works? When I came here the trench was nearly completed, so that there was only about 1,000 feet to finish.
586. There was no water coming up at any spot? None whatever.
587. Not where the clay peeled? No; it simply peeled off.
588. Did you consider any serious consequences would happen from this peeling? I have not considered whether anything could happen from it.
589. Have you had any previous experience with other puddle-walls? No; I have always been engaged in railway works.
590. So you have had no practical experience in puddle work before? None.
591. You have taken a good deal of interest in the leak on the land side, I believe? Yes, I have.
592. What is the general result of your observation? That there has been a steady flow of water for some time, irrespective of rain or saturation of the bank.
593. What is your opinion of the cause of this steady flow? It appears to me very much like a spring, and I know as a fact that there was a spring for some months on the flat outside the dam altogether where the gravel bed crops out. A ganger first drew my attention to it, but I think it is dry now.
594. At any rate this flow has not increased? No.
595. Has the flow increased at any other point? No; it is smaller at the other places.
596. When did you take your observations? I took the first on September 10th, 1888.
597. The water had been running for some time? It ran all through the year.
598. How did you test the flow? I had a gallon measure, and it took 1 minute 34 seconds to fill it, or by calculation 919 gallons in twenty-four hours.
599. When did you take the next observation? The next time was on 7th December, when the flow seemed to have decreased. In this case I used a larger measure, and I made 672 gallons in twenty-four hours. Since then I have taken, on the 24th January, an observation which gave 696 gallons in twenty-four hours.

600.

W. E. Dunn, Esq. 21 Feb., 1889.

600. What measure did you use in your later trials? A 5-gallon measure. The discrepancy between my first and the later experiments may be accounted for by the first not having been so accurately timed, as a difference of a second in the smaller measure would give a larger result.
601. Was this water clear? Yes, perfectly clear; just as you have it from a spring.
602. You do not think that this water was percolating down the bank? As far as I can see, any water which percolated from the bank would not be like that.
603. You do not consider that this water is leaking through the puddle from the reservoir? No.
604. If it were a leak from the reservoir it would increase in volume instead of remaining at a steady rate? I do not look upon it as a leak from the reservoir, but as a percolation from some other source, yet I cannot account for it.
605. Is it not drainage from the bank itself? It is certainly not drainage, as it is constant during dry weather. I have watched it for a long time, and while other drains are just dry, or weeping, this one is continually running.
606. This is from one drain only? Yes. We have one at peg 11, and another at peg 15.
607. And where is this drainage? At peg 14.
608. Have you noticed any flow at the other drains? Nothing at any of them, except a slight weeping.
609. Have you noticed the other drains after rain? Yes. I have watched particularly after rains, and there is generally some soakage; but the extra water does not seem to have any particular effect on this particular flow.
610. Are they all equally affected by the rain? No, they are not.
611. Then you cannot account for the running? I cannot think that it is anything but a spring; and I do not think it possible for water to come through the puddle-trench.
612. In your opinion, this water does not come through the puddle? It is impossible that it can be coming through the puddle. It has been running for twelve months, and I do not think it is from rain and soakage, nor can it be from the puddle-trench.
613. One of the newspapers referred to a stream of muddy water which was seen flowing from the back of the bank;—did this refer to the flow mentioned by you? I think not. I have never seen it dirty. It has always been quite clear when I have seen it. They have been confusing it with some of the others.
614. There was a newspaper paragraph to the effect that a horse and dray had sunk almost out of sight—up to the horse's shoulder;—do you know anything about that? The statement is incorrect. We had a water-cart which got one of its wheels into a crack and sunk up to its axle, but that was all.
615. You have taken very careful observations along the bank? Yes, for the last six months.
616. Have you detected any movement along the deep part of the bank? I apparently detected a movement in January, but I afterwards came to the conclusion it was from the heavy rainfall.
617. When did you put in your pegs? On the 29th December pegs were put in, and on the 4th of January I found a small difference. Since then I have not found any difference—in fact, it appears to have gone back, and leads me to think that the heavy rain had soaked between the stones, causing the ground to swell slightly, and thus giving the pitchers a little apparent forward movement, and the dry weather has caused them to come back again. Of course, in this hot weather it is very difficult to get perfectly accurate sights owing to the intense glare.
618. Was that the only time that you noticed any movement in the face, and that was surface movement only? Yes; but the pegs I put in for the pitching have moved, some of them bodily 2 or 3 feet from where they were put in.
619. When were they put in? In October, 1887, and a few of them are in existence still.
620. What are the movements? One at 15 moved 2 ft. 4½ in.; at 18, moved 2 ft. 10 in.; at 22, moved 2 ft. 1½ in.; and there were two or three others.
621. When did you take measurements? On December the 5th, 1888.
622. Were all the pegs put in at once? Those from 14 to 26 were put in last, and all the others at the end of the bank were put in six months before. I should like to mention here that the report stated that the kerb was not put in from a fixed line. This is not quite correct, as the line was ranged out from a fixed point on the solid ground.
623. Were any of the pegs put in from the solid? I did put some in from the solid, and afterwards I put them in from the centre of puddle-trench. Poles were put in true after the 20th of each month.
624. Where did you put in your pegs? All my pegs were put in on the 180-foot level, and I assume that none were more than an inch or two out.
625. Did you check them at all? I checked them all through before the pitching was put on.
626. When you checked them, how did you find them? They were all perfectly true.
627. There is no evidence so far as we can see at present as to when these movements first occurred. Had you noticed any signs of movement before the slips occurred? No; but for a long time before the slip occurred we were putting in more puddle than we thought we should require to put in, and we found after the slip occurred, by checking it in many ways, that we were putting in more puddle than we were getting paid for.
628. When was this? It was just after the slip occurred. I can show you where we stopped for a fortnight, and the puddle sank down 1 foot to 18 inches.
629. Where was this? It was between pegs 6 and 30 [*shown on plan*], and sank within the fortnight mentioned.
630. How long ago is it since this occurred? It was about June last.
631. That is since the first slip occurred? Yes.
632. You have not since noticed the apparent movement of January? That movement, or what I thought was a movement, has gone back again.
633. Is there any other point in connection with the work to which I have not alluded or on which you can give us any information? No; I do not know of anything. The particulars and notes which I have given you were taken simply for my own information, but I thought they might be of use to you in this investigation.

Mr.

Mr. John Rothery, Engineer and Fitter, examined by Mr. Mestayer :—

Mr. J. Rothery. 21 Feb., 1889.

634. Your name is? John Rothery.
635. You have been here since the commencement of the work, I believe? Yes.
636. What are you? I am a fitter and engineer.
637. What were you doing here at the commencement of the work? I was erecting a saw-mill.
638. Was it the same saw-mill that Mr. Limond was engaged on? Yes; I erected it.
639. You drew the water for use in the engines from one of the trial-shafts, I believe? Yes.
640. One of the witnesses said that the water was so salt that you could not use it;—is that correct? No; it was brackish, but not so salt as to be unusable.
641. Had you to knock off using it altogether owing to its saltness? No; it was always used.
642. Did you ever notice any rise and fall of the water in the shafts? Only when we pumped it out.
643. How was that accounted for? We used to pump it down about 4 feet during the day, and next morning when we commenced working it might or might not be up to the same level as when we commenced the previous morning.
644. Then it depended on the weather whether it was up again or not? Yes, greatly: sometimes it was and at other times it was not.
645. Then, irrespective of the pumping, you saw no rise and fall similar to tidal influence? No; I never saw any rise and fall in these trial-shafts other than that caused by our pumping.
646. One of the witnesses, Mr. Limond, said you had been on the works some time and could corroborate his statement of the rise and fall of the water? There was no rise and fall of the water further than what I have already explained.
647. It was stated that after working two days the engine was in such a state from the salt water that it could not be worked, and it had to stop until fresh water was brought for use? That is not correct. We did not stop, and we used the same water right through.
648. In what state did you find your boiler after the first week's use of this water? Quite clean.
649. Was there any salt on your tubes? No; there was neither sediment nor scale.
650. Had the water been salt, as Mr. Limond stated, what state would your boiler have been in? It would have scale on similar to a sea-boiler in a steamship.
651. As a matter of fact the statement about the saltness of the water is incorrect? There was no salt on the tubes; they were perfectly clean, and I ran for a month before I blew the boiler down again.

TUESDAY, 26 *FEBRUARY*, 1889.

W. A. Harper, Esq., C.E., called and examined by Mr. Mestayer :—

W. A. Harper, Esq., C.E. 26 Feb., 1889.

652. I saw the Minister for Works some time ago, and he was anxious that I should see you on the subject of your Report on the Prospect Dam before the whole of the evidence was printed; and, notwithstanding that our reports have been sent in, he is still anxious to get all the information possible on the subject in order to assist in forming an idea of the exact cause of these slips, and to guide us in our opinions. Had you any personal knowledge of the work prior to receiving instructions from Messrs. Want, Johnson, & Co., to report on the works in September? I had been up twice in the early part of the work, but was not out afterwards until September.
653. Had you any knowledge of the way the work was going on? I had no personal knowledge of the way it was being carried out.
654. Had you examined the work subsequently to September? I saw it twice soon after the work was started; once afterwards, and then in September. I saw it first about twelve months after it started; again about eighteen months after; on another occasion at about three years; and then within the last twelve months.
655. Is the report that has been published in the *Daily Telegraph* of the 5th January a fair reprint of your report? Yes.
656. You say you consider the puddle-wall is as good as possibly could be formed from the materials available? Yes.
657. Did you examine anything more than the surface of the puddle? I saw the material as it was being put into the trench.
658. Have you had any personal experience in the construction of large dams of this description? I have only built one.
659. Where was that? In New Zealand, under almost the exact conditions as the Prospect Dam, only it was much shorter.
660. What height? About 80 or 90 feet.
661. Of what consistency did you use the puddle—was it hard and firm like stiff brick-clay, or was it soft like putty? More like putty. It was a specially good blue clay, and was carted about 5 miles. All the blue clay was good, but this was especially good. I have never seen any clay here equal to it, and I have been a good deal about the Colonies. All the clays here which I have seen have a good percentage of sand in them.
662. That is the case in all the Colonies? No, not in New Zealand, and near Newcastle there is some very good clay.
663. Was your puddle in New Zealand formed by chopping and cutting with spades? Yes; it was chopped up small with spades and all the lumps broken; it was then dropped in loads and spread out fairly thin, worked up with water, and cut and cross-cut with spades.
664. You employed a method then similar to that adopted at the Prospect Dam? Yes.
665. The evidence which we have obtained in our investigations seems to show that the puddle, especially in the trench, was put in very soft—like putty? Yes, I know it was. I drew attention to that in one part of my report—that is, I said it was in a semi-solid condition.
666. When was that? In 1887, I know for a fact that it was always too wet.
667. In speaking of the work done at the time you visited the dam you say there were a series of parallel cracks at some places, clearly indicating a subsidence of the lower layers since the admission of the water; at what parts of the embankment did you notice these parallel cracks? They were at the southern end of the dam.

W. A. Harper, Esq., C.E. 26 Feb., 1889.

668. Where the slip occurred? No—where the valve tower is.
669. Were they on the surface or on the slope? Some were on the surface, others on the slope.
670. Was that in August and September, 1888? Yes; they were filling them up. A number were pointed out to me as being nearly filled up again.
671. Did you consider they were of a very serious nature? No, I did not. They were not large, and only like the ordinary cracks of an embankment.
672. The material was thoroughly carted over and pressed in every way. You examined the material thoroughly and saw how hard it was? Yes.
673. The puddle-wall would shrink away from this material and leave a hole in its place? Yes. I think the material was very bad; it was like sand. I have had some experience with similar stuff on the Southern Line, at Clifton, which slipped. The clay had a soapy look, but was really very sandy.
674. It was a soapy blue colour? Yes.
675. The material you allude to as seeming loamy clay is what you refer to in the article? Yes; I had the same kind of bad material in the dam which I constructed, and I used a puddle lining. I then had no further trouble with it.
676. You ascribe these parallel cracks to the subsidence of the lower layers caused by the water percolating the material? Yes.
677. Do you consider that the water was finding its way from the reservoir up to the puddle-wall? Yes.
678. In what way? Do you think it forced itself through the porous material, or was it by absorption? It found its way by absorption, like a sponge.
679. The material forming the bank is chiefly clay, being kept wet and well carted over, should not the face of the bank be watertight? It should.
680. There was no other slip than that at section 54 when you were up in September? No.
681. You say in your report that you cannot see any reason why the embankment should have gone at this spot more than at any other;—have you since then heard or seen anything to account for this movement? No, I have not; and I have not been able to understand how any mass of particular material could get into one place, when it was so regularly distributed in the site from where it was taken.
682. So far as construction is concerned, it was applicable to the whole of the bank? Yes.
683. Did you hear that in December, 1887, and January, 1888, this part of the embanknent was constantly flooded owing to the necessity for keeping the water away from part of the puddle-trench which was being excavated at that time? No.
684. Do you think this would have any effect in causing the slip? No doubt it would.
685. The contractors stated that they drained the bank by taking the water across to the stone drains in the back bank, but it happened at times that for some reason the water could not be taken away; it therefore soaked in and had to take its chance? I should think if that were the case it would be a good way to account for the slip. I did not know this at the time when I made my report.
686. Then the fact of our finding water in the bank at a higher level than that of the water in the reservoir goes to show this? Yes. I was always under the impression that the puddle-wall was not dry enough, but I did not know that it was confined to any one particular spot. One of my old contractors was out there while this work was going on, and he came to me one day and said, "I never saw such stuff in my life; they are making the puddle-wall of mud and water." So I had an idea that at times they were using too much water.
687. In your report you take exception to the manner in which the repairing work was being done, and you consider it worse than useless;—does this refer to the stone being thrown down on the slope of the bank? Yes. I could see that they were making it slip.
688. That is to say, they were throwing the weight on to the slipping surface, and so causing it to slip more? Yes. They might have piled it up from the foot, but even that I do not consider of much use.
689. Then, if it had been built from the toe, it would overcome your objection a good deal? Yes. I pointed this out to Mr. Shand, and I think he suggested it to the Government. Mr. Shand and I talked over the matter several times, but I thought that, before they did anything at all, they should have cut the trench.
690. In suggesting to cut the trench, did you mean to cut right through the embankment or simply up to the puddle-wall? Up to the puddle-wall.
691. You suggested lowering the water—not necessarily below the outlet level;—did you mean the inlet of the supply to Sydney? What I meant was that they should try as low as they could get before cutting off any of the supply. If this would not do, then cut it off if necessary.
692. What was this level? I think the water was at 12 feet at the time.
693. If this lowering of the water did not expose the fault, what good purpose would it have served? From what I could see then the slip only seemed to go a little below the water-level.
694. If it were known that the plane of disturbance was at such a level that to expose it by lowering the water would have prevented Sydney being supplied from the reservoir, would you still recommend it? No. When I went up the Department insisted that this cracking was only the ordinary occurrences in large dams, and they ridiculed the idea that they were anything out of the common.
695. As I understand your report, you do not recommend definitely any remedy for the fault, but merely suggest a searching examination of the bank where the slip occurred? I was not asked to recommend anything. I was simply asked to report whether it was usual subsidence or not, and to give a general statement on it.
696. You recommend in your report protecting the bank by a layer of puddle laid on the water face 18 inches thick;—would you use this lining of clay all the way along the bank, and of uniform thickness, irrespective of the depth of water? Yes; it was only that thickness in the dam to which I have alluded, and we had no further trouble.
697. If you found that the material itself is not taking up the water, and is not being injured by the water, would you still go to this expense? No; the present conditions, as now known, alter my opinions. I did not consider that the material was good enough, and that it was overcharged with water.
698. The object then of your suggestion of the puddle lining would be to protect the wall if it were shown that the water was injuriously affecting it? Exactly.
699. I think our investigations show very clearly that the bank is practically non-absorbent? In that case I would not recommend the puddle lining.

700.

W. A. Harper, Esq., C.E. 26 Feb., 1889.

700. Have you prepared any estimate of the cost of what you recommend? No.
701. The puddle alone would cost £10,000? Well that would be only a trifle when compared with the present cost of the embankment. In the case of the New Zealand dam the material was very bad, being principally sandy gravel, but the puddle lining had the desired effect.
702. About two-thirds of this bank is a firm and thoroughly tough clay, well worked over, and has a fairly impervious surface? In that case it really amounts to a puddle.
703. Are there any other points in connection with the dam which you would like to mention, now that you know more of what has actually been found out during our investigations? I do not think there is anything else. I think the idea of boring is the proper course to adopt in order to obtain the required information.

THURSDAY, 7 MARCH, 1889.

R. H. Ryan, Esq., Resident Engineer, further examined by Mr. Mestayer:—

R. H. Ryan, Esq. 7 March, 1889.

704. In Mr. Dunn's evidence he mentioned that a portion of the bottom of the puddle-trench had to be taken up between sections 71 and 72 in consequence of the shale having lifted; is this a fact? Yes; about $7\frac{1}{2}$ feet.
705. Was there any other length on the bottom, in addition to this $7\frac{1}{2}$ feet to which you refer, which had to be remade in consequence of this peeling up of the shale? Not at that place.
706. As a matter of fact, it was only between section 71 and 72 that this occurred to this extent? Yes; but there were other places of small extent.
707. Was this lifting due solely to the action of the weather on the shale? Yes.
708. Was there any signs of water where this peeling up took place? No; we had to sink deeper than we at first anticipated, in order to get a sound bottom.
709. When you sunk at first the shale seemed hard and sound? Yes; it was hard and sound.
710. Mr. Dunn mentioned that he had heard of this same thing having occurred at other places? Yes; I cannot point out the places, but I know there were some few places where it had to be taken up.
711. How was this? The shale had been exposed for some considerable time to the air, and we took it up.
712. Were there any unsound places? All the unsound pieces were always taken out.
713. What unsound places there were was, I presume, simply surface disintegration of the shale caused by exposure to the atmosphere? Yes; merely superficial, caused by the action of the air.
714. Did the lifting of the shale raise the puddle at all where it had been put on? No; we always put on a good depth of clay to keep a weight on the bottom to protect it from the action of the air.
715. It was when there was no clay on the shale that it lifted? Yes; it was only where there was no clay that it lifted, but the flaking of the shale extended a few feet under the clay sometimes.
716. In every case where this peeling up occurred, was it the same shale? Yes; the same shale. It was principally on the centre line of the trench, where the channel was cut, that the bottom usually lifted.
717. When you cut through the shale it was perfectly sound, but after exposure to the atmosphere it lifted? Yes. As far as I know the sides never lifted. It was in the centre it showed most, especially where the channel was cut.
718. In any instance where this has occurred was it due to water on the bottom? In no instance.
719. Then, as I understand you, this was simply the ordinary disintegration of surface exhibited by all shales when exposed to the atmosphere? Yes; nothing more than that.
720. It was solely in consequence of the exposure to the air? Yes; in fact from about section 27 up to the end we met with little or no water whatever.
721. With regard to the stream from the back of the embankment—I understand you cut through some gravel-beds? Yes.
722. If any of these were now giving out water the probabilities are that this water would find its way to the drains below? Yes; and that portion under the back part of the bank would most likely discharge some water below.
723. The particulars given by Mr. Dunn of this flow would seem to show that it is something more than that due to the ordinary drainage of the bank, owing to its great evenness of volume? Yes; I have always thought so.
224. What do you think is the reason of this? I think it is due to the soakage from the gravel-beds and shale, together with the ordinary soakage from the bank.
725. Is this at the place where most water was found? Yes.

A. F. Jacob, Esq., Assistant Engineer, called and examined by Mr. Mestayer:—

A. F. Jacob, Esq. 7 March, 1889.

726. Mr. Gordon, in a letter to me, says he would like to know whether the line of kerbing was set out with a theodolite from the solid, or was it measured from the centre line of the bank? It was set out from the centre line of the puddle-trench, which had been ranged from the solid with the theodolite.
727. Speaking of the movements on the face in the deep part, Mr. Dunn said some of the kerb pegs were put in from the solid;—did you range the line out? No; he must be referring to his own work.
728. That was not the line you fixed? No; we fixed no line there.
729. Did you give them the line of the trench? Yes; the centre line was set out from the solid by us.
730. Did you give them the line of the kerb? No; we gave them the centre line of the trench and gave our inspectors the distance of the kerb from the centre line of the trench, but we did not range any line out for the kerbing.
731. To a certain extent the kerb was governed by a line ranged out from the solid? Yes.
732. There was no other independent line? No; we put in no actual line for the kerb, our inspectors ranged it with poles.
733. Mr. Dunn appears to have worked from the centre line of the puddle-trench? Yes.
734. Did you give them any points on the slope? No; we considered it was not our place to do so. When we had given them the centre line of puddle-trench and toes of slopes we considered we had done all that was necessary, though we occasionally checked the slopes for our own satisfaction.

A. F. Jacob, Esq. 7 March, 1889.

735. You contend that in giving them the line of the puddle-trench you gave them sufficient to work upon? Yes; but with regard to putting in the kerb, we never laid down a true line; we simply kept our inspectors provided with distance from the centre line of the puddle-trench.
736. When the kerbing was being put in, did you check it from time to time from the centre line? No.
737. So, really, it would be impossible to say whether the kerb is in exactly the same line now or not? Yes. We have no records to fall back on.
738. Did you take the measurement of the puddle that was shifted when the bottom of the trench flaked up owing to exposure? No; I took the level of the bottom of the trench on 27th July, 1887, at peg 72, and it was then 29 feet from the surface. Inspector Davis informed me a few days after that the depth had been altered to 35 ft. 6 in., and I altered my notes accordingly.
739. Did you take actual measurements? No; I did not take actual measurements the second time, but the bottom had been altered to 6½ feet additional in depth at 72.
740. That was in consequence of the rock being unsound? Yes.
741. How much do you think was taken up owing to this "flaking up" of the bottom? There could not possibly be more than 25 feet. I did not get a note of the exact amount at the time, but I am sure it could not exceed 25 feet.
742. The actual surface taken up could not have exceeded 25 feet? No; but Mr. Davis can tell you more exactly.
743. You did not see the actual amount taken up? No.
744. There were other places which had to be taken up owing to the flaking? Yes; there were a few potholes which were taken up. Every part of the trench was carefully sounded immediately before the clay was put on the bottom, and all unsound pieces taken up.

William E. Dunn, Esq., Engineer to the Contractors, called and re-examined by Mr. Mestayer:—

W. E. Dunn, Esq. 7 March, 1889.

745. Mr. Gordon has written to me asking me to put one or two more questions to you. He wishes to know how you knew that the bottom had "flaked up" when it had been covered in for two or three days? [*This I explained to him by letter.* See page 84.]
746. Did the puddle rise in the trench? That is a thing we could hardly ascertain. We simply saw it begin to flake at the exposed end of the puddle, and we were told to remove it.
747. What depth of puddle was there in it at this time? About 1 foot at one end up to 4 feet at the other end. The shale at this place had peeled all the way along.
748. Where it flaked up it was from 1 to 4 feet deep? Yes.
749. Did you take the level as well as the position horizontally of the pegs which moved and went back again? I took the levels in the first instance, but after I found that there was no movement I took no more levels.
750. You do not know whether there was any variation or not? No.
751. When did you take your levels? On 5th December, 1888. Levels were taken along the kerb 73 feet from the centre line of trench. [*Levels shown and explained.*]
752. When was this? Shortly after I put the transverse line in. In many places it runs 9 to 12 inches lower than where originally put in.
753. Is that the kerbing? Yes; taking the level at the exact point where the pegs should have been had they not moved on the 73-foot contour. [*Levels produced.*]
754. These levels are compared with the actual levels of the kerb as put in originally? Yes.
755. What is the actual difference in level? About 6 inches above at peg 15.
756. So that point on the kerb has moved 2 ft. 4½ in. towards the water, and is 0·4 lower than it was? Yes.
757. What is it at peg 18? At present it is 182·04, and should be 182·73.
758. At peg 22 it is 2 ft. 1½ in. nearer the water? Yes.
759. These were measurements taken to the original pegs? Yes; this was the line run through on the 73-foot contour. Wherever I could find an old peg I took the distance of it.
760. How was this 73-foot contour set out? It was offsetted from the centre line of puddle trench. We then compared the pegs to see if any were out of line, and checked them.
761. Did you find any out of line? A few were, but none more than 2 inches out of line.
762. Was it set off with the theodolite? With the exception of the first two or three pegs, which we set off from the solid; we set the others from the centre of puddle trench.
763. Was the alleged movement entirely horizontal or was there any slipping down shown at the same time? I can hardly say.
764. Did you report the discrepancies at 15, 18, 22, and other places to the contractors? Yes.
765. Was it mentioned to the inspectors that there were these discrepancies. I do not think so.
766. It was not considered at the time of sufficient importance to make a formal report about? No.
767. Mr. Ryan says that the distance taken up owing to the shale peeling could not be more than 25 feet? I think it was about 60 feet.
768. Did you not make a complaint about it? No; we found we had been overpaid previously, and we did not take any notice of this.
769. Were you not paid for this? We were only paid for 25 feet, but as far as I can remember there was about 50 feet taken up.
770. Did you take up the bottom all along? When we took up the clay there was more bottom taken but, and the contractor asked me to see that we got paid for this extra measurement.
771. Did you get paid for the extra? No; we found that some extra measurement had been paid for oefore, and so we made no claim for this.
772. Do you think this is a matter of any importance? No; it is not.

TABULATED STATEMENT of Settlements of Clay between pegs 8 and 19. June, 1888. Taken by Mr. W. E. Dunn. W. E. Dunn, Esq. 7 March, 1889.

Date.	Chainage.	R. L. Clay.	Layer put on.	Date.	Chainage.	R. L. Clay.	Layer put on.
1888.				1888.			
June 4.....	Peg 6	200·44	....	June 8	Peg 8	200·18	Nil
	„ 8	199·44	.....		„ 10	199·38	„
	„ 10	198 94	.....		„ 12	198·88	„
	„ 12	198·94	.....		„ 14	199·80	„
	„ 14	198·58	.....		„ 16	200·90	„
	„ 16	200·24	.....		„ 18	200·70	„
	„ 18	200·44	.....		„ 19·50	200·58	„
	„ 19·5	200 27	.....				
June 5.....	Peg 8	199 97	0·50	June 12.....	Peg 8	199·67	Nil
	„ 10	199·47	0·50		„ 10	198·97	„
	„ 12	199·17	0·50		„ 12	198·27	„
	„ 14	199·88	0·50		„ 14	199·27	„
	„ 16	200·03	Nil		„ 16	200·47	„
	„ 18	200 18	„		„ 18	200·54	„
	„ 19·5	200·80	0·50		„ 19·50	200·54	„
June 7.....	Peg 8	200·57	0·50				
	„ 10	199·57	0·50				
	„ 12	199·17	} Thin layer				
	„ 14	200·03					
	„ 16	201·03	1·00				
	„ 18	201·23	1·00				
	„ 19·50	200·67	Nil				

The differences of level on the 7th, 8th, and 12th are the most reliable.—W.E.D., 6/3/89.

Mr. George Davis, Inspector of Puddle and Earthwork, recalled and further examined by Mr. Mestayer :—

Mr. G. Davis. 7 March, 1889.

773. Do you recollect the flaking up of the shale at the bottom of the puddle-trench between sections 70 and 71? Yes; there was a piece flaked there.

774. Were you present at the time it was taken up? Yes; it was my duty to be there.

775. Was the whole of the unsound part taken up? Yes.

776. What was the length of this unsound part? The greatest length between pegs 70 and 71 was 7 to 8 feet.

777. You are sure that it was not more than 7 feet? I go by our needles, which are 10 feet long, and it never exceeded that.

778. You are certain it was not 10 feet? I am certain, perfectly certain. I can get three or four men who were working at this place putting the clay in who will tell you the same. There are two Italians working here now who put in this clay.

779. Where are they working? They have just gone home again. They were down here half-an-hour ago, and were told there was nothing for them to do this morning, consequently they have returned home.

780. We are told it was 60 feet? There was not 60 feet in the whole amount taken up.

781. Not in the whole of the "flaking up" taken together? Not in the lot.

782. There were other places where it "flaked up"? Yes; we came to a hole occasionally. Any shale, whether rock or not, when exposed to rain, air, or the weather, will lift a little.

783. Was it not lifted by water? No; there was no water.

784. It was simply exposure that caused it? Yes; simply exposure to the air.

785. Where were the other places? At section 40. I showed Mr. Ryan some that had lifted.

786. Was it of great extent? No; two men lifted it in a day. It did not take them all the day.

787. Then the whole of the "flaking up" did not exceed 60 feet? Taking the whole length of the bank it did not exceed 1 chain all added together.

Correspondence.

Treasury Minute.

Subject:—The Dam at Prospect.

The Treasury, New South Wales, Sydney, 28 November, 1888.

SOME doubt having been expressed in Parliament as to the safety of the dam at Prospect, I would submit, for the consideration of Mr. Sutherland, the desirability of his appointing some officer or officers to inspect and report on the state of the dam. J.F.B.

The Under Secretary for Public Works.—G.E., B.C., 28/11/88. Submitted.—J.B., 28/11/88.

I can assure my honorable colleague the matter he refers to is causing me a great deal of anxiety; and previous to the date of his minute the Acting Engineer-in-Chief for Harbours and Rivers had visited the dam, and placed me in possession of the latest information on the subject. Subsequently I have been in close consultation with Messrs. Whitton and Bennett. These gentlemen have concurred in what they consider the best course to pursue under the circumstances, but previous to taking any action they are to visit the dam in company to-morrow, and on Monday I shall have the result of their conference before me, when I shall immediately place the matter before the Cabinet. I may also mention that Mr. Williams, one of the Assistant Engineers for Harbours and Rivers, has visited the dam alone, and his report will also be placed before the Cabinet.—JOHN SUTHERLAND, 30/11/88. Under Secretary, Finance and Trade.—J.B., B.C., 30/11/88. Seen.—J.F.B., 30/11/88.

The Under Secretary for Public Works to R. L. Mestayer, Esq.

Sir, Department of Public Works, Sydney, 4 December, 1888.

I am directed by Mr. Secretary Sutherland to enclose copy of his instructions touching your commission to examine and report upon the present condition of the Prospect Dam, and I am to request that you will be so good as to enter upon the duties and furnish your report at the earliest possible moment.

I have, &c.,
J. BARLING,
Under Secretary.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 6 December, 1888.

I have the honor to acknowledge the receipt of your letter of the 4th instant, enclosing a copy of the instructions drawn up by Mr. Secretary Sutherland for my guidance in examining into and reporting upon the slips at the Prospect Dam.

The matter shall receive immediate and most careful attention, and I will submit a report at the earliest date consistent with the thorough examination necessary to enable me to comply with the instructions.

I visited the dam yesterday, and in company with Mr. Ryan, the Resident Engineer, went carefully over the works. As, however, some information must be obtained as to the condition of the interior of the bank, I requested Mr. Ryan to arrange to put down a bore into the bank at a point which I indicated to him; and I shall be present to see this work carried out.

To enable me to properly estimate the character and importance of the causes which have produced the movement in the bank, I shall be obliged if you will give instructions to be supplied to me:—

1. Plan of dam, showing positions and extent of all movements noticed up to present date.
2. Longitudinal section of dam along puddle-trench, giving particulars of geological sections of ground at sites of movements.
3. Cross-sections of bank at centres of movements, showing:—
   (*a*) Original sections.
   (*b*) Altered outline caused by slip up to the time the first steps were taken to arrest the movement by weighting the toe.
   (*c*) Present outline of bank and stone thrown in to arrest the movement.
4. Copies of particulars obtained by boring up to the present time.
5. Specification under which the work has been constructed.

The specification is necessary to enable me to comply with the clause of my instructions in which I am directed to "report on the construction of the dam and subsidiary works as a whole . . . . . and whether the works have been carried out according to the design."

I have, &c.,
R. L. MESTAYER.

The Under Secretary for Public Works to G. Gordon, Esq.

Sir, Department of Public Works, Sydney, 10 December, 1888.

I am directed by the Secretary for Public Works to forward herewith for your information and guidance, a copy of the instructions which have been given to Mr. Mestayer, A.M.I.C.E., who as you are aware has also been appointed to inquire into, and report upon the condition of the Prospect Dam, and to request that you will be good enough to take them as referring to the inquiry entrusted to you. The object of Mr. Sutherland is to obtain a full and impartial statement of the facts of the matter as they appear to you as an engineer of experience, altogether unconnected with the Department having charge of the work.

I am to add that Mr. Hickson has been instructed to place everything required at your service, including original plans and documents, and all officers of the Department have been enjoined to give you all possible information, and to reply to any inquiries you may desire to make in the course of your investigations.

I have, &c.,
J. BARLING,
Under Secretary.

Copy of instructions to Mr. Mestayer which were forwarded herewith were laid on the Table of the House on the 6th December, 1888.

G. Gordon, Esq., to The Under Secretary for Public Works.

Dear Sir, 13 December, 1888.

I visited the Prospect Dam yesterday and examined the second slip and two boreholes put down by Mr. Mestayer on the 7th and 10th inst.

I should like to put down another bore in the same line, *i.e.*, in the axis of the slip near the water's edge, and another in the puddle-wall on the same line, and still another in the part of the dam that has not shown any inclination to slip. In order to save time I asked Mr. Ryan to have the places prepared for these, and also to have a trench dug across the top of the bank at a place I pointed out, so as to be ready for my putting down the bores to-morrow. Mr. Hickson says he can get me the services of a diver and I ask permission to employ one to examine the toe of the bank, and I ask authority for the works mentioned above and leave to examine the plans of the accessory works, and to get some tracings made.

Yours, &c.,
G. GORDON.

Mr. Hickson,—Please attend to this.—J.B., B.C., 13/12/88. Submitted.—J.B. Appd. I give Mr. Gordon the fullest authority to carry out his investigation in the way he thinks best.—J.S., 14/12/88. I have arranged for these matters as instructed by the Minister.—R.H., B.C., 18/12/88. Under Secretary for Public Works. Put with papers.—J.B. 19/12/88.

R. L. Mestayer, Esq., to Mr. H. Murray.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 15 December, 1888.

I understand from Mr. Dempsey that you can give me some information concerning the way the work was carried on at Prospect. I shall be extremely glad of any such information, and shall be much obliged if you can call here to see me on Tuesday afternoon, about 3 o'clock p.m.

Yours truly,
R. L. MESTAYER.

R. L. Mestayer, Esq., to A. Bennett, Esq., *Evening News* Office.

Dear Sir, Beresford Chambers, Sydney, 52, Castlereagh-street, 15 December, 1888.

We are informed by Mr. Secretary Sutherland that you are willing to place at our disposal any information in your possession relating to the Prospect Dam. If you could mention a time on Tuesday morning which would be convenient to you, we shall be happy to wait on you to receive any particulars you can supply.

We are, &c.,
G. GORDON.
R. L. MESTAYER.

The Under Secretary for Public Works to R. L. Mestayer, Esq.

Sir, Department of Public Works, Sydney, 15 December, 1888.

I am directed to enclose for your information copies of correspondence, which has taken place between the Secretary for Public Works, and Mr. Alfred Bennett, proprietor of the *Evening News*, and have to request that you will be so good as to put yourself in communication with that gentleman, with a view to obtaining any information he may have at his disposal with regard to the Prospect Dam.

I have, &c.,
J. BARLING,
Under Secretary.

The Under Secretary for Public Works to G. Gordon, Esq.

Sir, Department of Public Works, Sydney, 15 December, 1888.

I am directed to enclose for your information copies of correspondence, which has taken place between the Secretary for Public Works and Mr. Alfred Bennett, proprietor of the *Evening News*, and have to request that you will be so good as to put yourself in communication with that gentleman, with a view to obtaining any information he may have at his disposal with regard to the Prospect Dam.

I have, &c.,
J. BARLING,
Under Secretary.

[*Enclosures.*]

Department of Public Works,
My dear Mr. Bennett, Sydney, 11 December, 1888.

You will have observed from the papers which have been laid upon the Table of the House that I have appointed two engineers outside the Department—one having only recently come to the Colony, and the other a resident of the sister Colony of Victoria—for the purpose of inquiring into the present state of the Prospect Dam. I have given them the utmost freedom of action, and have instructed them as far as possible to keep themselves from the influence of the Department, and report to me the true facts of the case whatever they may indicate. My

My object, however, in writing to you is to ask you to be so kind as to assist me in this matter. From the interest your paper has taken on the subject of the Prospect Dam it is clear that you must have obtained a great deal of information given you by various informants on the subject, and I have now to ask that you will be so good as to place this information, so far as you are able, at the disposal of the two gentlemen who have been appointed for the inquiry, namely, Mr. Mestayer, late Hydraulic Engineer to the South Australian Government, and Mr. George Gordon, an engineer of eminence in Victoria.

I have instructed these gentlemen to obtain information from every possible source, and it is for this reason that I ask you to be so good as to place any information you may have at their disposal.

I feel sure that from a national point of view you will accede to my request, and if you will furnish me with the names of those who have supplied you with information, I will take care that their evidence shall be taken and considered. My only object is to elicit the truth.

I am, &c.,

Alfred Bennett, Esq., *Evening News* Office. JOHN SUTHERLAND.

P.S.—To show the extent of the power entrusted to these gentlemen, I enclose you copy of the instructions to Mr. Mestayer, in similar terms to which instructions are being prepared for Mr. Gordon.

Town and Country Journal and *Evening News* Office,

Dear Sir, Market-street, Sydney, 12 December, 1888.

Mr. Bennett desires me to acknowledge receipt of your letter and enclosure of yesterday, and to say that he will be only too happy to supply your officers with any information in his power in reference to the condition of the Prospect Dam, in the security of which he takes a deep interest. Such members of the staff of the *Evening News* as have reported upon the dam will willingly see Mr. Mestayer and Mr. Gordon, and afford these gentlemen whatever assistance they can to facilitate their investigations. At the same time I should mention that all information which representatives of the *Evening News* have obtained has been published in that journal and commented upon, and I assume that such information and comments, touching a subject of such great importance, have been preserved in your Department. Should that, however, not be the case, I have an index by me that will enable me to lay my finger at any time upon the various reports, &c., that have appeared on the subject in the *Evening News*. These I will be glad to point out to any accredited officer of your Department who may desire to see them.

I may add that it is very gratifying to Mr. Bennett and myself, as it must be to the public, to observe the steps you have taken to have a thoroughly independent examination made by competent engineers of the dam, with a view to ascertaining its actual condition, and so set the public mind at rest, if possible, as to its stability.

I have, &c.,

JAMES A. HOGUE,

The Secretary for Public Works. ——— Editor, *Evening News*.

Answered. See letters sent to Messrs. Gordon and Mestayer on the subject.—J.B., 15/10/88. Put away.

Dear Sir, Parliament, New South Wales, Sydney, 12 December, 1888.

I have to thank you for your letter of this date, in which you offer to place your services at the disposal of the engineers I have appointed to inquire into the present state of the Prospect Dam, and I shall take care to request them to avail themselves of your kind offer.

My only object is to get at the true facts of the case from whatever source I can obtain them.

I have from the first been fully impressed with the necessity of the most searching investigation.

Yours, &c.,

The Editor, *Evening News*. JOHN SUTHERLAND.

Town and Country Journal and *Evening News* Office,

Dear Sir, Sydney, 17 December, 1888.

Mr. Alfred Bennett desires me to say, in answer to your note of the 15th instant, that he will be glad if you will call on the editor of the *Evening News*, at the office of the *Sydney Morning Herald*, any time on Tuesday forenoon.

Yours, &c.,

JAMES A. HOGUE,

Messrs. Gordon & Mestayer. Editor, *Evening News*.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, 18 December, 1888.

Mr. Secretary Sutherland has been informed that you can give some information to Messrs. Gordon and Mestayer, who are conducting an inquiry about the Prospect Dam. Will you be so good as to say in what it consists, and whether you can state any facts bearing on the construction of the dam from your own observation.

Yours truly,

Mr. G. A. Bramston, 717, George-street. R. L. MESTAYER.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, 18 December, 1888.

Messrs. Gordon and Mestayer, who are taking evidence about the Prospect Dam, have been informed by Mr. Secretary Sutherland that you can give information as to the construction of the dam. Can you attend at Mr. Mestayer's office, Beresford Chambers, Castlereagh-street, at 12 o'clock on Thursday next?

Yours truly,

Mr. Edwin Limond, 63, Church-street, Newtown. R. L. MESTAYER.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 18 December, 1888.

Messrs. Gordon and Mestayer, who are taking evidence about the Prospect Dam, have been informed by Mr. Hogue, of the *Evening News*, that you can give information as to the construction of the dam. Can you attend at Mr. Mestayer's office, Beresford Chambers, Castlereagh-street, Sydney, at 11 o'clock, on Thursday next?

Yours truly,

Mr. Rutherford, Mundarra Towers, Little Coogee. R. L. MESTAYER.

R.

R. L. Mestayer, Esq., to I. Ives, Esq.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 18 December, 1888.

Mr. G. Gordon, C.E., of Victoria, and myself have been instructed by the Honorable the Secretary for Public Works to report upon the condition and construction of the Prospect Dam.

We have been informed that you might be in a position to give us some information as to the character of the work. If that is the case, we shall be very glad to be put in possession of any facts you may be willing to communicate, and shall be happy to wait upon you at any time on Thursday afternoon which may be convenient to you.

I am, &c.,

R. L. MESTAYER.

Copy of Telegram addressed to Mr. John Norton, "Terminus Hotel," Newcastle.

18 December, 1888.

I AM informed you can give evidence as to Prospect Dam. Can you attend at Beresford Chambers, 52, Castlereagh-street.

G. GORDON,
Australian Club.

R. L. Mestayer, Esq., to The Hon. J. Davies, M.L.C., C.M.G.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 18 December, 1888.

Mr. G. Gordon and myself have been instructed by the Honorable the Secretary for Public Works to report upon the condition and construction of the Prospect Dam.

We have been informed that you might be in a position to give us some information as to the character of the work. If that is the case, we shall be glad to be put in possession of any facts you may be willing to communicate, and shall be happy to wait upon you at any time on Thursday afternoon which may be convenient to you.

I am, &c.,

R. L. MESTAYER.

NOTE.—Up to the present date, 30 March, 1889, no reply has been received from Mr. Davies.—R.L.M.

R. L. Mestayer, Esq., to J. A. Hogue, Esq.

Beresford Chambers, 52, Castlereagh-street, Sydney, 18 December, 1888.

Dear Sir, *Re* Prospect Dam.

I shall be obliged if you can give me particulars on the following points, viz.:—

1. An article in the *Evening News* of the 3rd instant refers to a correspondent who seven months ago predicted the collapse of the dam. Can you give me the name of this correspondent?
2. A leading article in the *Evening News* of 2nd May, 1888, refers to an article published in the *Evening News* three years previously in which it was stated that portions of the puddle-wall consisted of rubble and rubbish. Can you give me the name of the person responsible for this statement?
3. Can you give me the dates of the articles written by Mr. Norton?

I am, &c.,
R. L. MESTAYER.

R. L. Mestayer, Esq., to Mr. J. Weston.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 18 December, 1888.

I have been instructed by the Honorable the Secretary for Public Works to inquire into and report upon the work of the Prospect Dam.

I understand that you were engaged upon the works for some time during 1883 and 1884, and shall feel obliged if you will give me any information as to the manner in which the work was executed, and the depth at which the puddle-wall was kept below the level of the bank.

I am, &c.,
R. L. MESTAYER.

Memo. from Mr. J. A. Hogue, *Evening News* Office, to Mr. Mestayer, C.E.

Dear Sir, Sydney, 19 December, 1888.

In answer to your first question,—Mr. Rutherford, contractor; 2nd—Mr. Gipps, C.E.; 3rd—Mr. Norton wrote all the reports up to the end of June.

J. A. HOGUE.

Agnes Gipps to Geo. Gordon, Esq.

Dear Sir, "Maida," Chandos-street, Ashfield, 19 December, 1888.

Mr. Gipps is at present in Melbourne. In a letter that I received from him yesterday he said that all being well he would leave Melbourne for Sydney on Thursday. On his arrival here I will lose no time in giving him your letter.

Yours, &c.,
AGNES GIPPS.

I. E. Ives, Esq., to R. L. Mestayer, Esq.

Sydney, 19 December, 1888.

Dear Sir,

I am not aware that I can give you any information as to the character of the work at the Prospect Dam.

I visited the dam on Tuesday morning the 4th instant, arriving there at 6 a.m., and as work does not commence until 8 a.m. I had a good opportunity of seeing the amount of settlement during the previous night. In one place, a crack of some considerable length widened considerably as I looked on.

On Monday, 10th instant, I again visited the dam, in company with Mr. Kelly, M.L.A., arriving at about 10·30 a.m. At this hour most of the cracks had been covered, but in one place three or four men with picks were loosening the solid sides of a crevice fully a foot wide, and filling in with stuff so obtained. Another man was using a long iron rod in the crevice, apparently with a view of inducing the small stuff to go further down.

Yours, &c.,

I. E. IVES.

Telegram from J. Rutherford, Esq., to R. L. Mestayer, Esq.

Mundarra Towers, Coogee, 20 December, 1888.

Just received letter. Will attend to-morrow, if required.

JAS. RUTHERFORD.

Telegram from R. L. Mestayer, Esq., to J. Rutherford, Esq.

20 December, 1888.

Shall be glad if you will call here to-morrow morning about 11.

R. L. MESTAYER,
Beresford Chambers,
Castlereagh-street.

Mr. R. J. Weston to R. L. Mestayer, Esq.

Marrickville Road, Marrickville, 20 December, 1888.

Dear Sir,

In reply to your request, I beg to inform you that I was engaged on the Prospect Reservoir works from August, 1883, to August, 1885, as manager of the tunnel works until completed. I can vouch for all material and workmanship used for the construction of the said works being first class. All bricks used were culled out from the stock before they were allowed to be taken into the tunnel for use. The man who performed this task was subject to the approval of the Government Inspector. Only the best brands of cement were used; and on receiving a fresh supply of cement it had to be weighed, measured, and tested, by order of the District Engineer, and in his presence or his assistant, often both of them; an inspector in the tunnel to see the work faithfully performed; an inspector outside to see all concrete and cement mortar properly mixed, &c.; and during the construction of the above works the District Engineer was through the tunnel almost daily.

In reference to the puddle-trench, I had nothing whatever to do with that portion of the work; but I know the engineer was very determined to have the trench sunk down to a good solid formation, and that for some distance it was upwards of 40 feet deep.

I have repeatedly heard our firm complain of the strict attention of the District Engineer to the fixing of the puddle in the trench, also to the getting and preparing of the same for use, and many other matters connected with the works.

In conclusion, I have had considerable experience on general public work in Great Britain and other parts of the world, and can honestly and truthfully say that I never was managing works under the supervision of an engineer so *strict* and attentive to his duties as Mr. Ryan, District Engineer of the Reservoir Works, Prospect.

I have, &c.,

R. J. WESTON.

Mr. E. Limond to The Secretary for Public Works.

63, Church-street, Newtown, 21 December, 1888.

Dear Sir,

I waited on Messrs. Gordon and Mestayer yesterday, 12 noon, when not only my statement was unbelieved, but I was told it was all lies about water being under the puddle. I cannot rest under this imputation, but shall take other steps to prove to the public that my assertions are correct. The *Evening News* has not published my evidence as yet.

Yours, &c.,

EDWIN LIMOND.

I have seen Mr. Gordon about this, and he absolutely denies the truth of these allegations.—J.S., 21/12/88. Resubmit.

Tell him to call at 11 a.m., Monday, and the Minister will then take his evidence.—J.B., 29/12/88.

Edwin Limond, Esq., 29/12/88.

New South Wales Electric Telegraph, 29 December, 1888.

J. Barling, Esq., Public Works Office.

Your message of to-day to Edwin Limond, 63, Church-street, Newtown, is undelivered. Address is vacant.

H.J.S.P., Manager.

Shall we search for him?—J.B., 31/12/88. Find him.—J.S., 31/12/88.

Telephone message from Newtown Police, 2nd January, 1889, 3 p.m., to Inspector-General of Police.

Mr. Edwin Limond resides at No. 73, Church-street, Newtown. He is a most respectable man, and lately worked at the Prospect Reservoir.

Telegraphed to Limond, 2/1/89.

R.

R. L. Mestayer, Esq., to F. B. Gipps, Esq., C.E.

Prospect Dam.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 22 December, 1888.

Mr. Gordon wrote to you on Tuesday last, asking if you would be good enough to give us any information you could regarding the above work. Mr. Gordon has been obliged to return to Victoria, but has left with me the questions he intended to put to you, and I shall be much obliged if you will kindly let me know when it will be convenient for you to call here and see me respecting it. I shall be here up to 1 o'clock on Monday, but not on Tuesday or Wednesday.

If Monday morning will not suit your convenience, please send me a line to my private address—Symington, Parramatta Road, Ashfield.

Yours, &c.,
R. L. MESTAYER.

The Under Secretary for Public Works to R. L. Mestayer, Esq.

Sir, Department of Public Works, Sydney, 22 December, 1888.

With reference to the instructions which have been given to you in regard to the work of reporting upon the Prospect Dam, I am desired by the Secretary for Public Works to request that you will be so good as to give a detailed estimate of any works which you may recommend should be carried out.

I am to add that Mr. Gordon has been similarly instructed.

I have, &c.,
J. BARLING,
Under Secretary.

R. L. Mestayer, Esq., to R. T. Ryan, Esq.

Beresford Chambers, 52, Castlereagh-street, Sydney, 24 December, 1888.

Dear Sir, Prospect Dam.

I wish to find out how far the movement that we found at section 18 has extended, and shall be glad if you will have similar sections taken at each 100 feet, right and left of section 18, until the present and original face-lines are found to correspond.

I also wish two more boreholes to be put down at section 18—30′ and 35′ respectively from the centre of puddle-wall. They should go down about 35 feet deep. I shall come out on Thursday or Friday, but the holes can be sunk without waiting for me.

Yours, &c.,
R. L. MESTAYER.

Copy of Telegram addressed to J. Norton, Esq., on 27/12/88.

MINISTER will be glad if you can give your evidence respecting the Prospect Dam at once. Can you call at the office of Mr. Mestayer, Beresford Chambers, 52, Castlereagh-street, for this purpose, on Saturday morning at 10 o'clock. Any expense incurred will be paid by the Department.

J. BARLING,
Under Secretary for Public Works.

Telegram from Mr. J. Norton to The Under Secretary for Public Works.

IN reply to your telegram, could not possibly come to Sydney to give evidence, *re* Prospect Dam, before to-morrow, Saturday, week.

J. NORTON,
"Terminus Hotel."

Telegraph that I will instruct Mr. Mestayer to proceed to Newcastle to take his evidence at any early time which may suit his convenience.—JOHN SUTHERLAND, 29/12/88. Wired, 29/12/88.

Copy of further Telegram addressed to J. Norton, Esq., on 29/12/88.

MINISTER will instruct Mr. Mestayer to proceed to Newcastle to take your evidence at an early time which may suit your convenience. Reply.

J. BARLING,
Under Secretary for Public Works.

J. Norton, Esq., to The Under Secretary for Public Works.

Newcastle, 31 December, 1888.

USELESS to send Mestayer here for my evidence, *re* Prospect Dam, as I decline to afford information before present Board, being doubtful of its utility and impartiality.

Seen. I regret that Mr. Norton refuses to give evidence, as we offered to pay all expenses.—JOHN SUTHERLAND, 31/12/88.

The Under Secretary for Public Works to J. Norton, Esq.

Sir, Department of Public Works, Sydney, 2 January, 1889.

I am directed by the Secretary for Public Works to acknowledge the receipt of your telegram of the 31st ultimo, in which you say it is useless to send Mr. Mestayer for your evidence in regard to the Prospect Dam, as you decline to afford information on the subject. Mr. Sutherland very much regrets that you should have come to this conclusion. He is most anxious to obtain all the particulars possible, and will be obliged if you will consent to give evidence before himself at any convenient time which may be named by you.

I am to point out that the matter is of great national importance, and Mr. Sutherland thinks he is justified in appealing to your patriotism as a public man to give him all the information you can, as it is clear you have devoted very considerable attention to the subject, and have collected a mass of evidence which he thinks may be very useful.

I have, &c.,
J. BARLING,
Under Secretary.

Up to this date no answer has been received from Mr. Norton.—D.C.M'L., 15/1/89.

R. L. Mestayer, Esq., to Mr. G. Robinson.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, 27 December, 1888.

Please be at my office by 9·30 a.m. on Saturday, and I shall be glad if you can go through the *Evening News* files to-morrow, and note down any assertions in the articles written by Mr. Norton. Mr. Secretary Sutherland has telegraphed to him to come to my office on Saturday to give evidence, and also to Mr. Maher, of West Maitland, who has written to the *Evening News*.

Yours, &c.,
R. L. MESTAYER.

The Under Secretary for Public Works to R. L. Mestayer, Esq.

My dear Sir, Department of Public Works, Sydney, 27 December, 1888.

Mr. Sutherland desires me to enclose for your information an extract of a leading article from the *Evening News* of this day's date upon the subject of the Prospect Dam.

I am further desired to point out to you the extreme importance of taking any evidence which may present itself to you in connection with the subject of your inquiry, however trivial or absurd it may appear to you as an engineer—because it is largely on statements of this character that the public mind has been exercised of late, and it is desirable to get at the source of the many statements which have been spread abroad with regard to the state of the dam.

I am, &c.,
J. BARLING.

The Under Secretary for Public Works to G. Gordon, Esq.

My dear Sir, Department of Public Works, Sydney, 27 December, 1888.

Mr. Sutherland desires me to enclose for your information an extract from the *Evening News* of this date, bearing on the subject of the Prospect Dam, and to ask that you will be so good as to come to Sydney again before sending in your final report. Mr. Sutherland further wishes me to point out to you the extreme importance of taking any evidence which may present itself, no matter how trivial or absurd it may seem to you as an engineer—because it is by such statements that a great deal of the uneasiness now existing in the public mind with regard to the dam has been raised.

I am, &c.,
J. BARLING.

[*Enclosure.*]

[Extract from the *Evening News* of Thursday, 27th December, 1888.]

THE PROSPECT DAM.

THE coming event of Messrs. Gordon and Mestayer's report on the Prospect dam has cast its shadow before, and the foreshadowing is not a pleasant one to contemplate. Though the report has not been drawn up, the Minister for Works was able to tell the Assembly on Friday what the most important part of it will be when it does come. The *Hansard* report of what the honorable gentleman said contains the following:—

> There are two gentlemen now holding a very serious inquiry into the state of the Prospect Dam, from its first foundation till the time they took evidence on the subject. They will not be prepared to give in their report before some time next week. I sent for Mr. Gordon to-day, and he assured me that there was not the slightest danger of the dam giving way. Alterations and a large expenditure of money will have to take place; and I have given instructions to those gentlemen, not only to make recommendations but also to state what will be the cost of carrying out the recommendations.

It appears from Mr. Sutherland's remarks that Mr. Mestayer agrees with Mr. Gordon, for speaking of the two gentlemen, he concluded by saying,—

> They are certain that there is not the slightest foundation for the fear of the dam going.

This remarkable communication to the Assembly can have no other effect than that of destroying the confidence of the public in the report of Messrs. Gordon and Mestayer when it is produced. Their instructions to hold the investigation were issued on the 13th December, and assuming that they commenced work the following day, their inquiries into the state of the Prospect Dam from its foundation had extended over a week and a day when they assured Mr. Sutherland that there was not the slightest fear of it collapsing. It is true that, according to the Minister for Works, the investigation was not concluded when he saw Mr. Gordon; but what is of most importance is to know on what evidence Mr. Gordon and Mr. Mestayer came to the conclusion that the dam is in no danger. It may be taken for granted that they went out to see it; but for the practical purpose of their commission, looking at the embankment was, comparatively speaking, a waste of time. The Department has been taxing its resources during the last eight or nine months to patch the work up, and most probably when Mr. Gordon and Mr. Mestayer were taken to see it most of the cracks had been filled up, and unless it had burst through again the stream of thick yellowish water our reporter saw running from the base of the embankment on its lower side was stopped up. Looking at the work in its patched-up condition would therefore give the two gentlemen only a very imperfect idea of what has been going on in the way of cracks, slips, subsidences, and the actual flow of water through the embankment. What they required to do was to take the evidence of disinterested men who had been carefully watching the dam since the first slip was discovered, and if they have not done this the investigation on which they guarantee the soundness of the work is useless, and their opinions are not worth one penny of the money they will cost. An application was made to us by Mr. Mestayer a few days since for the names of those who had written certain reports in the *Evening News*, and also the names of those persons who had given our reporters the information upon which some of their statements were founded; but so far as we know, not one of those who may be termed the *Evening News* witnesses has been examined. If there has been any examination of witnesses at all, it has been carried on in a remarkably secret manner; and it is perfectly certain that during the few days that elapsed between the appointment of the two gentlemen and Mr. Gordon's statement to Mr. Sutherland it would have been impossible to take all the evidence necessary to enable them,

them to give a definite opinion respecting the stability of the dam; but what is that opinion, as stated by Mr. Sutherland, worth? In the first place, it contradicts those of Mr. Hickson and Mr. Williams, two officers of the Department, who recently reported upon the condition of the embankment. The only interpretation to be put upon the opinions of those two gentlemen is that the dam is in a dangerous condition, so that the statement of Mr. Gordon that there is not the slightest fear of it giving way is in direct opposition on this particular point to the opinions of Mr. Hickson and Mr. Williams. Even the Engineer-in-Chief for Railways, who guaranteed the soundness of the work six or seven months ago as confidently as Mr. Gordon and Mr. Mestayer do now, reported to Mr. Sutherland the week before last that the dam now requires to be "carefully watched." Messrs. Gordon and Mestayer not only contradict Mr. Hickson, Mr. Williams, and Mr. Whitton, but, if Mr. Sutherland reported Mr. Gordon correctly, they contradict themselves. They say that "there is not the slightest danger of the dam giving way," but that alterations and a large expenditure of money will have to take place. If the dam is in no danger, what will this money have to be spent for? The fact is that every shilling Mr. Gordon and Mr. Mestayer may recommend to be expended will be for securing the dam, and will therefore be a contradiction of the statement that it is not in the slightest danger. We are dealing with the two professional gentlemen entirely on the basis of the speech made by Mr. Sutherland in the Assembly. The honorable gentleman may have misunderstood Mr. Gordon, but if he did not, and the verbal report submitted to the House is a correct one, the engagement of Mr. Gordon and Mr. Mestayer will only add another unsatisfactory chapter to the record of extravagance and blundering connected with the Prospect Dam.

The Under Secretary for Public Works to R. L. Mestayer, Esq.

Sir, Department of Public Works, Sydney, 27 December, 1888.

I am directed by Mr. Secretary Sutherland to forward herewith a letter which has been received from Mr. James J. Maher on the subject of the Prospect Dam, and to inform you that a telegram has been sent to the writer requesting him to be good enough to attend at your office on Saturday morning at 10 o'clock, in order that you may take any evidence on the subject that he has to give.

I am to inform you that Mr. J. Norton, late of the staff of the *Evening News*, has also been requested to attend at your office on Saturday morning at 10 o'clock to give evidence on the same subject.

Mr. Sutherland desires that the fullest information possible should be obtained from these gentlemen, and will be glad if you will take whatever evidence they are prepared to give.

I have, &c.,
J. BARLING,
Under Secretary.

[*Enclosure.*]

Hon. Sir, 26 December, 1888.

I take the liberty of forwarding you a letter of mine which, as you will observe, appeared in the *Evening News*, *in re* the Prospect Dam at the time of the first breakage.

I am sorry to say that my prognostications have been realised, and not one of the gentlemen connected with its construction or inspection seems able to account for the cause, which, to my mind, is very simple indeed.

I would have communicated with our worthy Member, Mr. Thompson, or our esteemed citizen and Minister for Lands, Mr. Brunker, but, upon second consideration, I thought you, sir, the fountain-head, would be the most advisable to forward my information to.

My knowledge has been obtained in deep sinking on the gold-fields, where the batter is much used in keeping back the water. I simply offer my advice in the interests of the citizens of my native city, and hoping, hon. sir, that you will accept my observations in the same spirit in which they are written; and if you or any of your advisers would desire an interview on the subject from my point of view, I am willingly at your service. I may add that Mr. Williams seems to possess the best knowledge of any of the experts or professionals that I have read. You will also find that the cause of the slip has not been occasioned at the toe of the dam. The diver will prove my words correct. He may be deceived if a large quantity of the debris is lodged at the bottom, but a remedy most efficacious is very simple indeed.

Hoping, hon. sir, that you will excuse the liberty I have taken in addressing you on this subject,

Yours obediently,
JAMES J. MAHER,
Eastview, Church-street, West Maitland.

[*Sub-Enclosure.*]

THE PROSPECT DAM.

To the Editor.

SIR,—The warning note of danger sounded by you in the *Evening News in re* the above proves to be of very great value to the citizens of Sydney; for any person reading the report of the visit to the works, which appeared in the *Evening News* of the 9th, of the officials of the Water and Sewarage Board, will see at a glance that a great calamity is imminent, for not one of the gentlemen present seemed to give a satisfactory opinion as to the cause of the fissure. I possess not the educational attainments of an engineer, but have had considerable experience with puddled clay, therefore feel no diffidence in offering an opinion on the subject. The Prospect Dam as constructed will ever be a source of danger, for as the water recedes and rises a fissure will occur in some part or other of the work. The expansion of puddled clay is almost incredible when exposed to the action of water, and cannot be consolidation or settling down, as so expressed by Mr. Rowe. Now, my opinion is, however impertinent it may be considered, that the face of the dam, where puddled clay has been used, must be protected by a facial of heavy masonry, or ironbark timbering well secured. Then, and then only, can a calamity be averted. Thanking you in anticipation.

Yours, &c.,
J.J.M.

Maitland, June 9, 1888.

R.

R. L. Mestayer, Esq., to J. A. Hogue, Esq.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, 28 December, 1888.

You referred Mr. Gordon and myself to Mr. Wearne as one of the authorities who could give information respecting the Prospect Dam.

Mr. Wearne, in replying to questions from us, stated that much of the information he had supplied to you was given to him by someone whose name he declined to mention, as he (Mr. Wearne's informant) had particular reasons for wishing his name not to be made known.

I told Mr. Wearne that if his informant would come to my office I should be glad to take any evidence or receive any information he would give me, and would see that his name did not appear. As this has failed to induce Mr. Wearne's informant to visit me, I have thought it as well that you should know how the matter stands, more especially as Mr. Wearne said he had referred the matter to his superiors in the office.

If you can persuade this or any other person in possession of any information respecting work at Prospect to communicate with me I shall be only too glad to take their information.

Yours, &c.,
R. L. MESTAYER.

Up to present date no information has been received from Mr. Wearne or his informant.—R.L.M., 25/4/89.

R. L. Mestayer, Esq., to J. Barling, Esq.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 29 December, 1888.

The bearer, Mr. J. J. Maher, has called upon me this morning in accordance with the telegram sent to him by you, and given me his evidence as to what he considers the cause of the slip, and the remedy he proposes.

As I understood from you that Mr. Maher's expenses would be paid by your Department, I have given him this note to certify to the fact of his having attended as requested.

I am, &c.,
R. L. MESTAYER.

Submitted.—J.B., 30/12/88. Give him three days at 30/- per diem and his travelling fares, and say that if any part of his recommendation is adopted a substantial recognition will be awarded.—JOHN SUTHERLAND, 31/12/88. Mr. Mestayer,—What expenses do you recommend?—J.B., B.C., 31/12/88. See voucher 88–4,704 for £6 1s.—T.J.C., 10/1/89. Mr. Maher informed, 31/12/88. Maher has been paid.—*Per* A. Eng.-in-Chief, J.S., B.C., 12/1/89. Under Secretary for Public Works. Place with others papers.—D.C.M'L., 14/1/89. Attach to voucher.—J.S., 4/1/89. Mr. Cremen.

The Under Secretary for Public Works to A. Bennett, Esq., *Evening News* Office.

Sir, Department of Public Works, Sydney, 29 December, 1888.

With reference to your leader of the 27th instant, on the subject of the Prospect Dam, in which the following statement appears, viz. :—"An application was made to us by Mr. Mestayer a few days since for the names of those who had written certain reports in the *Evening News*, and also the names of those persons who had given our reporters the information on which some of their statements were founded; but so far as we know, not one of those, who may be termed the *Evening News* witnesses, has been examined." I am directed by Mr. Secretary Sutherland to ask if you will be so good as to mention the names of the witnesses you refer to, and whom you think have not been examined by the engineers appointed to inquire into the matter.

I am to say that Mr. Sutherland read the paragraph with very great surprise, as he has given the most emphatic instructions that all information obtainable should be considered; and if you will kindly give the names of the gentlemen you refer to, care will be taken that their evidence shall be received in the fullest possible manner, as it is the desire of the Minister to exhaust every channel of information on the subject that is available.

I am to add that Mr. Sutherland will consider it an especial favour if you will at your earliest convenience comply with this request.

I have, &c.,
J. BARLING,
Under Secretary.

G. Gordon, Esq., to The Under Secretary for Public Works.

Dear Sir, Colonial Chambers, 86, Collins-street West, Melbourne, 29 December, 1888.

I said I thought I would send in my report about the end of this week. That was before I knew I was to send an estimate. As I have not yet received the cross-section I want for this purpose, it will be next week before I can be ready. I have finished the draft of my report, but I will not write it out till I get Mr. Gipps' evidence, which I expect daily; not that I think it will induce me to alter the report, as I know from the report in the *Evening News* what his views are, but there may be something in his evidence requiring attention. If some of my recommendations are adopted the closing of the contract will be a necessity.

With the compliments of the season.

Yours, &c.,
G. GORDON.

The cross-sections will be sent to you to-day.—*Pro* A. Engineer-in-Chief, J.S., B.C., 31/12/88. Under Secretary, Public Works. Please see that they go without fail to-day.—J.B., 31/12/88. Sent, 31/12/88.

R.

R. L. Mestayer, Esq., to J. A. Hogue, Esq.

Beresford Chambers, 52, Castlereagh-street, 31 December, 1888.

Dear Sir, *Re* Prospect Dam.

On the 18th inst. I wrote to you asking for the name of your correspondent responsible for the assertion that the puddle-wall was in places composed of rubble and rubbish. You replied that Mr. F. B. Gipps had given you the information. Mr. Gipps, however, in his evidence most strongly denies ever having made any such statement, and asserts that you are mistaken in ascribing it to him. I shall be very glad if you can ascertain whether any mistake has arisen, and, if so, who is the person responsible for the statement, as I should like to take his evidence on that point and any other information he is willing to give.

I am, &c.,

R. L. MESTAYER.

J. Hogue, Esq., *Evening News* Office, to The Under Secretary for Public Works.

Town and Country Journal and *Evening News* Office,

Dear Sir, Market-street, Sydney, 31 December, 1888.

In reference to your letter of 29th instant, I desire to point out that in the *Evening News* article you quote from, the expression occurs, "So far as we know not one of those," &c., &c., "has been examined." I furnished to Mr. Mestayer, as far as I can now remember, the following names:—Mr. J. Wearne, Mr. J. Norton, Mr. F. B. Gipps, C.E.; Mr. Rutherford, contractor; Mr. Buckett, hotelkeeper; Mr. Ives, M.L.A.; and the Hon. John Davies, M.L.C.

Yours, &c.,

JAS. A. HOGUE.

(N.B.—*Vide* reply from Under Secretary for Public Works, p. 65.)

J. A. Hogue, Esq., to R. L. Mestayer, Esq.

Town and Country Journal and Evening News Office,

Dear Sir, Market-street, Sydney, 31 December, 1888.

When I gave you the name of Mr. F. B. Gipps as our authority for the statement "*re* rubble and rubbish," I wrote from memory and must have been mistaken, Mr. Gipps having denied it. I was under the impression at the time that it was he who made the statement. I will endeavour to obtain the information you require, but you must see how difficult it is to obtain it after the lapse of time that has taken place since the statement was published.

Yours, &c.,

JAS. A. HOGUE.

A. Mackay, Esq., to The Secretary for Public Works.

Technical College, Sydney, 31 December, 1888.

Re Prospect Dam.

Dear Sir,

As coming within the scope of investigations I have been making into the soils of the Colony, considerable attention has been given to the nature of the clay and soil used for forming the puddle-wall and for making up the sloping embankments of the Prospect Dam; and as I now feel certain of having discovered the cause of the fretting away or weathering of the material used in the earthwork, and the consequent alarms which have arisen concerning the safety of the whole structure, I take the liberty of submitting the following for your consideration.

You will see that the cause of disturbance is more of a chemical than a mechanical nature.

On examination of the stuff used for building up the earth embankment on the reservoir or inside slope of the work, I find it to be made up very largely of a peculiar species of clay, common to the Wainamatta shale formations of the metropolitan district. This clay is largely composed of silicates of iron, and is acted on rapidly and visibly by exposure to air, rain, or water. It shrinks in bulk as a first change, it then cracks and oxidizes rapidly, changing to yellowish and reddish clay loam, of a character different essentially from the original clay. These are some of the chemical changes that occur, as I have had frequent and minute occasion for observing in connection with the cultivation, trenching, and draining of the Wainamatta shale soils—the clays especially, for orcharding and other purposes.

The mechanical effect of the chemical changes have become very visible at the Prospect Dam Works. As the shrinking and oxidization proceeds, the silicious or sandy portion of the clay matter tends downwards, it being very much the heaviest; while the oxidized and loamy portions of the clay earth become so lively, especially when saturated with water, that they float or wash away. This is, in reality, what has been going on at the Prospect Dam, ever since water was brought into contact with the clay soils of the inside slope of the work; and the process must continue to go on until the oxidization and chemical change is complete, and the soil settles down into regular loamy strata or layers.

The question then is, how can these consequences be met? And this, I have not a doubt, will be found a much less troublesome matter than at first sight appears. It will be seen that if any extra heavy material, such as stone, is placed on top of earth undergoing the chemical changes, and under the conditions mentioned, the result will be to press out the lighter portion of the material—which analyses, in this case, let me see, is nearly one-half of the whole—the stone sinking downwards by the displacement. Where the soil is in contact with water, as in the case where slips outwards have occurred at the Prospect Dam, the process is very rapid, the light stuff being literally strewed out upon the water, where it is forming ugly blemishes upon the magnificent proportions of the huge earthwork.

I would suggest that, as the changes going on in the embankment cannot be stopped, the better course would be to meet the alterations as they go on, and so aid in the process of absolute solidity. This can be done by using water from the reservoir to soak—not to saturate—the soil. This would increase the process of oxidization, the sinkage and shrinkage being met by applying loamy soil, which would be washed into any small cracks or crevices. Large gaps and slips could not occur under this course of treatment. Thus the material of the embankment would solidify gradually downwards upon the solid earth below and against the puddle-wall behind. The said puddle-wall is, to every visible appearance, a most solid and perfect work.

Examination

Examination of the whole earth embankment along the inside face of the dam shows that the changes mentioned have occurred most rapidly where the greater proportion of loose clay matter has been deposited, and where the westerly winds have had fullest opportunity for exerting their influences. This is just what might be expected. If all the bank facing the water had been of loamy earth no such rapid changes would have been likely to occur; and it might be worthy of consideration whether, where such masses of material have to be dealt with, it would not be a desirable course to have chemical analyses made, in order to have a knowledge of the changes which must occur when the stuff is moved and placed under different conditions from its natural state. Where clay has to be dealt with, so intricate and obscure is much of it in composition, that investigation of the kind seems to me a very necessary proceeding to ensure safety.

In order to meet the fretting or withering action upon the earthwork slope by the water in the reservoirs, when moved into wavelets by the winds, I would suggest that slabs of colonial hardwood—which does not float, being more dense or heavier than water—would answer the purposes of protecting the moving earth below. They would be fastened so as to lie upon, without pressing or shifting, the material under them; and as the stuff settled down solid the stone cubes could be laid in position, as being the very best material for the purpose.

I have now the pleasure of submitting the foregoing for your attention and consideration in such manner as you may consider most fitting, either in a private or public sense. I do not intend doing anything more in the matter. My desire has been to try and help to get at the cause of the troubles at Prospect Dam. The leisure of a brief holiday and the use of the apparatus in the Agricultural Department here have made the investigations possible and pleasant. I will be glad to give any further information in my power either to yourself or to any of the professional gentlemen concerned whom you may entrust with the same. I will be in Sydney during Wednesday, Friday, Saturday, and Sunday, January 2, 4–6. I leave for Port Macquarie, Monday.

I have, &c.,
ANGUS MACKAY, I.C.S.,
Inst. Agriculture, B.T.E.

The Under Secretary for Public Works to R. L. Mestayer, Esq.

My dear Sir, Department of Public Works, Sydney, 2 January, 1889.

I have to-day received from Mr. Gordon the notes of evidence taken from Messrs. Moline and Shand. Mr. Gordon says he gave a promise that the information should not be made public, and by direction of Mr. Sutherland I have written to Mr. Gordon asking him to obtain the permission of the witnesses to have their evidence printed and placed with the reports.

Mr. Sutherland desires me to say that he wishes all evidence taken to be made public, as he thinks it is of the utmost importance to expose everything to the public view with regard to the Prospect Dam.

Yours, &c.,
J. BARLING,
Under Secretary.

P.S.—The evidence is enclosed herewith.

G. Gordon, Esq., to The Under Secretary for Public Works.

Dear Sir, Colonial Chambers, 86, Collins-street West, Melbourne, 31 December, 1888.

I enclose evidence of Messrs. Moline and Shand. I thought it better to send the original, and I have kept a copy. The pencil notes are mine, as some of the evidence would not be quite intelligible to any one who did not hear it and the questions that were put.

Yours, &c.,
G. GORDON.

P.S.—I told all the witnesses connected with the works whom I examined that the information they gave was for my own use only, and not for publication.—G.G.

R. L. Mestayer, A.M.I.C.E. Geo. Gordon, Esq., M.I.C.E., 2/1/89. Register and place with other papers.—J.S., 7/1/89.

The Under Secretary for Public Works to G. Gordon, Esq.

Dear Sir, Department of Public Works, Sydney, 2 January, 1889.

I have to acknowledge the receipt of your letter of the 31st ultimo with the notes of evidence of Messrs. Moline and Shand. I also note your postcript, in which you state that you informed the witnesses that the evidence they gave was for your use only, and not for publication. With reference to this, Mr. Sutherland desires me to say that he wishes any evidence taken in connection with the subject of your inquiry made public, and he will thank you if you will have the goodness to obtain the permission of the witnesses to have this done in the present case.

I presume we shall have the pleasure of seeing you in Sydney again in the course of a few days. There are matters Mr. Sutherland will be glad to see you upon.

Yours, &c.,
J. BARLING.

D. C. M'Lachlan, Esq., to R. L. Mestayer, Esq.

Sir, Department of Public Works, Sydney, 2 January, 1889.

I am desired by the Secretary for Public Works to ask you to be good enough to call at this office at 11 o'clock to-morrow (Wednesday) morning, in reference to the Prospect Dam.

Yours, &c.,
D. C. M'LACHLAN.

The

The Under Secretary for Public Works to A. Mackay, Esq.

Sir, Department of Public Works, Sydney, 2 January, 1889.

I have the honor to acknowledge the receipt of your valuable and interesting letter of the 31st ultimo, in regard to the nature of the clay and soil used for forming the puddle-wall, and for making up the sloping embankments of the Prospect Dam, and to convey to you the thanks of the Secretary for Public Works.

I am desired to say that Mr. Sutherland will be glad to avail himself of your offer to give evidence on this important subject, and to ask you to be so good as to call at this office at 2 o'clock p.m. to-morrow (Wednesday), in reference thereto.

I have, &c.,
J. BARLING,
Under Secretary.

The Under Secretary for Public Works to J. A. Hogue, Esq., *Evening News* Office.

Dear Sir, Department of Public Works, Sydney, 3 January, 1889.

Mr. Sutherland desires me to acknowledge receipt of your letter of the 31st ultimo, in which, at his request, you gave the names of the witnesses whom you supposed had not been examined in regard to the Prospect Dam. I have only had an opportunity of seeing Mr. Mestayer to-day, and he has given me the enclosed memorandum with respect to the matter, from which you will see that your supposition that the *Evening News* witnesses had not been examined, is incorrect. With regard to Mr. Norton, every endeavour has been made to obtain his evidence, but as yet without result, as will be seen from the attached copies of correspondence that has taken place, but Mr. Sutherland hopes that the letter sent him yesterday will have the desired effect.

I can assure you that Mr. Sutherland is leaving no stone unturned in obtaining information on the subject, no matter from what source it is to be derived, and where witnesses object to give their evidence to either Mr. Mestayer or Mr. Gordon he is prepared to take it himself.

I am, &c.,
J. BARLING.

[*Enclosure.*]

Copy of Memorandum by Mr. Mestayer on letter from Mr. Hogue, of 31st December.

All the gentlemen mentioned were written to the same day that Mr. Hogue gave me their names, and they were asked to give evidence in the course of the three following days. Mr. Rutherford came as requested; Mr. Wearne was examined by us at Prospect the following day; Mr. Gipps was in Melbourne, but called and gave his evidence as soon as he came back; Mr. Ives replied to the letter stating he had no evidence to give; the Hon. J. Davies has not replied to the letter, and Mr. Norton has refused to give any evidence. Mr. Buckett's evidence was only taken yesterday owing to a misunderstanding about the name, this not being the name given me by Mr. Hogue.

Be seen that they are all examined.—J.S., 3/1/89. Resubmit Wednesday morning.—J.B., 3/1/89.

D. C. M'Lachlan, Esq., to R. L. Mestayer, Esq.

Dear Sir, Department of Public Works, Sydney, 4 January, 1889.

I am desired by the Secretary for Public Works to ask you to be good enough to call here to-morrow morning at 10 o'clock to meet Mr. Angus Mackay, of the Technical College, Sydney, who has arranged to be at the office at that time, in regard to the nature of the clay and soil used for forming the Prospect Dam.

Yours, &c.,
D. C. M'LACHLAN.

G. Gordon, Esq., to The Under Secretary for Public Works.

Dear Sir, Colonial Chambers, 86, Collins-street West, Melbourne, 4 January, 1889.

I have written to Messrs. Ryan, Moline, and Shand, asking their permission to have the evidence published. I have no doubt about their being quite willing. I have asked Mr. Ryan and Mr. Shand to inform you direct. I do not remember to have told the other witnesses whom I examined in company with Mr. Mestayer that the evidence was only for my own information.

I had not expected to be wanted so soon again in Sydney, and I have an engagement for next week in Gippsland—a water supply or irrigation scheme,—but I shall be glad to go over on my return. By that time Mr. Sutherland will have read my report, and if there is anything in it needing explanation I shall be glad to afford it. If the matters on which Mr. Sutherland wishes to see me refer to anything other than the dam will you kindly mention what they are, that I may be prepared.

Yours, &c.,
G. GORDON.

I wish to see Mr. Gordon chiefly about the dam, but when he is here will consult him about locking the Darling, concerning which we have further information. The time mentioned by Mr. Gordon will suit.—JOHN SUTHERLAND, 7/1/89. Write.—J.B., 7/1/89. Geo. Gordon, Esq., C.E., 8/1/89.

R. L. Mestayer, Esq., to G. Gordon, Esq., C.E.

Dear Sir, 4 January, 1889.

I forward you herein the results of two boreholes put down on sec. 18, behind the one put down when you were here. The movements have decreased lately, and I give below the daily record at sec. 44, from December 20th till yesterday.

Yours, &c.,
R. L. MESTAYER.

Minute

Minute by The Under Secretary for Public Works.

Subject :—Prospect Dam.

Department of Public Works, Sydney, 5 January, 1889.

It was suggested by Mr. Mestayer, M.I.C.E., before whom Mr. Angus Mackay, F.C.S., of the Technical College, Sydney, gave evidence to-day in regard to the nature of the clay and soil used for the formation of the Prospect Dam, respecting which he had submitted a report, that it was desirable Mr. Mackay should officially visit the dam for the purpose of taking samples of the material used in connection therewith, and making an analysis thereof. Mr. Mackay intimated that he could not be released from his engagements for a period of six weeks. Mr. Mestayer, however, expressed the opinion that, notwithstanding this lapse of time, it would be better to have the result of that gentleman's analysis in order that the investigation into the whole matter may be complete.

J.B., 8/1/89.

Appd.—J.S., 7/1/89. Write.—J.B., 8/1/89. Angus Mackay, Esq., F.C.S., 9/1/89. Seen. Resubmit on 16 Feb., 1889.—R.H., 12/1/89.

Extract from *Telegraph*, Saturday, 5th January, 1889.

The Prospect Reservoir.

The following report on the Prospect Dam, by Mr. W. A. Harper, A.M. Inst. C.E., was made at the request of Messrs. Want, Johnson, & Co. on September 20, after the first slip. Mr. Harper was asked to furnish an entirely independent report, he being hampered with no conditions whatever :—

"I do myself the honor to inform you that in accordance with your instructions I visited the works on Wednesday, September 6, with Mr. Chapman, to report on the present state of the embankment, and the following will give you my views on the character of the works :—

"First puddle-wall.—This work has been perfectly constructed of the finest clay throughout of the best quality in the district, and under the most rigid supervision. I have no hesitation in saying that (with the reservation that the best clays procurable are not of first-class description) the construction of the wall is such that no fears of its safety need ever be entertained, providing the bank which supports it remains intact. I examined portions of the wall now exposed, which show it to be a concreted mass of impervious clays so well laid and wrought that no pressure would cause the slighest percolation through it. It is homogeneous in density, and considerably exceeds the theoretical thickness required for a wall constructed of first-class materials, deposited on the most approved principles. With this fact laid down, viz., that the construction of the puddle-wall is perfect, it is surprising to find that in one portion of the bank the wall has subsided over 6 ft., and in order to understand the reason of this very serious depression one must direct his attention to other causes which have so disturbed the continuity of its mass in this one particular locality.

"Second embankment.—The outside mass is composed in all reservoir dams of any ordinary materials, in many cases entirely of surface loams ; in the case of the Prospect the material used is procured from large cuttings in the adjacent hills, and is the inferior or second-class earth of quite suitable character for the work. No slips or extraordinary subsidence occurs throughout its whole length ; in fact it remains, as it should, seeing the number of years it has taken to deposit, almost at its permanent level.

"The inside mass presents quite a different appearance ; it is cracked in many places for a chain in length, and in some cases a series of parallel cracks occur at the same place, clearly indicating a gradual subsidence of the lower layers since the admission of the water. This I do not consider of serious importance, for undoubtedly the whole of the lower layers, as the superincumbent mass becomes more saturated, will gradually consolidate, and in such a huge body of material it is not surprising that local surface disturbances may appear from time to time, becoming less frequent until the whole mass becomes charged with the maximum quantity of moisture it will absorb. At the same time I consider a properly-laid embankment where the deposition has extended over a number of years should not subside essentially after completion, if the material is suitable, laid in thin layers, thoroughly saturated when laid, and well consolidated by continuous wheeling and pulverising.

"At a point where the height of the dam is comparatively small, about a quarter of a mile from its northern end, a very serious disturbance has taken place. The whole inner face of the embankment (for a distance of about 300 ft.) has been violently projected into the reservoir, and also the whole of the inner portion of the bank at this point has slipped, and now bulges out at least 8 ft. beyond the line of the present water-level. This slip has caused the portion of the bank opposite it to subside at least 6 ft., and has so torn away the puddle-wall, which is still evidently in a semi-consolidated condition in its lower portions, that the wall itself has also subsided, with bank, some 6 ft. in the centre.

"The diagrams appended hereto illustrate the present condition of bank at this point. I consider this slip a very serious misfortune; I cannot see any special reason (in the meantime) why this particular spot should have given way ; and consider it quite as probable that any portion of the inner mass may act in a similar way ; in fact, the deeper portion of the bank should be more liable to slip at a lower level, on account of the greater weight it carries. The same conditions apply to the whole work, similar material, and the same process of laying along its whole length. The system of depositing the material in continuous layers prevents the accumulation of any particular class of earth in one place, and insures homogeneity in character over the whole surface.

"The problem to solve is, why this particular part of the bank should act in this manner while the balance remains, with the exception of the surface cracks before mentioned, in apparently a stable condition. I hold that there is no reason for the disturbance being peculiar to this locality, and must draw the conclusion that any part of the remainder may, at any time, while the process of saturation is proceeding, begin to act in a similar manner ; and without fearing any immediate danger to the structure on account of the superior nature of the puddled core, I consider the method being carried out of repairing the breach is most unjustifiable and dangerous. The first duty was undoubtedly to lower the water as much as possible, not necessarily below the outlet level, and carefully investigate the cause of the mishap by cutting a cross-sectional trench through the dam at the centre of the slip.

"This could have been done without much expense and carried down to the necessary level, and the line of slip carefully ascertained, to enable a reliable conjecture as to the cause being formed.

"The

"The work now being done I consider worse than useless, viz., the tipping of most expensive stones pell-mell over the projecting portion into the water—it may be literally termed throwing money into the sea; and in addition to its uselessness in preventing a continuation of the slip, I consider it the very best way to assist such depression by extending it further and sinking more rapidly. Had the stones been systematically deposited from the toe upwards, they would have assisted matters materially, but I doubt then even their efficacy in holding back a slipping bank. The cause of this depression and its line of fracture still remains unknown. The bank is still slipping, the subsidence being fully 9 inches during the twenty-four hours prior to my inspection, as clearly shown by the levels on the surface drains cut the day before.

"Time alone will prove how much further this subsidence may still extend. It is possible that the complete saturation of the mass may soon cause it to assume its permanent angle of repose; but this in no way undervalues the urgent necessity for at once determining the secret cause of this unnatural bulging out.

"One naturally directs his attention in attempting to conjecture the possible reasons of the fault to the class of materials employed and the work of the contractor. As to the latter, all doubts of bad workmanship may be at once set aside, for there is a permanent resident engineer-in-charge, with a full staff of assistant engineers and inspectors, so that each load of material deposited has been most rigidly supervised. The onus of construction is thus thrown entirely on the engineer-in-charge, who has undoubtedly adhered strictly to the instructions laid down in his specifications.

"As to the quality of the material, I have serious misgivings. It is an inferior loamy clay, subject, on account of its composition, to very great expansion and contraction, according to the quantity of moisture allowed to enter it.

"It is most unstable, and has no plasticity, becoming semi-liquid with the addition of a very small quantity of moisture, and porous when dry. I consider it one of the worst materials that could possibly be used in a bank, and, in my opinion, should have been protected from the possibility of absorbing too much moisture by a puddled lining of approved clay between it and the layer of broken metal on which the pitchers are laid. The cost of this layer would have been small, and I have used a puddle lining 18 inches thick to protect similar material, with the result that no water ever entered the main body of the bank.

"The metal layer and pitching is carried out in a most superior manner—better I have never seen. The stone is of first-class quality, and the pitchers are larger than I have ever seen used.

"A proper investigation at the point before-mentioned would probably at once prove beyond all doubt the agencies at work, and dispose of the unpleasant uncertainty existing as to the future of the structure. In addition, the original lines of the work might be still adhered to, the protuberance removed and restored to its original shape, and the everlasting eyesore dispensed with, which, under the present scheme of patching, will remain as a permanent stigma on the engineers of a work which, on account of its magnitude, would otherwise be classed as one of the great undertakings of modern engineering."

NOTE.—We are informed that 42 to 44 has slipped, as predicted by Mr. Harper, who indicates that the remainder may at any time, while the process of saturation is proceeding, begin to act in a similar manner.

Refer to Mr. Mestayer, who, I understand, will examine Mr. Harper.—J.B., 7/1/89.

G. Gordon, Esq., to The Under Secretary for Public Works.

Sir, Colonial Chambers, 86, Collins-street West, Melbourne, 8 January, 1889.

I have the honor to forward, under separate cover, sealed and addressed to the Honorable the Secretary for Public Works, my report on the Prospect Dam; also in separate cover, five plans to illustrate it and Appendices II and III to Report, being an abstract of the evidence. I had already prepared the greater part of this before I knew that the evidence was to be printed, and I intended it for the information of the Honorable the Minister, and not for publication. Although superseded by the evidence itself, it may yet be convenient.

Mr. Moline has no objection to his evidence being published.

I purpose, in accordance with your letter of the 2nd instant, to go to Sydney on my return from Gippsland, unless I hear from you to the contrary. Please telegraph.

I have, &c.,
G. GORDON.

Received this day and handed unopened to Mr. Sutherland.—J.B., 10/1/89. Specially submitted for instructions.—J.B., 10/1/89. I do not think it will be necessary now for Mr. Gordon to come to Sydney.—JOHN SUTHERLAND, 11/1/89. Telegraph to above effect.—J.B., 11/1/89. Telegram sent.—11/1/89. Put with papers.—J.B., 11/1/89.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 9 January, 1889.

I have just received the cutting from *Daily Telegraph* of 5th instant sent from your office. I saw this report of Mr. Harper's at the time, but did not think it called for any special action such as examining Mr. Harper as a witness, seeing that the report itself contains Mr. Harper's views very fully and clearly stated. If you still think, however, that it would be advisable to examine Mr. Harper, I will write and ask him to call on me as soon as possible.

I am, &c.,
R. L. MESTAYER.

I am so anxious to obtain information from any and every source which is open to me that I think the evidence of this gentleman should be obtained, as it is the only way to give it a proper bearing on the subject of Messrs. Gordon and Mestayer's inquiry and investigation.—JOHN SUTHERLAND, 9/1/89.

Write.—J.B., 9/1/89. R. L. Mestayer, Esq., M.I.C.E., 10/1/89. Put all the papers together.—J.B., 10/1/89.

The

The Under Secretary for Public Works to Angus Mackay, Esq., F.C.S.

Department of Public Works, Sydney, 9 January, 1889.

Sir,

With reference to your call at this office on the 5th instant, when you expressed your willingness to officially visit the Prospect Dam as soon as you could be released from your engagement, in order that you may take samples of the material used in connection with its formation, and make an analysis thereof, I am directed to inform you that the Secretary for Public Works will be glad if you will proceed to the dam as soon as you can make it convenient to do so, and furnish him with the result of your investigation.

I have, &c.,
J. BARLING,
Under Secretary.

The Under Secretary for Public Works to R. L. Mestayer, Esq., M.I.C.E.

Department of Public Works, Sydney, 10 January, 1889.

Sir,

With reference to your letter of the 9th instant, enclosing a report made by Mr. W. A. Harper, A.M.I.C.E., on the condition of the Prospect Dam, which appeared in the Sydney *Daily Telegraph* of the 5th instant, and inquiring whether that gentleman should be called to give evidence in connection with the inquiry now being conducted by Mr. Gordon and yourself, I have the honor to inform you that Mr. Secretary Sutherland is very anxious that every possible item of information in respect of the Prospect Dam procurable shall be obtained and considered by you when drawing up your report, and to request that you will be so good as to place yourself in communication with Mr. Harper accordingly.

I have, &c.,
J. BARLING,
Under Secretary.

R. L. Mestayer, Esq., to W. A. Harper, Esq.

11 January, 1889.

Dear Sir,

I have been desired by the Honorable the Secretary for Public Works to write and ask if you will be good enough to call here on Tuesday morning next, the 15th instant, at 10 o'clock, in order to give me any information you may have regarding the Prospect Reservoir.

Yours truly,
R. L. MESTAYER.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Beresford Chambers, 52, Castlereagh-street, Sydney, 11 January, 1889.

Sir,

I have the honor to forward herewith my report on the Prospect Dam. The estimate and other appendices will be forwarded to you to-morrow.

I have, &c.,
R. L. MESTAYER.

R. L. Mestayer, Esq., to R. H. Ryan, Esq.

Beresford Chambers, Castlereagh-street, Sydney, 12 January, 1889.

Dear Sir,

Re Prospect Embankment.

Please send me result of observations as to movements up to date; the latest I have is up to January 3rd. I could not get up last week as arranged; the Minister wished to have the reports in this week, and my time has been quite taken up with that, but I shall be up next week most probably, and bring the proofs of evidence to be signed.

Yours truly,
R. L. MESTAYER.

P.S.—What about results from the other sections I asked for at 16 and 20? I have not seen them yet, and if you can send them on Monday I shall be glad. They may necessitate an appendix to my report.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Beresford Chambers, 52, Castlereagh-street, Sydney, 14 January, 1889.

Sir,

Re Prospect Dam.

I have the honor to forward herewith the complete appendices referred to in my report on the above work, including the estimate (Appendix F), a copy of which was forwarded to the Honorable the Secretary for Public Works on Saturday morning.

I have, &c.,
R. L. MESTAYER.

Telegram from R. L. Mestayer to R. H. Ryan, Esq.

14 January, 1889.

WHAT is the reduced level of inlet to pipes supplying Sydney? If water in reservoir were lowered below this, could supply be continued, and how?

R. L. MESTAYER,
Beresford Chambers, 52, Castlereagh-st.

R.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Beresford Chambers, 52, Castlereagh-street, Sydney, 15 January, 1889.

Dear Sir, *Re* Prospect Dam.—Mr. W. A. Harper's evidence.

Mr. W. A. Harper is ill, and, for the present, confined to his bed. His brother called this morning and promised to let me know as soon as he was well enough to come to town, so that an appointment might be made, when he would attend and give any information in his power.

I am, &c.,

R. L. MESTAYER.

Submitted.—J.B., 15/1/89. Seen.—J.S.

Telegram from The Under Secretary for Public Works to Geo. Gordon, Esq.

Sydney, 18 January, 1889.

MINISTER desires you to come to Sydney immediately, if possible, to confer with Mr. Mestayer, *re* Prospect Dam.

J. BARLING,
Under Secretary Public Works.

The Government Geological Surveyor to The Minister for Mines.

Geological Survey Branch, Department of Mines,
Sydney, 16 January, 1889.

Sir,

In reference to the cause of the sinking of portions of the Prospect Dam, it may be desirable to point out that it is probable that the Wainamatta shale-beds upon which the dam has been constructed may have moved owing to "faults" in the strata.

There are numerous faults in the Wainamatta formation, as may be well seen in the railway-cuttings between Sydney and Penrith.

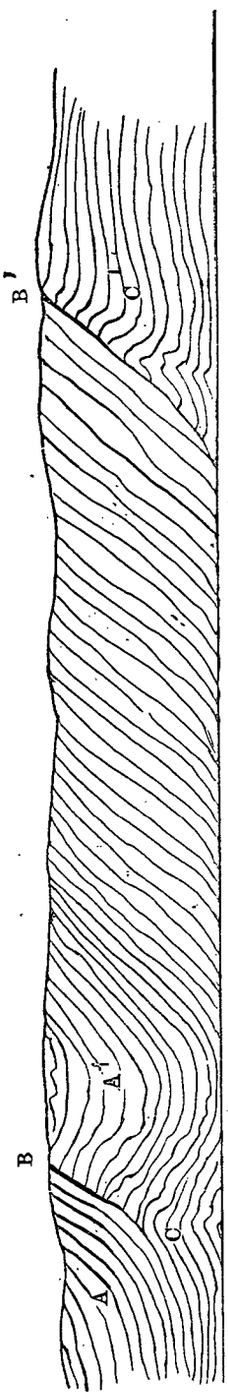
Should the dam happen to have been built upon one such as that of which I enclose a sketch section, which occurs near the Ashfield Railway Station, the present sinking would not be surprising.

In this section the beds A A,' owing to lateral pressure, have moved horizontally, and B B' upwards, upon the beds C C.'

A great pressure vertically upon the beds at A A,' might cause a compression and force them up at B B. The effect would show itself in waves or raised portions of the ground in front of the dam, and the remedy for further movement would be to heavily load these raised portions, and not to put more weight upon the dam itself, beyond what is necessary for its repair.

I have, &c.,

C. S. WILKINSON,
Geological Surveyor in Charge.



This might, perhaps, be sent to the Works Department for the information of the Minister.—H.W., 16/1/89. Submitted.—Approved, F.A., 17/1/89. The Under Secretary for Public Works, B.C., 18 Jan., 1889. Refer for the consideration of Messrs. Gordon and Mestayer.—J.B., 21/1/89.

R. L. Mestayer, Esq., to The Government Geological Surveyor.

Beresford Chambers, 52, Castlereagh-street,
Sydney, 22 January, 1889.

Dear Sir, *Re* Prospect Dam.

Your letter of the 16th inst. to the Under Secretary has been referred to me for consideration in connection with the instructions I have received to inquire fully into all matters in connection with the Prospect Reservoir.

If you could make it convenient to call here on Thursday morning, at any time after 10 a.m., I shall be glad to show you the information I have obtained, and you would be in a better position to judge whether the results accord with the suggestions you have made.

I am, &c.,

R. L. MESTAYER.

C. S. Wilkinson, Esq., to R. L. Mestayer, Esq., C.E.

Dear Sir, Department of Mines, N.S.W., 23 January, 1889.

I beg to thank you for your letter of this date. I will, if possible, call upon you shortly after 10 a.m. on Thursday (to-morrow).

I am, &c.,

C. S. WILKINSON.

Returned to the Under Secretary for Public Works. In accordance with request contained in my letter of 22nd January, Mr. Wilkinson called at my office, and I showed him the plans and sections of the embankment where disturbances had occurred, and gave him particulars of all the movements so far as they had been determined by the investigations made by myself and Mr. Gordon. This information satisfied Mr. Wilkinson that there was not evidence of any slip in the strata, and that the movements in the embankment could be accounted for without assuming any movement of the strata to have occurred.—R. L. MESTAYER, 23 March, 1889.

The

The Under Secretary for Public Works to R. L. Mestayer, Esq.

Sir, Public Works Department, Sydney, 23 January, 1889.

I am directed to inform you that a telegram has been received from Mr. Gordon, dated Melbourne, 22nd instant, stating that he was unable to undertake the overland journey, but that he intended to come by the "Orizaba," in order to confer with you in reference to the Prospect Dam.

I have, &c.,
J. BARLING,
Under Secretary.

Minute by The Under Secretary for Public Works.

Subject:—Analysis of Water from Prospect.

Department of Public Works, Sydney, 9 Jannary, 1889.

THE Minister would be greatly obliged if Mr. Hamlet would kindly cause an analysis to be made of the sample of water which is forwarded herewith. It has been taken from the foot of the embankment at Prospect, and is required in connection with evidence which has been taken in regard to the slip at that place.

The Government Analyst. J. BARLING.

The Government Analyst to The Medical Adviser to the Government.

Sir, Government Laboratory, Sydney, 16 January, 1889.

I have the honor to report that I have made a chemical analysis of the sample of water taken from the foot of the embankment of the Prospect Dam, on the 8th January, by Edwin Limond, in the presence of T. W. Holliman, of the Department of Public Works.

The sanitary-chemical analysis, which accompanies the present report, shows that the water is unfit for domestic purposes.

The water was found to contain 156 grains of solid matter per gallon, equivalent to 22¼ lb. per 1,000 gallons. This solid matter was found on analysis to have the following composition:—

Sodium chloride (common salt)	121·05 grains.
Silica...	1·05 „
Oxide of iron and alumina	0·70 „
Sulphuric acid	4·95 „
Lime	8·93 „
Magnesia	2·59 „
Loss on ignition = organic matter, carbon dioxide, and nitrogen oxide	17·18 „
	156·45 grains.

I have, &c.,
WILLIAM M. HAMLET, F.I.C., F.C.S.,
Government Analyst.

Analysis.

Government Laboratory, Sydney, 16 January, 1889.

ANALYSIS of a sample of water received from the Hon. the Minister for Public Works, 10/1/1889, labelled, "Samples taken from foot of embankment, Prospect Dam."

	Results expressed in— Grains per gallon.	Parts per 100,000.
Appearance in 2-foot tube	Clear on standing.	
Odour on heating to 100° Fah....	None.	
Chlorine as chlorides	73·5	105·0
Phosphoric acid in phosphate	trace.	
Nitrogen in nitrates and nitrites	0·19	0·25
Do equivalent in nitric acid	0·85	1·12
Do existing as free ammonia	0·0042	0·006
Organic nitrogen or albuminoid ammonia	0·56	0·08
Oxygen absorbed in fifteen minutes at 80° Fah.	.....	.....
Do do four hours do	0·28	0·40
Poisonous metals	None.	
Total solid residue dried at 220° Fah.	156·45	223·5

General observations on the character of the water:—Unfit for domestic use. For further particulars see report herewith.

WILLIAM M. HAMLET, F.I.C., F.C.S.,
Government Analyst.

R.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Beresford Chambers, 52, Castlereagh-street, Sydney, 24 January, 1889.

Re Prospect Dam—Analysis of water trickling from embankment.

Sir,

I beg to acknowledge the receipt of the above analysis, and your minute referring it to Mr. Gordon and myself for consideration. I will bring the matter under Mr. Gordon's notice as soon as he arrives. In the meantime, if any analysis of water taken direct from the reservoir has been made I should like to have it for comparison. If no such analysis has been taken, it would, I think, be advisable to have one made now, and the results attached to the one now sent.

I am, &c.,
R. L. MESTAYER.

Analysis.

Government Laboratory, Sydney, 3 February, 1888.

ANALYSIS of a sample of water received from Prospect Reservoir. Taken by R. H. Ryan, 14/1/88, 30/1/88. Labelled R. H. R., &c.

	Results expressed in— Grains per gallon.	Parts per 100,000.
Appearance in 2-ft. tube...	Bright and clear.	
Odour on heating to 100° Fah.	None.	
Chlorine as chlorides	2·4	3·42
Phosphoric acid in phosphates	None.	
Nitrogen in nitrates and nitrites	Minute trace.	
Do equivalent in nitric acid		
Do existing as free ammonia	·011	·016
Organic nitrogen, or "albuminoid ammonia"	·018	·026
Oxygen absorbed in 15 minutes at 80° Fah.	.....	.....
Do 4 hours do	·086	·124
Hardness in degrees, Clark's scale, before boiling	Not a hard water.	
Do do after do		
Poisonous metals...	None.	
Total solid residue, dried at 220° Fah....	6·53	9·34

Culture examination for pathogenic organisms—negative results. Moving organisms formed.
General observations on the character of the water. *See* Report.

WILLIAM M. HAMLET, F.C.S.,
Government Analyst.

SUPPLEMENTARY REPORTS.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Beresford Chambers, 52, Castlereagh-street, Sydney, 31 January, 1888.

Sir,

Re Prospect Dam.

I have the honor to forward, herein enclosed, my second report on the above work, detailing the works upon which Mr. Gordon and myself are agreed should be at once carried out.

I am, &c.,
R. L. MESTAYER.

R. L. Mestayer, Esq., to The Secretary for Public Works.

Beresford Chambers, 52, Castlereagh-street, Sydney, 30 January, 1889.

Sir,

Re Prospect Dam.

I have the honor to inform you that, in accordance with your instructions, I have conferred with Mr. Gordon, M. Inst. C.E., respecting our reports on the above work, and I now submit a statement of the various points upon which we agree as to the course which should be adopted to ensure the stability of the embankment, and also of the differences of opinions we hold as to the work which we consider advisable.

1. We agree that lowering the water in the reservoir below the level required to ensure an ample reserve to the city supply is out of the question, and that any measure to be adopted must be carried out whilst the water is at or about the reduced level of 180 feet.
2. We agree that an ultimate level of 195 feet is sufficient for the top of the puddle-wall, and that in restoring the wall where it has sunk it is unnecessary to bring it to a higher level than will be required to provide for the subsidence which may be expected to occur.
3. We agree as to the urgent necessity of maintaining the upper portion of the bank so far as to prevent the percolation of water into the interior, at whosesoever cost this may have to be done.
4. We agree as to the necessity of a thorough and systematic examination of the whole of the embankment, both above and below the water-level, and that trenches exposing the upper portion of the puddle-wall should be opened at every alternate transverse section in order to ascertain whether the wall is still moving at any portion of its length.

This work we consider of the utmost importance, and should be proceeded with immediately.

5. We agree that there is no immediate necessity to complete the pitching and the crest of the embankment; and that it will be advisable to terminate the present contract by mutual consent, if possible.
6. We agree that until all movements have ceased it is advisable not to raise the level of the water in the reservoir above that necessary to ensure an ample reserve for the city supply.
7. We consider that the apparent divergence of opinion as to the measures necessary to be taken between the first and second slips may, and probably will, disappear when the full extent of the movement has been accurately determined by the systematic examination recommended in paragraph 4. We agree that all movement at this point must be stopped by means of a rubble-stone mound deposited from boats or rafts, and that as movement is undoubtedly taking place between transverse sections 41 and 46 this portion should be put in hand immediately; but that it will not be necessary to extend this rubble mound between transverse sections 42 and 51, if the embankment is completely at rest.
8. We agree that the same course should be adopted to deal with any movement that may be detected in other portions of the embankment, except at the deeper part between transverse sections 15 and 25.
9. We agree that it will be unnecessary to take any steps to cover the oozing out of the white clay reported by the diver, if this action has ceased; if, however, further examination should prove that this is still continuing, and is not merely due to the surface action of the water in the reservoir, we consider it can be best dealt with by a deposit of screenings, as suggested by Mr. Gordon, in his first report.

The foregoing nine paragraphs cover almost the whole of the work described in our first report as being immediately required, the principal exception being the alteration of the water-face of the bank from its present slope of 3 to 1 to that of 4 to 1 proposed by Mr. Gordon.

This I do not agree with, as I consider that the work above described will of itself be sufficient to effectually arrest all movement, and that the water contained in the embankment—which is undoubtedly the present active cause of the disturbances—will gradually be diffused, and thus rendered inoperative.

Whether any further work will be necessary at the deep portion of the dam, viz., between transverse sections 15 and 25, can only be determined when the results of the examination recommended in paragraph 4 are known; should there be any doubt of the stability of the bank at this portion, I consider it could most easily be ensured by the method indicated in my first report, *i.e.*, by opening a trench between these sections and removing the water which will be met with; further borings will, however, be necessary to determine the best position of such trench. This would, in my opinion, be much less costly than the method proposed by Mr. Gordon, and equally effective.

The difference between our estimates is more apparent than real, and is due principally to the fact that Mr. Gordon's estimate provided for the work that he considers *may be found to be required* when the complete examination of the bank has been made, whereas I have included only such work as I considered *was proved to be necessary* by the movements that have occurred and by the examination that we have already made.

After a careful reconsideration of the subject, I still consider that about £6,000 will be found sufficient to remedy the evils occasioned by the disturbances which have occurred, and that the systematic examination of the bank, which we have recommended, will prove that no further movements other than natural subsidence will have to be provided against.

I have, &c.,
R. L. MESTAYER,
M. Inst. C.E.

R. L. Mestayer, Esq., to The Secretary for Public Works.

Beresford Chambers, 52, Castlereagh-street, Sydney, 31 January, 1889.

Sir, *Re* Prospect Dam.

I should like to add to the report I had the honor to forward to you this morning that in restoring the puddle-wall the puddle should be worked in a pug-mill, and not *in situ*, as provided in specification, as I consider it a matter of importance to prevent access of any water to the embankment more than is absolutely necessary to the completion of the work.

I have, &c.,
R. L. MESTAYER.

Does Mr. Gordon concur.—J.B., 1/2/89. [Urgent.] I do not think pugging is at all essential, as puddle can be worked quite well without it, and without excess of water, but I have no objection to the pugging, if the proper precautions against an excess of water are taken with it; such excess is just as probable in pugging as in working the puddle by hand. Probably pugging would be cheaper if a pug-mill is on hand.—G. GORDON, 2/2/89.

G. Gordon, Esq., to The Secretary for Public Works.

Sir, Sydney, 30 January, 1889.

In compliance with the request conveyed to me by Mr. Barling's telegram of the 18th instant, I have conferred with Mr. Mestayer on the subject of our respective reports on the Prospect Dam, and I have now the honor to state that Mr. Mestayer and I are agreed on the following points, viz. :—

(*a*) That the emptying of the reservoir is out of the question.

(*b*) That the puddle-wall should be continually kept up to full height, and that the ultimate height need not exceed R.L. 195.

(*c*) The necessity of the maintenance of the crest of the dam only so far as to prevent the accumulation of water within it, no matter at whose expense this may have to be done.

(*d*) The necessity of a thorough examination of the bank from end to end, in the manner recommended in paragraph 32 of my report, and that this should be begun immediately, and continued without interruption.

(*e*) That there is no immediate necessity for finishing the pitching and the crest of the dam, and that it is desirable that the present contract should be terminated by mutual agreement.

(*f*) That the water should be allowed to rise in the reservoir, but only to such a level as will give an undoubtedly sufficient supply to Sydney until the repairs have been completed below H.W.L.

2. We think that an apparent difference of opinion as to the measures recommended in my report to be taken between sections 35 and 51 will disappear when the exact extent of the movement of the dam shall have been ascertained, for we are quite agreed that it is absolutely necessary to arrest any forward movement, by means of a stone mound deposited from barges, wherever and as soon as any such movement is detected. We both think this work should begin at once from section 41 to 46. While Mr. Mestayer hopes that nothing will need to be done between 46 and 51, or to the east of 41, I am less sanguine, and I provide for the whole length from 35 to 51 being similarly treated; but I shall be happy to agree with Mr. Mestayer on this point also, if the examination mentioned above should show that there is no forward movement of the puddle wall or inner slope at those parts of the dam.

3. In the same way Mr. Mestayer has reckoned nothing for the treatment of the slope where the oozing out of the white clay showed itself, believing this to be only a temporary symptom. Should this prove to be the case, and should there be no movement of slope or of puddle wall traceable above L.W., as there seems at present to be none below that level, I would agree that nothing need be done at that place, but as there is undoubtedly a movement in the neighbourhood, I can hardly hope that the work I proposed between sections 5 and 35 (Estimate No. 2) can be dispensed with for the whole distance.

4. I am still of opinion that a flattening of the slope above L.W. to 4 to 1 is necessary wherever there is any tendency to slip, but, as stated in paragraph 36 of my report, nothing definite can be said as to the exact course to be taken with the high part of the dam, or the expense likely to be incurred, until after a thorough examination on the lines laid down in paragraph 32 of my report, because the exact nature of the slight movement that has taken place in that part is not yet ascertained.

5. Mr. Mestayer and I are both very strongly of opinion that the examination should be begun without any delay; and also that the repairs near 44 should be carried out as rapidly as possible.

I have, &c.,
G. GORDON,
M. Inst. C.E.

R. L. Mestayer, Esq., to R. Shand, Esq.

Beresford Chambers, 52, Castlereagh-street, 6 February, 1889.

Dear Sir, *Re* Prospect Dam.

In the *Daily Telegraph* of the 2nd instant, in an article on the Prospect Dam, two gentlemen are referred to as capable of giving valuable evidence in this inquiry. I have discussed the matter with the Under Secretary for Public Works, who is of opinion that, as the inquiry is not yet closed, any further evidence likely to be of service should be taken, and, if necessary, dealt with in an Appendix to the Reports. If you will kindly inform me where Mr. Dunn—one of the gentlemen referred to—can be communicated with, I will arrange to take his evidence at the earliest possible date. Should there be anyone else whose evidence you would wish to be taken, if you will let me have their names, I will communicate with them at once.

I am, &c.,
R. L. MESTAYER.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Beresford Chambers, 52, Castlereagh-street, Sydney, 6 February, 1889.

Dear Sir, *Re* Prospect Dam.

In accordance with your suggestions made this morning at our conversation respecting the articles in last Saturday's *Telegraph*, I have written to Mr. F. A. Franklin, and asked him to call here to-morrow morning; also to Mr. Shand for Mr. Dunn's address.

I am, &c.,
R. L. MESTAYER.

R. L. Mestayer, Esq., to F. A. Franklin, Esq., C.E.

Beresford Chambers, 52, Castlereagh-street, Sydney, 6 February, 1889.

Dear Sir, *Re* Prospect Dam.

The author of an article in the *Daily Telegraph* mentioned you as being in a position to give evidence of importance in the inquiry being held *re* the above work.

I was previously unaware that you had been in any way connected with the work, or I would have taken an earlier opportunity of asking you for any information you can afford on the subject.

I discussed the matter with the Under Secretary for Works this morning, and he is of opinion that, as the inquiry has not yet terminated, any information likely to be of service should be at once obtained, and could, if necessary, be dealt with as a Supplementary Report.

If it will be convenient for you to call at my office to-morrow morning between 10 and 12·30, or in the afternoon between 3 and 4, to give me any information you may have respecting the work, I shall be much obliged. Should these hours not be convenient for you, kindly let me know what times will suit you best.

I am, &c.,
R. L. MESTAYER.

F. A. Franklin, Esq., C.E., to R. L. Mestayer, Esq., C.E.

Re Prospect Dam.

Sunny Corner, 9 February, 1889.

Dear Sir,

Yours of the 6th instant reached me here this morning. It is so well known to the authorities I have been connected with the Prospect Dam works on the contractor's behalf that I am at a loss to understand why my name was not submitted to you at the outset of the inquiry.

I will call upon you upon my return to Sydney.

I am, &c.,

FREDK. A. FRANKLIN.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Re Prospect Dam Enquiry—Analysis of Water flowing from drain at foot of embankment.

22 February, 1889.

Sir,

I have carefully compared the analysis of this water with the analysis of the water taken from the reservoir in January, 1888.

The comparison of the analyses, however, taken alone, does not afford any information of value to determine whether the water is due to a leak, a spring under the embankment, or to drainage from the bank.

The character and composition of the water is totally different from that of the water in the reservoir; but if the latter could escape through a crack in the puddle-wall it, would, on issuing from the rear of the embankment, have a very different composition from that which it possessed when in the reservoir, owing to the soluble salts in the soil through which it would have passed.

If analyses only are taken into account therefore, it would be unsafe to conclude that this water did not come from the reservoir.

To obtain definite data sufficient to enable one to decide positively the origin of this water, it would be necessary to determine accurately:—

1. The soluble matter which would be dissolved by water passing through the soils of which the embankment is composed;
2. The analysis of subsoil water at this point in addition to that of the effluent, and of the reservoir water;
3. The daily flow from the drain, as compared with that of the adjacent drains, and the effects of variations in the weather upon the flow;
4. The temperature of the effluent at this and the adjacent drains, and of the water in the reservoir;
5. The effect of the rise or fall of the water in the reservoir upon the flow from the drain.

I do not consider that there is the remotest possibility of this water being due to a leak, and in that opinion Mr. Gordon fully concurs.

It may be due to a spring, as when the dam was commenced it was found that the gravel bed underlying this portion of the embankment contained a large amount of water, and at a point on the flat two or three hundred yards below the dam where an outcrop of the gravel bed occurs, water has regularly been noticed. Mr. Dunn, the Contractor's engineer, has roughly gauged the flow from this drain, and has found it to amount to about 700 or 800 gallons a day, and his latest measurements indicate less than those taken first. This is very strong proof that it is no leak, as in that case the flow would unquestionably have increased instead of diminished.

Seeing that this drain is cut in the deepest portion of the embankment, it is quite possible that the water may be due solely to the rainfall during construction, and that which has fallen since the outer slope has been completed; but supposing that subsequent examination proves that this water is due to a spring under the embankment, no apprehension need exist as to the effect of a spring in this position, especially when the discharge is so small, as in this case. I may instance the Hope Valley Reservoir, in Adelaide, in proof of this: there are several springs under the embankment, which is about 60 feet high at the deepest part, and at one time the whole of the ground at the toe of the embankment was saturated with the water from these springs. By sinking drainage wells at various points, and connecting them by open jointed earthenware pipes, the water was drained to one central point, and carried away in a 12-inch pipe: the flow from this pipe amounts to several thousand gallons daily, but the embankment is in no respect injured, nor is the stability of the foundation in the slightest degree impaired. Mr. Dunn, in his evidence, states positively that this water is always perfectly clear, and this shows that it is not affecting the embankment at all.

I have, &c.,

R. L. MESTAYER.

Mr. District Court Judge Murray to The Secretary for Public Works.

Mittagong, 22 February, 1889.

Sir,

Some weeks ago I wrote a letter from Grafton for insertion in the *Sydney Morning Herald*, touching a question of great public interest. I could never find it in print; probably—almost certainly—it never was published. May I take the liberty of writing to you on the subject, as it is just possible that some good may come out of the suggestion which it has struck me to make? It is this: I notice that the chemical or mineralogical aspect of the Prospect Dam difficulty does not appear to have been gone into by your Department. Not pretending to be in any way an expert, but having some small superficial knowledge of the subject, I am strongly of opinion that the slimy nature of the clay, which has apparently caused the difficulty, is due to its containing a soluble salt, *i.e.*, carbonate of iron.

It is a matter of common observation that the white clays resulting from the decomposition of the Wianamatta shales generally turn red on exposure to the air. This change is caused by the decomposing of the carbonate of iron—a colourless salt—contained in the clay; the result is red oxide of iron. This oxide is almost absolutely insoluble. Consequently it may be expected that a clay which, when it contains the soluble carbonate, is easily made pasty and slimy ("slurry," I believe, is the term used by navvies) by the action of water, will, when the insoluble red oxide is substituted for the carbonate, become stiff and tenacious, suitable for the body of a dam.

Supposing

Supposing I am correct, the instability of the water face of the dam is due to the presence of layers or masses of this unripe material, that required a long exposure to convert it into what it ought to have been before being used—what remedy should be adopted? As to this I speak with very great diffidence; the practical difficulty may be too great. But, theoretically, there is one way of quickly causing the required change. This is by the introduction of a solution of lime. Lime at once decomposes carbonate of iron—the result being oxide of iron and carbonate of lime—the latter salt, of course, being almost insoluble. Whether by the judicious cutting of longitudinal trenches in the dam, and introduction of lime (to be covered, so as to prevent carbonation by the air), the trenches being taken down to the plain of percolation, lime water might be induced to work through the clay.

The depth of covering over the faulty clays will probably prevent the required change from taking place for a quite indefinite time unless something is done to assist the chemical action; it is therefore well worth going into this question. I would suggest the consulting of a thoroughly good chemist, such as my old friend, Mr. Charles Watt. At any rate, the chemical aspect of this important matter should not be ignored. Perhaps all I have said has been already considered.

Yours, &c.,
C. E. R. MURRAY,
D.C. Judge.

If I mistake not this aspect of the case has been fully considered in Mr. Mackay's report.—J.B., 27/2/89. Mr. Mestayer.

R. L. Mestayer, Esq., to G. Gordon, Esq.

Beresford Chambers, 52, Castlereagh-street, Sydney, 23 February, 1889.

Dear Sir, *Re* Prospect Dam.

I enclose copy of additional evidence taken on Thursday from Mr. Dunn, the present engineer to the contractors, and Mr. Rothery, whose name was mentioned by Mr. Limond as able to corroborate his absurd statements about the tidal influences. The Government have completed arrangements to take the work over, and are building a couple of boats for the stone; trenches have been opened up every 200 feet, but regular observations have not yet been made.

Believe me, &c.,
R. L. MESTAYER.

G. Gordon, Esq., to R. L. Mestayer, Esq.

Colonial Chambers, 86, Collins-street West, Melbourne, 25 February, 1889.

Dear Sir, Prospect Dam.

I have received your letter of the 23rd with some additional evidence. I should like to ask Mr. Ryan and Mr. Davis if they can say anything about the peeling of the rock mentioned in No. 579 to 588. Did Mr. Dunn say how they knew the bottom had flaked up when it had been covered in for two or three days? Did the puddle rise in the trench; if so, what depth of puddle was there in it, and what was the nature of the rock which flaked up? Did Mr. Dunn take the level, as well as the position horizontally, of the pegs which he says *moved and went back again?* Can he give the actual measurements of the pegs that have moved two or three feet? Was the line of the pitching set out with a theodolite from the solid (622), or was it measured from the centre line of the bank? Was the alleged movement entirely horizontal, or was there any slipping down the slope at the same time? Did he report the discrepancy he found at 15, 18, 22, and other places to the contractors? Did he mention it to the inspectors? What did he do about it? Are you taking any more evidence?

Yours, &c.,
G. GORDON.

R. L. Mestayer, Esq., to R. H. Ryan, Esq.

Beresford Chambers, 52, Castlereagh-street, Sydney, 27 February, 1889.

Dear Sir, *Re* Prospect Dam.

When Mr. Dunn was examined by me last week he mentioned that when the puddle was being put in the trench between pegs 71 and 72, part of it had to be taken up again because the bottom peeled up; that when the bottom of the trench was prepared for the puddle it appeared to be perfectly sound, but after the puddle had been on it for two or three days the bottom peeled up. Mr. Dunn said that after about three feet of puddle had been put on they had to stop for some reason, and it was when resuming work that this peeling of the bottom was noticed. In consequence of this he said a length of about 60 feet was taken up and all the unsound rock removed. Did you know of this; if not, please ask Mr. Jacob and Mr. Davies to let me know if they knew of it, or if they knew of anything of the sort occurring at any other part of the puddle trench.

I have wired you to day asking you to tell Mr. Dunn I should be glad if he could call at my office; I did not send to him direct as I did not know whether he was still on the works.

Yours, &c.,
R. L. MESTAYER,

Telegram

Telegram from R. L. Mestayer, Esq., to R. H. Ryan, Esq.

Sydney, 27 February, 1889.

If Mr. Dunn is still at Prospect, please ask him if he can call at my office one morning this week, between 10 and 1. If he has left please send me his address.

R. L. MESTAYER.

R. H. Ryan, Resident Engineer, Prospect Reservoir Works, Prospect.

R. L. Mestayer, Esq., to G. Gordon, Esq.

Beresford Chambers, 52 Castlereagh-street, Sydney, 28 February, 1889.

Dear Sir, *Re* Prospect Dam.

I have received your letter of the 25th instant, and have asked Mr. Dunn to call at my office; when he does so I will ask him for the particulars referred to by you. There was only about 2 feet of puddle in the greater part of the trench, where the bottom had flaked up, after this had been put in the work at that point was stopped for a day or two, and on resuming work the contractors noticed that the puddle had lifted at the end; the bottom of the trench was found to have flaked up for a total length of about 60 feet.

I forward you herewith copy of Mr. Harper's evidence. The only witness remaining to be examined is Mr. Franklin, who was mentioned by the writer of the article in the *Daily Telegraph*, as having been connected with the work as consulting engineer to the contractors. I have had a letter from Mr. Franklin at Sunny Corner, and he will call here as soon as he returns to town.

Yours, &c.,

R. L. MESTAYER.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Beresford Chambers, 52, Castlereagh-street, Sydney, 28 February, 1889.

Sir, *Re* Prospect Dam.

I have not been able to take Mr. Franklin's evidence, owing to his absence from town. I have sent to his office this morning again and hear that he is expected back on Saturday.

Do you propose to have the supplementary reports sent in by Mr. Gordon and myself printed with the other reports, evidence, and correspondence? If so, will you let me have copies of them to arrange for the printer.

There were several errors in the printed copies of the original reports, but the printers decline to correct and take fresh proofs until they have the whole of the revises. These I have now obtained.

I am, &c.,

R. L. MESTAYER.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Beresford Chambers, 52, Castlereagh-street, Sydney, 1 March, 1889.

Sir, *Re* Prospect Dam—Mr. Murray's Letter.

I have the honor to acknowledge receipt of your minute, dated 27th ultimo, with Mr. Murray's letter respecting the probable effect of the decomposition of the clays composing the embankment of the Prospect Reservoir. Mr. Mackay dealt with a portion of the probabilities of the effect of the decomposition of these clays, but his argument was quite different from Mr. Murray's, and before dealing with this latter letter I should be glad to have a copy of the analyses of the clays which Mr. Mackay was directed to make.

I understood from Mr. Mackay about three weeks ago that the analyses were nearly finished, and you will probably have received them by now. If not, I would suggest that Mr. Mackay should be asked to complete them at once and let you have the results this week.

I have, &c.,

R. L. MESTAYER.

A. Mackay, Esq., to The Under Secretary for Public Works.

Technical College, Sydney, 28 February, 1889.

Sir, *Re* Prospect Dam.

In response to request conveyed in your communication of January 9th, I proceeded to the Prospect Reservoir in order to get specimens of the clay and other material of which the Dam is constructed.

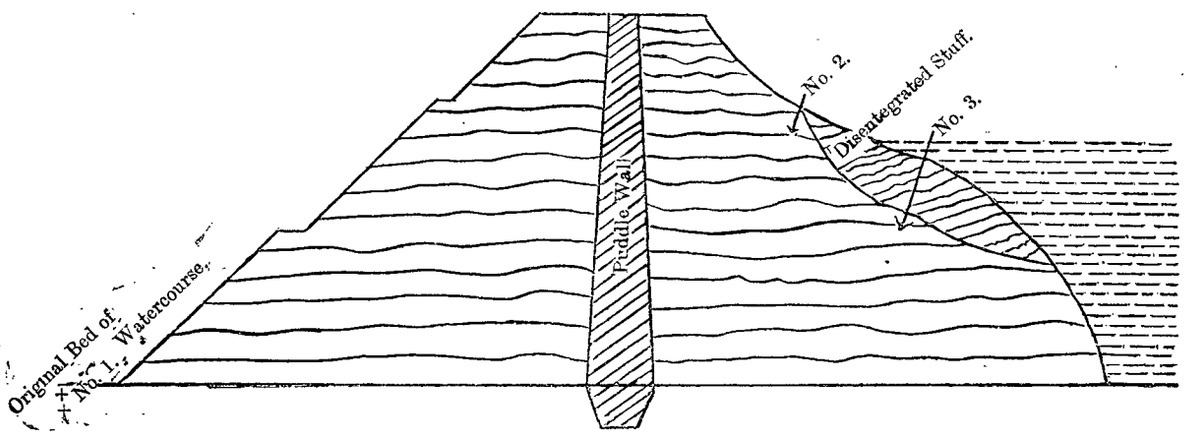
The Engineer in Charge, Mr. Ryan, promptly placed the necessary facilities at my disposal, and by means of auger rods (bores having been put down in parts of the work where the process of disintegration is going on, and again where the stuff has "slipped" or moved forward by gravitation from its original position in the bank) I got the material dealt with in the analyses as Nos. 2 and 3.

The No. 1 material is the raw unworked clay taken from the bed of the water shed, from which, as I am informed, was got the bulk of the clay for forming the puddle wall, and a large proportion of the stuff used in the protecting embankment which faces the Reservior, and which is now in contact with the water.

The No. 4 is the loamy earth which covers and faces the Prospect Quarry, and is of the type of which is formed that portion of the embankment facing the water which has given the least, if any, trouble. This latter material is of volcanic origin; it is true, thoroughly oxidised earth that is not likely to move or separate were it placed in masses of any conceivable size. It affords all the properties which should make perfect, reliable material for an earth embankment formed on correct lines, and which has to resist disturbing atmospheric effects, or from being in contact with, or possibly saturated with, water. This latter material does not alter—in a mechanical sense—on exposure to the weather, air, or water, and is thus the very opposite of the clay material of No. 1.

The

The following sketch will show from where Nos. 1, 2, and 3 were taken:—



In order to get at the real character of the substances in operation they have been tested by mechanical and chemical analysis, by microscopic examination, by weight, and specific gravity, with the following result:—

No. 1. Mechanical analysis of clay matter from the Wainamatta shale series—already described in a former report—yellowish-white in appearance, as taken from the natural bed, where it lies unaltered by air exposure. It weighs 165 lb. per cubic foot; when dry, 143¾ lb. per cubic foot. It yields 31 per cent. of very fine sandy matter which, under the microscope, appears as rounded grains of quartz sand, white in colour, and which weighs 170 lb. per cubic foot. 69 per cent. of the whole is very fine silicate of alumina plastic, and which, for ordinary purposes, is true clay matter of very fine quality. For making puddle it is not easy to find anything better.

Chemical analysis shows:—

	Per cent.
Moisture of combination and organic matter (the latter fractional)	9·7
Sandy and dry matter, insoluble in strong acid	86·755
Alumina and iron	2·37
Sulphuric acid	0·11
Lime	0·22
Magnesia	0·12
Undetermined matter (alkaline)	0·725
	100·000

This material, owing to its close density, the weight of other clays over it, and the enormous proportion of fine clay matter present in its composition, would remain unaltered for all time in its natural bed, but, when moved and exposed to the air and the changes of contraction and expansion, arising from drying winds and wet weather, it alters in a remarkable manner, as we see from the next analysis of the stuff (No. 2) taken from the inner face of the embankment where the "slip" had occurred, and from below the water level in the reservoir.

No. 2. Plastic clay-like material, showing reddish veins and streaks. Weight, 172 lb. per cubic foot; when dry, 151 lb. Masses of particles of hard oxide of iron are visible under the microscope. Oxidation, or separation of the sandy from the fine clay matter is going on rapidly in this material. 14 per cent. of sandy matter, separates freely; the remainder, 86 per cent., is coarse clay, coloured by the oxidised iron, and is still undergoing separation.

Chemical analysis shows:—

	Per cent.
Moisture of combination and organic matter	9·31
Sandy and clay matter, insoluble in strong acid	83·257
Alumina and iron (peroxide)	5·857
Sulphuric acid	0·11
Lime	0·22
Magnesia	0·095
Undetermined matter (alkaline mostly)	1·151
	100·

That a great change has taken place in this material, in comparison with the raw stuff from the undisturbed bed below, is very evident. The increase of weight and presence of nearly 6 per cent. of alumina, and oxidised iron, show what has been going on, and what must go on till the oxidation is complete.

No. 3. Matter got from below the level of the water in the reservoir, and outside of the original slope of the embankment.

It is, in reality, part of the stuff that has "slipped," or moved forward, because of the chemical changes brought about by contact with the water in the reservoir, which movement is increased by the pressure of heavy material above.

As taken from the boring tool, it weighs 120 lb. per cubic foot; when dry 93 lb.

Further separation gave 47 per cent. of very fine clay matter, weighing 70 lb. per cubic foot—which is, but slightly heavier than water. This stuff really floats in water for several days before it settles.

It

It seems very likely that if further tests are applied, and the matter that has moved furthest into the water can be reached, it will be found to be still lighter; indeed, that the mass there is but very little heavier than water, and therefore, most difficult stuff to retain in position in the presence of water in a state of movement—as the case is in the reservoir at Prospect. Under the microscope, it is seen to be a mass of very fine aluminous matter, with but little sandy or silicious stuff.

Chemical analysis shows:—

	Per cent.
Moisture of combination and organic matter	14·50
Clay and sandy matter, insoluble in strong acid	75·10
Alumina and iron	10·00
Traces only of sulphuric acid and magnesia. The lime has all disappeared ...	.....
Undetermined matter	0·40
	100·

No. 4. Earth from the surface embankment of bluestone quarry, from which broken metal and cubes are got for facing the inside embankment of the reservoir.

This is very decided volcanic material, and which shows the process of oxidation still going on very rapidly in the rock. In the soil the change is practically completed, and hence, that part of the embankment made up largely of stuff of this kind, is not influenced by the weather changes or contact with the water.

Mechanical analysis gives 48 per cent. of very fine silicious matter, which the microscope discovers to be coated with oxidised iron. The remainder is fine aluminous earth. As gathered during a dry day, the earth weighs 119 lb. per cubic foot. By drying at an even temperature of 212°, 25 lb. of water per cubic foot of soil is evaporated.

Chemical analysis shows:—

	Per cent.
Organic matter and combined water	22·50
Sandy matter	23·80
Alumina and iron	47·00
Lime	·60
Magnesia	Traces.
Chlorine = Salt	·90
Potash...	·20
Phosphoric acid and loss	4·75
	100·

Several minute tests were applied to this soil, as also to the others, in order to get at any changes likely to occur by saturation with water. The only observable change in No. 4 was that it gave off distinct traces of chloride, sodium (salt), and magnesia, which affected the water and made it sweetish.

The violent changes observable in connection with Nos. 1, 2, and 3, and which are referred to fully in the former report, I had the honor of submitting to your Department, do not affect this earth (No. 4.) Hence my reasons for recommending it and other earths in which oxidation has been completed for the formation of such works as those at Prospect, where in process of time the earth facing the water must become saturated.

It will be seen that, when tested closely, the driest of the clays (No. 2), and which in general observation is supposed to be dry, actually contains 21 lb. of water per cubic foot.

I think it will be seen by the foregoing analyses that the cause of disturbance in the embankment is due to the character of, and the consequent oxidation of the large masses of clay matter (No. 1) lodged there. When saturated, the heavier portions of the mass separate rapidly and gravitate downward. In the face of any movement in the mass, which may arise from wind, storms, and agitation of the water of the reservoir, the movement must be very rapid, and where there is pressure above the mass, either of stone, earth, or lodgments of rain-water, the change will be accellerated, and accounts in full, as it appears to me, for the changes that are going on in the work referred to, and which may have the effect of loosening the puddlewall behind, by the removal of its support.

The state of No. 3 proves further that the lighter portions of the material have been pressed, or floated, outward in large masses, thus tending to still further remove the support the embankment was erected to give.

I can but reiterate the suggestion made after the first investigations, and submitted in the former report, that, as oxidation of this huge mass of matter cannot now be prevented, the better course is to humour it, and to encourage the whole mass to settle in natural strata or layers. Oxidation of the character and dimensions mentioned may be controlled, it cannot be stopped. No human agency can do it; but much mischief may be done by attempting to force this natural manifestation of nature.

In conclusion, I would again suggest the desirability of having chemical examination and analyses made of clay and other materials that have to be moved in masses, in order to make those in charge of the works acquainted with the changes which must take place when such matter is moved and exposed to the influences of the weather under conditions which differ essentially from that of their natural state.

I have, &c.,
ANGUS MACKAY, F.C.S.

R. H. Ryan, Esq., to R. L. Mestayer, Esq.

Department of Public Works, Harbours and Rivers Branch,
Prospect, 1 March, 1889.

Dear Sir,

I have your letter *re* Mr. Dunn's examination. In sinking the trench near the extreme south-western end, it was found necessary to get down considerably deeper than anticipated, the clay having been placed on the bottom close to where the drop commenced, the latter being exposed to the action of the atmosphere for some considerable time, lifted in the ordinary way, and in removing it subsequently, it was found that the lift extended for a distance of 7½ feet (about) under the clay, which necessitated the temporary removal of the latter for that length, and the taking up of the unsound bottom.

You,

You, of course, know that the puddle-wall for its entire length was founded on the dry close blue shale, and that it was one of the best bottoms that could be got, goes without speaking, provided that it was covered immediately after it was finished and ready for use. This was invariably done; for, as soon as possible after a section of the trench was completed, it was covered up immediately after with the clay, as it would not bear exposure for any time, and would lift in parts, more especially the centre, where the channel was cut.

Anyone with a practical experience of this work and in this material, could easily understand how, in removing the unsound slope, which was exposed for some time, it would be possible for a small portion of the shale bottom under the clay, the latter being of little depth to get injured, and therefore, and quite properly, it was followed up and removed. This is as nearly as possible what happened. I may mention that all through, from the commencement to the finish, I have myself, accompanied by the inspectors, examined and sounded with a pick every foot of the trench-bottom immediately before the puddle-wall was started.

Very truly yours,
R. H. RYAN.

R. H. Ryan, Esq., to R. L. Mestayer, Esq.

Department of Public Works, Harbours and Rivers Branch,

Dear Sir, Prospect, 2 March, 1889.

I think it may be necessary, from the tone of the evidence given by Mr. Dunn, and mentioned to me in your letter of the 27th ultimo, that myself and my assistants and inspectors would require to be examined again.

Yours, &c.,
R. H. RYAN.

R. L. Mestayer, Esq., to W. E. Dunn, Esq.

Beresford Chambers, 52, Castlereagh-street, Sydney, 2 March, 1889.

Dear Sir, *Re* Prospect Dam.

I understood from Mr. Ryan that you would be at my office to-day between 10 and 1 o'clock, and I remained in on purpose. Please let me know when you will be here. I have had a letter from Mr. Gordon, who has asked me for some further information from you.

Yours, &c.,
R. L. MESTAYER.

R. L. Mestayer, Esq., to G. Gordon, Esq.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 2 March, 1889.

Enclosed I forward you copies of a letter sent to the Secretary for Public Works by Mr. Murray, District Court Judge at Mittagong, which Mr. Barling sent to me yesterday; and also the analyses of soils from Prospect, made by Mr. Mackay.

I have asked Mr. Ryan about the peeling of the trench bottom, and he says that although the bottom was hard, dry, and apparently quite free from flaws of any description, if it were left exposed to the air for a few days after being prepared for the puddle, the surface would lift, and that this did occur as mentioned by Mr. Dunn; but Mr. Ryan gives 7 or 8 feet as the length of the puddle that was moved. The whole of the bottom was hard shale, a material which we know is very readily affected by exposure to air.

I do not think that this would have any effect on the stability of the dam, as even if the unsound piece had not been discovered the weight of the puddle above it would have kept it in place, and as no water was met with, there was nothing to injure the puddle, even supposing that the disintegration of the shale that had peeled had proceeded so far as to reduce it to powder. Mr. Dunn was to have called here this morning to see me respecting his evidence, but has not yet come. When he does, I will ask him the questions raised by you in your letter of the 25th ultimo.

Yours, &c.,
R. L. MESTAYER.

W. E. Dunn, Esq., to R. L. Mestayer, Esq.

Dear Sir, Prospect Reservoir, 4 March, 1889.

In answer to yours of Saturday *re* my not having called on you as arranged on that day. This was brought about by Messrs. Shand and Chapman demurring to my leaving the works unless the contractors were reimbursed for the loss of my services to them while away. However, Mr. Shand, who was in Sydney on the Friday, told me he would see you about it himself; but I found, on his return that evening, that he had not done so, and as I had not a man about me to send a telegram by on the following morning, I was unwillingly obliged to allow you to remain in ignorance of my change of plans. As I have no say in this matter, being a salaried servant of the contractors, it might be as well, if you still wish to take further evidence from me, to see Mr. Shand on the subject, who will probably be in Sydney until Wednesday, and whose whereabouts could be ascertained by applying to Mr. J. Chapman, Bank of New Zealand, Pitt-street.

Yours, &c.,
WILLIAM E. DUNN,
Engineer for Contractors.

R. L. Mestayer, Esq., to R. Shand, Esq.

Beresford Chambers, 52 Castlereagh-street, Sydney, 5 March, 1889.

Dear Sir, *Re* Prospect Dam.

As it appears to be inconvenient to you for Mr. Dunn to call at my office, I have arranged to be at the works at 10 a.m. on Thursday, and I shall be obliged if you will arrange for him to be there.

I should not have asked him to call at my office, but for your own offer that he should do so at any time I might wish it.

Yours, &c.,
R. L. MESTAYER.

R. L. Mestayer, Esq., to F. A. Franklin, Esq.

Beresford Chambers, 52, Castlereagh-street, Sydney, 5 March, 1889.

Dear Sir, *Re* Prospect Dam.

Shall you be able to call and see me *re* the above matter, either to-morrow (Wednesday), or Friday between 10 and 1 o'clock? I shall be out of town on Thursday.

Yours, &c.,
R. L. MESTAYER.

R. L. Mestayer, Esq., to W. E. Dunn, Esq.

Beresford Chambers, 52, Castlereagh-street, 5 March, 1889.

Dear Sir, *Re* Prospect Dam.

I was very much surprised on receiving your letter this morning, as when I first mentioned to Mr. Shand that I wished to ask you some questions he said you should come to my office at any time I might require you.

Relying on that promise, I asked you to come on Saturday; however, to save any further trouble, I will come to Prospect on Thursday morning, and I have written to Mr. Shand to that effect. I shall be there about 10 a.m., and shall see you as soon as I arrive.

Please be at the office about that time.

Yours, &c.,
R. L. MESTAYER.

R. L. Mestayer, Esq., to R. H. Ryan, Esq.

Beresford Chambers, 52, Castlereagh-street, 5 March, 1889.

Dear Sir, *Re* Prospect Dam.

As you wish to be more fully examined as to the peeling of the shale in the puddle trench, I will be at the Works on Thursday morning about 10 o'clock for that purpose.

Yours truly,
R. L. MESTAYER.

R. L. Mestayer, Esq., to G. Gordon, Esq.

Beresford Chambers, 52, Castlereagh-street, Sydney, 9 March, 1889.

Dear Sir, *Re* Prospect Dam.

I enclose copies of some further evidence given by Mr. Ryan, Mr. Dunn and Mr. Davis *re* the flaking up of the shale in the puddle trench, and on the water flowing from the rear of the embankment. I do not see that anything of importance has been elicited, as the flaking up referred to seems to have been very trifling, and nothing more than is always found with all classes of shale when exposed to the air.

Yours, &c.,
R. L. MESTAYER.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Beresford Chambers, 52, Castlereagh-street, Sydney, 11 March, 1889.

Sir, *Re* Prospect Dam.

In accordance with your instructions given to me by you on the 6th ultimo, I wrote to Mr. F. A. Franklin, C.E., and asked him to attend at my office and give evidence in the above enquiry. Owing to Mr. Franklin's absence from town the matter had been in abeyance until the beginning of this month, when, hearing that Mr. Franklin had returned to town, I again wrote to him. In reply to my letter, Mr. Franklin called here on Wednesday and stated that having been engaged by the contractors to advise them professionally during the progress of the work, he did not feel at liberty to give any evidence in the matter without first obtaining their consent, but that he had written to Mr. Shand and would see me again as soon as he had received a reply to that letter.

On Saturday morning Mr. Franklin called here and stated that he had received a reply from Mr. Shand, who did not think it advisable to reopen the matter, as the Government had effected an arrangement with the contractors.

Mr. Franklin stated that he considered himself bound to respect the opinion of his clients, and must, in consequence, decline to give any evidence.

Under these circumstances I shall be glad if you will instruct me whether any further action is to be taken.

I have, &c.,
R. L. MESTAYER.

R. L. Mestayer, Esq., to The Under Secretary for Public Works.

Prospect Dam.

Dear Sir, Beresford Chambers, 52, Castlereagh-street, Sydney, 25 March, 1889.

Re Mr. Mackay's analysis of soils at Prospect, and his report thereon, also letter from C. E. R. Murray, Esq., on the probable effect of the changes in the chemical constitution of the materials forming the Prospect embankment,—I have very carefully considered these papers, and in order the better to give a decided opinion I have made special examinations of the materials in question. Although not professing perfect knowledge of analytical chemistry, I am well acquainted with both the theory and practise of analysis, and my own examinations of these soils agrees practically with Mr. Mackay's results. I, however, dissent altogether from his conclusions.

The differences between analyses Nos. 1 and 2, upon which Mr. Mackay lays so much stress, do not, in my opinion, prove anything, because Mr. Mackay has omitted to prove that the material operated upon for analysis No. 2 had the composition given in analysis No. 1 *before it was put in the embankment.*

The embankment is a mixture of clays and soils taken not only from the flat but also from the Prospect Hill, and the composition of these soils differs one from the other much more widely than analysis No. 1 from No. 2.

Seeing how the work was carried on, and the measures taken to thoroughly incorporate all the materials, no matter whence received, into one homogeneous mass, it would be practically impossible to take a sample of material from the bank and be certain of its being the same as was brought from any given site, with the exception perhaps of some isolated lumps of white clay, which, still retaining their original colour, can be identified and compared with similar material in its original bed.

The very existence of a considerable quantity of this white clay, unaltered in colour after months of exposure both on the bank and on the excavations on the flat, is a refutation of the theory deduced by Mr. Mackay from the analysis alone.

Analysis No. 3 corresponds nearly with the composition of this white clay, excepting that it contains the merest trace of iron, and has evidently been taken from a portion of the bank where this material was in excess.

Analysis No. 4 fully bears out the opinion I had already advanced in my report as to the suitability of this earth for filling the fissures and completing the embankment.

The theory advanced by Mr. Murray is not borne out by the results of my examinations nor by Mr. Mackay's analyses. I have failed to find any soluble salts of iron in any of the clays; carbonates also were entirely absent; and the white clay contains the merest trace of iron, but runs into a thin "slurry" directly water has access to it.

After a very careful reconsideration of the whole matter, and further examination of the embankment since the opening of the transverse trenches, I am firmly convinced that the mechanical action of the contained water is the active cause of the disturbances, and that there is no reason to modify in any way the opinion I have already expressed in my reports.

I am, &c.,

R. L. MESTAYER,
M. Inst., C. E.

Sydney: Charles Potter, Government Printer.—1889.

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

SYDNEY WATER SUPPLY.

(REPORTS, &c., ON PROSPECT DAM—PLANS RELATING TO.)

Ordered by the Legislative Assembly to be printed, 8 *May*, 1889.

FIVE Plans relating to the Reports upon the Prospect Dam, to be placed with Papers previously laid upon the Table (Sig. 80) and printed.

[2*s*. 9*d*.] 237—(80)

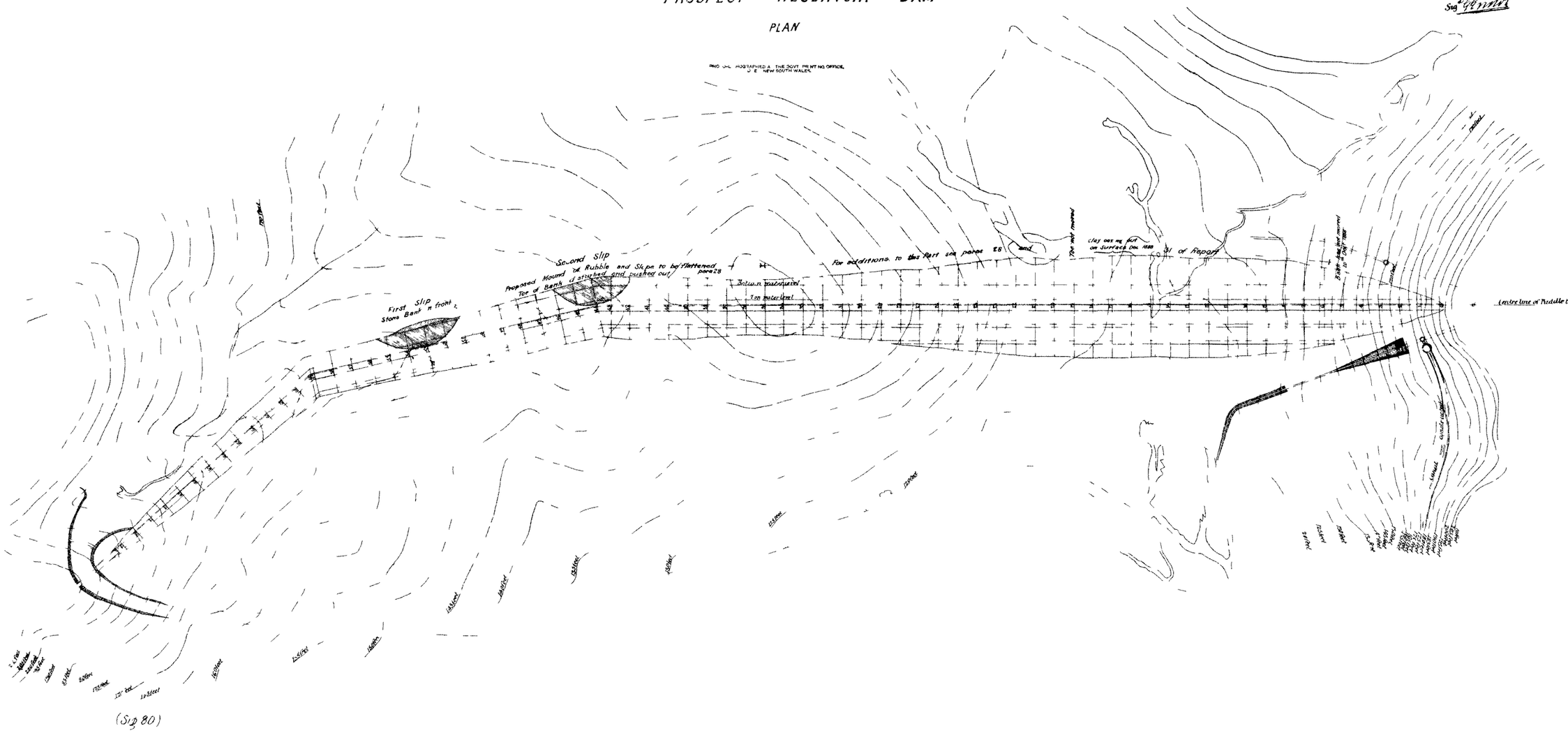
Laid upon the Table and ordered to be printed and appended to the papers previously laid upon the Table
8/5/89

PLAN No 1

To accompany Report dated 7th Jan 1889
Sig [signature]

PROSPECT RESERVOIR DAM

PLAN



(Sig 80)

Laid upon the Table and ordered to be printed and appended to papers previously laid upon the Table.
8/5/89.

PLAN No 2

To accompany Report dated 7th Jany 1889

signed G. Gordon

PROSPECT RESERVOIR

CROSS SECTIONS SHEWING MOVEMENT OF EMBANKMENT

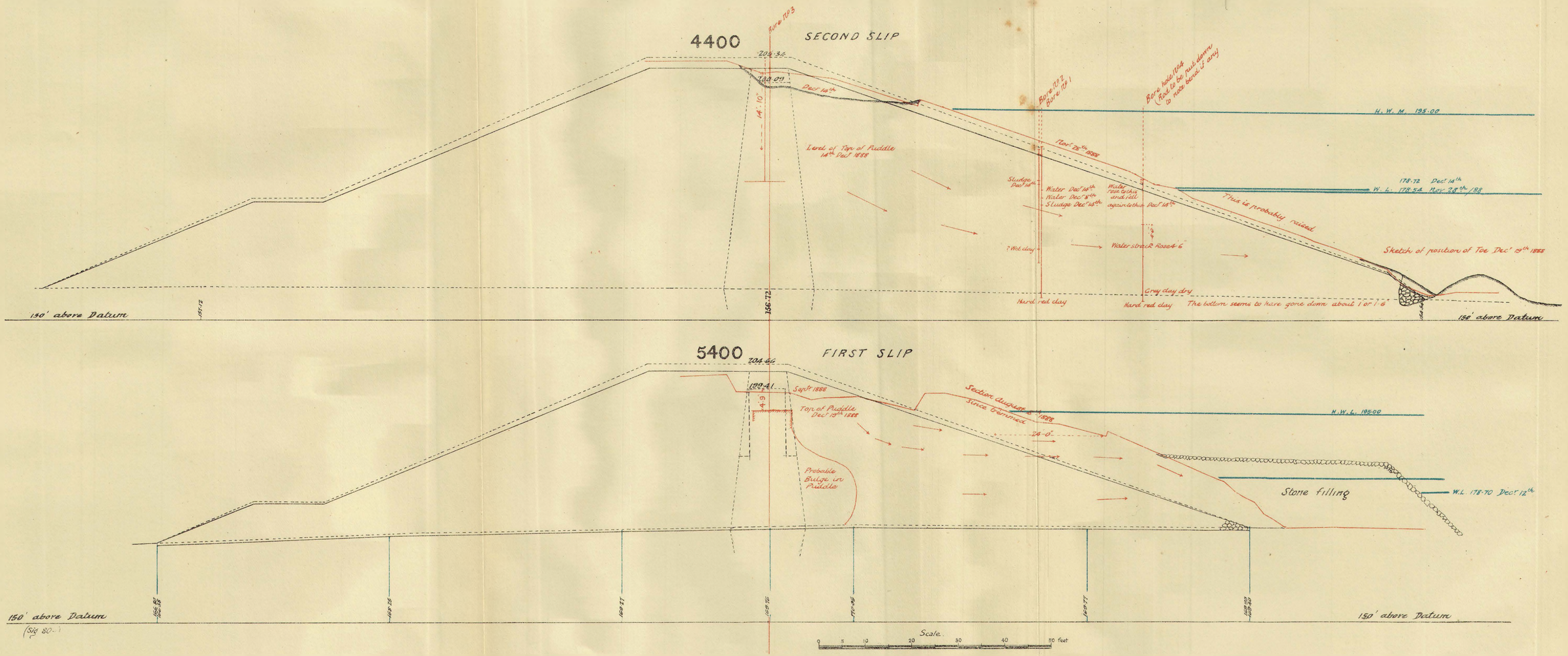


PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

Laid upon the Table and ordered to be printed and appended to papers previously laid upon the Table
8/5/89.

PLAN No 3

To accompany Report dated 7th Jany 1889

signed G. Gordon

Section at 18

To illustrate state of Dam at Ts 16 to 19

Scale 0 5 10 20 30

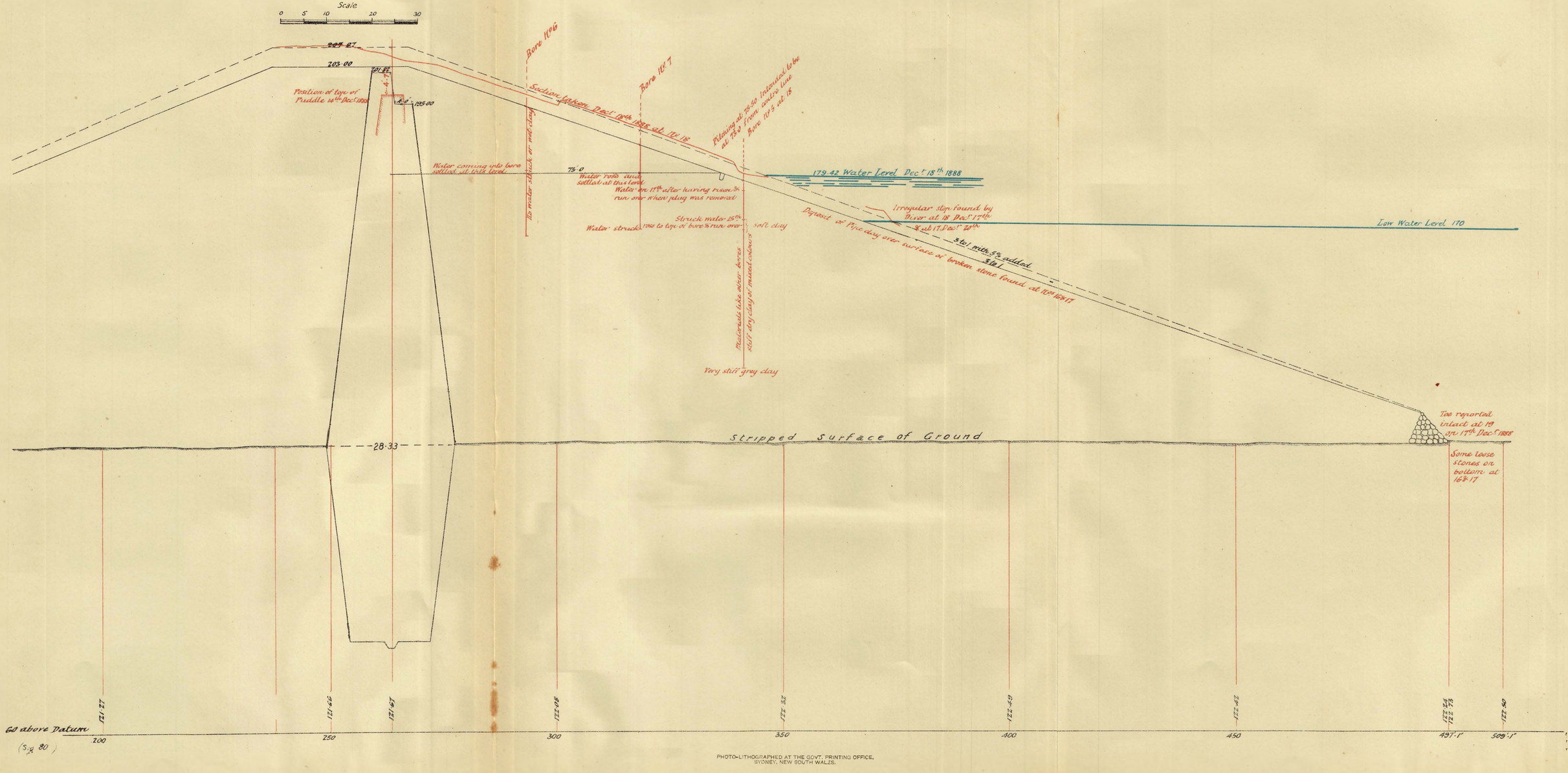


PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

PLAN Nº 4

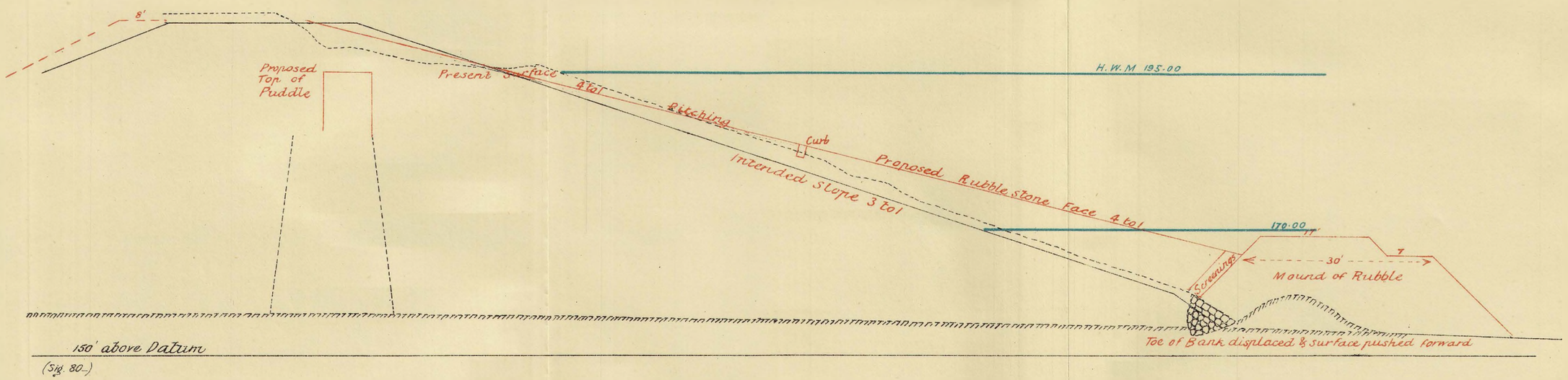
To accompany Report dated 7th Jany 1889

Laid upon the Table and ordered to be printed and appended to papers previously laid upon the Table.
8/5/89.

Section at TS 44 shewing Proposed Additions

Scale.
0 5 10 20 30 40 Feet.

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.



(Sig. 80–)

PLAN Nº 5

To accompany Report dated 7th Jany 1889

Engr in Chief

Laid upon the Table and ordered to be printed, and appended to papers previously laid upon the Table.
8/5/89.

Section shewing proposed Additions near T.S. 16 to 18

The Red lines shew the work recommended at present where the clay is oozing out of the Bank
The Blue lines shew the additions required if the Bank should move in the manner it does at T.S 44

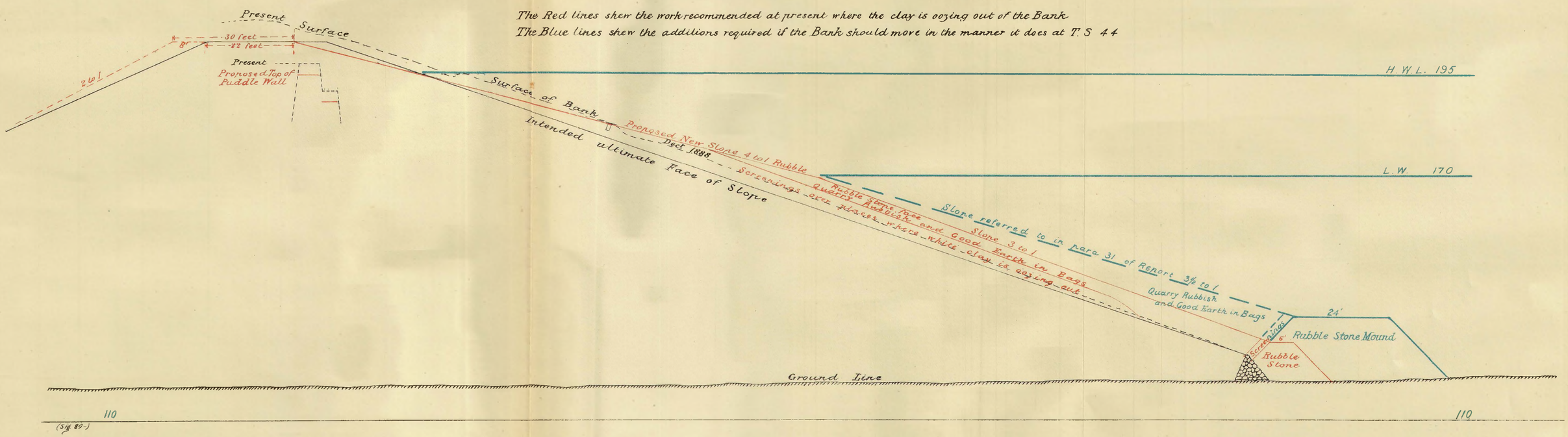


PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.-1889.

1889.

NEW SOUTH WALES.

LANDS FOR PUBLIC PURPOSES ACQUISITION ACT.

(RESUMPTION OF LAND, PARISH OF NEWCASTLE, COUNTY OF NORTHUMBERLAND, REQUIRED AS A SITE FOR RESIDENCE OF CARETAKER, RESERVOIR, NEWCASTLE.)

Presented to Parliament, pursuant to Act 44 Vic. No. 16.

NOTIFICATION OF RESUMPTION OF LAND UNDER 44 VICTORIA No. 16.

NEW SOUTH WALES, to wit. } By His Excellency The Right Honourable CHARLES ROBERT, BARON CARRINGTON, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.) CARRINGTON, *Governor.*

WHEREAS I, the Governor aforesaid, with the advice of the Executive Council of the said Colony, have duly sanctioned the carrying out of certain works for and in connection with the erection of a cottage at Newcastle, for and towards the completion of which said works public funds are available under the provisions of the "Appropriation Act of 1888;" and whereas the land hereinafter described is required for the construction of the said works: Now I, the Governor of the said Colony, with the advice of the Executive Council of the said Colony, in pursuance of the powers in this behalf given to or vested in me by the "Lands for Public Purposes Acquisition Act," do by this notification published in in the Gazette and in a newspaper, that is to say, in the "Newcastle Morning Herald and Miners' Advocate," circulated in the Police District wherein the said land is situated, declare that the land hereinafter described has been resumed for the public purposes hereinafter mentioned, that is to say, for and in connection with the erection of a cottage for the caretaker of the reservoir at Newcastle, to the intent that, upon the publication of this notification in the Gazette, the legal estate in the said land shall forthwith be vested in the Minister for Public Works and his successors, on behalf of Her Majesty, for the purpose of the said last-mentioned Act, for an estate of inheritance in fee-simple in possession, freed and discharged from all trusts, obligations, estate, interest, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the intent further that the legal estate therein, together with all powers incident thereto or conferred by the said Act, shall be vested in the said Minister as a trustee with the powers stated in the said last-mentioned Act. And I declare that the following is the description of the land hereinbefore referred to, that is to say:—

All that piece or parcel of land situate in the parish of Newcastle, county of Northumberland, and Colony of New South Wales, being part of allotment 318 of the subdivision of the city of Newcastle, originally purchased by H. W. Tomkins: Commencing at the intersection of the east side of Terrace-street with the north side of Pitt-street; and bounded thence by the east side of Terrace-street bearing north 12 degrees 30 minutes west 90⅔ links; thence by a line bearing north 78 degrees 6 minutes east 2 chains 16½ links; thence by a line bearing south 6 degrees 51 minutes west 1 chain 55⅔ links to the north side of Pitt-street; thence by said north side of Pitt-street bearing north 83 degrees 1 minute west 1 chain 74¾ links, to the point of commencement,—containing by admeasurement 37½ perches, owner unknown.

In witness whereof, I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this twelfth day of February, in the year of our Lord one thousand eight hundred and eighty-nine, and in the fifty-second year of Her Majesty's Reign.

By His Excellency's Command,

JAMES FLETCHER.

GOD SAVE THE QUEEN!

1889.

NEW SOUTH WALES.

LANDS FOR PUBLIC PURPOSES ACQUISITION ACT.

(RESUMPTION OF LAND, PARISH OF ROSET, FOR THE SUPPLY OF WATER TO THE TOWN OF NYMAGEE.)

Presented to Parliament pursuant to Act 44 Vic. No. 16.

NOTIFICATION OF RESUMPTION OF LAND UNDER 44 VICTORIA No. 16.

NEW SOUTH WALES, to wit. } By His Excellency The Right Honourable CHARLES ROBERT, BARON CARRINGTON, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.) CARRINGTON, *Governor.*

WHEREAS I, the Governor aforesaid, with the advice of the Executive Council of the said Colony, have duly sanctioned the carrying out of certain works for and in connection with the supply of water to the town of Nymagee, in the said Colony, for and towards the completion of which said works public funds are available, and whereas the land hereinafter described is required for the construction of the said works: Now, I, the Governor of the said Colony, with the advice of the Executive Council of the said Colony, in pursuance of the powers in this behalf given to or vested in me by the "Lands for Public Purposes Acquisition Act," do, by this notification published in the Gazette and in a newspaper, that is to say, in the "Cobar and Louth Herald," circulated in the Police District wherein the said lands are situated, declare that the lands hereinafter described have been resumed for the public purposes hereinafter mentioned, that is to say, for and in connection with the supply of water to the said town of Nymagee, to the intent that, upon the publication of this notification in the Gazette, the legal estate in the said land shall forthwith be vested in the Minister for Public Works and his successors, on behalf of Her Majesty, for the purpose of the said last-mentioned Act, for an estate of inheritance in fee simple in possession, freed and discharged from all trusts, obligations, estate, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever, and to the intent further that the legal estate therein, together with all powers incident thereto or conferred by the said Act, shall be vested in the said Minister as a trustee with the powers stated in the said last-mentioned Act: And I declare that the following are the descriptions of the lands hereinbefore referred to, that is to say:—

1st. All that piece or parcel of land situate in the town of Nymagee, parish of Roset, county of Mouramba, Colony of New South Wales, being portion 28: Commencing on the southern side of a road 3 chains wide at the north-western corner of portion 27 of 6 acres and 33 perches; and bounded thence on the north by that road dividing it from portion 21 of 8 acres 18 perches bearing about south 86 degrees 43 minutes west 5 chains 6¾ links; on the west by a road 1 chain 50 links wide dividing it from part of portion 3 of 40 acres bearing south 11 chains 84 links; on the south by a road 1 chain 50 links wide dividing it from portion 29 of 12 acres 23 perches bearing east 5 chains 6 links; and on the east by the western boundary of portion 27 aforesaid, bearing north 12 chains 13 links, to the point of commencement,—containing 6 acres and 10 perches, and said to be in the possession and occupation of D. Thomas.

2nd. All that piece or parcel of land situate in the town of Nymagee, parish of Roset, county of Mouramba, Colony of New South Wales, being portion 26: Commencing at the southern side of a road 3 chains wide at the north-western corner of portion 25 of 6 acres 2 roods 2 perches; and bounded thence on the north by that road dividing it from portion 23 of 7 acres 3 roods 11 perches bearing about south 86 degrees 43 minutes west 5 chains 6¾ links; on the west by the eastern boundary of portion 27 of 6 acres 33 perches bearing south 12 chains 42 links; on the south by a road 1 chain 50 links wide dividing it from part of portion 30 of 12 acres 24 perches bearing east 5 chains 6 links; and on the east by the western boundary of portion 25 aforesaid bearing north 12 chains 71 links to the pomt of commencement,—containing 6 acres 1 rood 17 perches, and said to be in the possession and occupation of J. Bray.

3rd. All that piece or parcel of land situate in the town of Nymagee, parish of Roset, county of Mouramba, and Colony of New South Wales, being portion 27: Commencing on the southern side of a road 3 chains wide at the north-eastern corner of portion 28 of 6 acres 10 perches; and bounded thence on the north by that road dividing it from portion 22 of 7 acres 3 roods 34 perches bearing about north 86 degrees 43 minutes east 5 chains 6¾ links; on the east by the western boundary of portion 26 of 6 acres 1 rood 17 perches bearing south 12 chains 42 links; on the south by a road 1 chain 50 links wide dividing it from part of portion 29 of 12 acres 23 perches bearing west 5 chains 6 links; and on the west by the eastern boundary of portion 28 aforesaid bearing north 12 chains 13 links to the point of commencement,—containing 6 acres and 33 perches, and said to be in the possession and occupation of May Thomas.

In witness whereof, I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this thirteenth day of April, in the year of our Lord one thousand eight hundred and eighty-nine, and in the fifty-second year of Her Majesty's Reign.

By His Excellency's Command,
BRUCE SMITH.

GOD SAVE THE QUEEN!

1889.

NEW SOUTH WALES.

LANDS FOR PUBLIC PURPOSES ACQUISITION ACT.

(RESUMPTION, IN CONNECTION WITH THE SUPPLY OF WATER TO THE VILLAGE OF RYDE.)

Presented to Parliament, pursuant to Act 44 Vic. No. 16, sec. 6.

NOTIFICATION OF RESUMPTION OF LAND UNDER 44 VICTORIA No. 16.

NEW SOUTH WALES, to wit. } By His Excellency The Right Honourable CHARLES ROBERT, BARON CARRINGTON, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.) CARRINGTON, *Governor*

WHEREAS I, the Governor aforesaid, with the advice of the Executive Council of the said Colony, have duly sanctioned the carrying out of certain works for and in connection with the supply of water to the village of Ryde, for and towards the completion of which said works public funds are available; and whereas the land hereinafter described is required for the construction of the said works: Now, I, the Governor of the said Colony, with the advice of the Executive Council of the said Colony, in pursuance of the powers in this behalf given to or vested in me by the "Lands for Public Purposes Acquisition Act," do by this notification, published in the Gazette and in a newspaper, that is to say, in the "Sydney Morning Herald," circulated in the Police District wherein the said land is situated, declare that the land hereinafter described has been resumed for the public purposes hereinafter mentioned, that is to say, for and in connection with the supply of water to the village of Ryde, to the intent that, upon the publication of this notification in the Gazette, the legal estate in the said land shall forthwith be vested in the Minister for Public Works and his successors, on behalf of Her Majesty, for the purpose of the said last-mentioned Act, for an estate of inheritance in fee-simple in possession, freed and discharged from all trusts, obligations, estate, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the intent, further, that the legal estate therein, together with all powers incident thereto or conferred by the said Act, shall be vested in the said Minister as a trustee, with the powers stated in the said last-mentioned Act: And I declare that the following is the description of the land hereinbefore referred to, that is to say:—

All that piece or parcel of land situate in the parish of Concord, county of Cumberland, and Colony of New South Wales, being part of a grant of 256 acres to J. H. Potts: Commencing at the intersection of the eastern boundary of the aforesaid grant with the southern boundary fence of the Great Southern and Western Railway; and bounded thence by the said boundary of grant bearing south 23 minutes west 20 feet 10 inches; thence by a line bearing south 73 degrees 50 minutes west 267 feet 2 inches and south 80 degrees 12 minutes west 369 feet; thence by the western boundary of the aforesaid grant bearing north 18 degrees 23 minutes east 22 feet 8 inches; thence by the southern boundary of the Great Southern and Western Railway bearing generally north-easterly, to the point of commencement,—containing 1 rood 6½ perches, and said to be in the possession of Coates and Whitty.

In witness whereof, I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this first day of June, in the year of our Lord one thousand eight hundred and eighty-nine, and in the fifty-second year of Her Majesty's Reign.

By His Excellency's Command,

BRUCE SMITH.

GOD SAVE THE QUEEN!

1889.

NEW SOUTH WALES.

LANDS FOR PUBLIC PURPOSES ACQUISITION ACT.

(RESUMPTION OF LAND FOR THE SUPPLY OF WATER TO ASHFIELD, PARISH OF PETERSHAM.)

Presented to Parliament, pursuant to Act 44 Vic. No. 16, sec. 6.

NOTIFICATION OF RESUMPTION OF LAND UNDER 44 VICTORIA No. 16.

NEW SOUTH WALES, to wit. } By His Excellency The Right Honourable CHARLES ROBERT, BARON CARRINGTON, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.) CARRINGTON, *Governor.*

WHEREAS I, the Governor aforesaid, with the advice of the Executive Council of the said Colony, have duly sanctioned the carrying out of certain works for and in connection with the supply of water to the district of Ashfield, in the county of Cumberland, in the said Colony, for and towards the completion of which said works public funds are available; and whereas the land hereinafter described is required for the construction of the said works: Now, I, the Governor of the said Colony, with the advice of the Executive Council of the said Colony, in pursuance of the powers in this behalf given to or vested in me by the "Lands for Public Purposes Acquisition Act," do, by this notification published in the Government Gazette and in a newspaper, that is to say, in the "Sydney Morning Herald," circulated in the Police District wherein the said land is situated, declare that the land hereinafter described has been resumed for the public purposes hereinafter mentioned, that is to say, for and in connection with the construction and erection of a reservoir, tanks, water pipe depôt, and other works for such supply of water as aforesaid, to the intent that, upon the publication of this notification in the Gazette, the legal estate in the said land shall forthwith be vested in the Minister for Public Works and his successors, on behalf of Her Majesty, for the purpose of the said last-mentioned Act, for an estate of inheritance in fee simple in possession, freed and discharged from all trusts, obligations, estate, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever, and to the intent further that the legal estate therein, together with all powers incident thereto or conferred by the said Act, shall be vested in the said Minister as a Trustee with the powers stated in the said last-mentioned Act: And I declare that the following is the description of the land hereinbefore referred to, that is to say:—

All that piece or parcel of land situate at Ashfield, in the parish of Petersham, county of Cumberland, and Colony of New South Wales, containing by admeasurement three roods and thirty-one and a half perches, a little more or less, and which said land is part of 10 (ten) acres conveyed by Arthur Frederick Jeffreys to Donald Robertson, and held by the said Donald Robertson under certificate of title No. 120,280, dated the ninth day of July, 1887; and which said ten acres form portion of two hundred and fifty-five (255) acres held by the said Arthur Frederick Jeffreys by certificate of title, application No. 4,533, dated 15th November, 1878: Commencing on the north-western side of Holden-street, one chain wide, on the northern side of a road one chain wide dividing it from the remainder of the said 255 acres, and distant one (1) chain from the south-east corner of the said ten (10) acres; and bounded thence on the south-east by the north-western side of Holden-street bearing north two (2) degrees thirty-one (31) minutes east two hundred and seventy-five (275) feet and three (3) inches to the south-western side of a lane twenty (20) feet wide dividing it from another portion of the said ten (10) acres; thence on the north east by the south-western side of that lane bearing north eighty-seven (87) degrees twenty (20) minutes west one hundred and fifty (150) feet; thence on the north-west by a line bearing south two (2) degrees thirty-one (31) minutes west two hundred and seventy-five (275) feet six (6) inches to the north-eastern side of the said road one (1) chain wide; and thence on the south-west by the said north-eastern side bearing south eighty-seven (87) degrees twenty-eight (28) minutes east one hundred and fifty feet, to the point of commencement,—being part of one hundred (100) acres originally granted to John Clepham by Crown Grant dated the 11th day of November, A.D. 1794, of which said land Donald Campbell is said to be owner.

In witness whereof, I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this twenty-seventh day of June, in the year of our Lord one thousand eight hundred and eighty-nine, and in the fifty-third year of Her Majesty's Reign.

By His Excellency's Command,

BRUCE SMITH.

GOD SAVE THE QUEEN!

1889.

NEW SOUTH WALES.

COUNTRY TOWNS WATER AND SEWERAGE ACT OF 1880.

(MUNICIPAL DISTRICT OF BALRANALD—BY-LAWS.)

Presented to Parliament, pursuant to Act 44 Vic. No. 14 sec. 13.

Colonial Secretary's Office,
Sydney, 2nd July, 1889.

MUNICIPAL DISTRICT OF BALRANALD.—BY-LAWS.

THE following By-laws, relating to the management and regulation of Water Supply, made by the Council of the Municipal District of Balranald, under the power conferred by the "Country Towns Water and Sewerage Act of 1880," having been confirmed by His Excellency the Governor, with the advice of the Executive Council, are published in accordance with the requirements of the above-cited Act.

HENRY PARKES.

BY-LAWS FOR THE MANAGEMENT AND REGULATION OF WATER SUPPLY.

THE Mayor and Aldermen of the Municipal District of Balranald, pursuant to and in exercise and execution of the powers and authorities conferred on such Council by the Country Towns Water and Sewerage Act of 1880, make the following By-laws:—

Rates and Charges.

1. The following rates and charges are those which the owners and occupiers of land and tenements shall pay in respect of water supplied by the Council, that is to say,—

2. On every house or tenement of £10 assessed annual value and under, ten shillings per annum.

3. On every house or tenement above the annual value of £10, a rate of one shilling for each pound sterling on the amount of the assessed Municipal valuation.

4. Water supplied for other than domestic purposes, such as stables, gardens, ornamental grounds, manufactories, or other purposes, shall be by meter or by special agreement with the Council.

5. Public-house troughs, twenty shillings per annum; water carts from stand-pipes, 6d. per load of not exceeding 200 gallons.

6. Unimproved town allotments and suburban lands, if not distant more than 150 feet from any main or pipe of the Council's, shall be charged at the rate of one shilling in the pound on the annual value, as assessed in the Municipalities Act.

7. For water supplied temporarily to buildings in course of progress, 20s. per centum on the amount of the contract for stonework, brickwork, and plastering, or the Council may require a meter to be fixed, the charge to be the ordinary one in use for water supplied by measure or agreement.

8. Water required for market gardens or purely agricultural purposes may be supplied by measurement at such times and at such charges as the Council may agree to.

9. For water supplied by the Council by measurement the charge will be, except in cases referred to in preceding sections, at the rate of two shillings per 1,000 gallons.

10. The minimum quantity of water to be charged in each case where water is supplied by measure, except by agreement, shall be not less than at the rate of 25,000 gallons per quarter, even should this quantity not be consumed.

11. For water supplied to any lands, tenements, or premises not before specified, and not chargeable with or paying Municipal rates, shall be supplied by measure at the rate of 4s. per 1,000 gallons, or by special agreement.

12. No meter shall be allowed to be affixed unless the dial of the same is capable of registering 1,000,000 gallons, except by special consent in writing of the said Council; the meter to be of approved kind.

13. If any meter shall cease registering, or be out of repair, or registering inaccurately, the said Council shall estimate the charge for water consumed during the period such meter was not in working order and until it is repaired and refixed either by taking an average of the quantity used during the previous quarter or during the corresponding period of the previous year, or the said Council may insert a check meter on the service-pipe.

14. Any person supplied with water by the said Council wilfully allowing water to run to waste, or using it in a wanton and extravagant manner, shall be subject to a penalty not exceeding five pounds for each offence, and to a further penalty of two pounds for each day after receiving notice from the said Council.

15. Before any person shall affix any service-pipe to any pipe of the said Council, or alter or repair, or in any manner interfere with any pipe of the said Council, or any service-pipe, cock, or fitting connected with the pipes of the said Council, he shall obtain from the said Council a license in that behalf to execute such works; and any unlicensed person affixing, altering, repairing, or in any manner interfering with such pipe, service-pipe, cock, or fitting as aforesaid, shall be liable to a penalty not exceeding ten pounds.

16. Before any license shall be granted by the said Council, the person applying for the same shall satisfy the said Council that he is a competent plumber, and before obtaining his license, he shall deposit £5 as security for faithful performance of all his work in connection with the water supply; also pay an annual fee of £1 1s.

17. Any person, whether licensed as aforesaid or not, who shall offend by opening any ground so as to uncover any pipe or pipes, the property of the said Council, without giving two days' notice to the said Council of his intention so to do, or who shall in any way tamper with or alter any pipe, the property of the said Council, without the permission in writing of the said Council being first obtained, or who shall wilfully or carelessly break, injure, or open any lock, cock, valve-pipe, work, or engine, the property of the said Council, shall be liable for each such offence to a penalty not exceeding twenty pounds. In cases of leakage or emergency the Council may dispense with the two days' notice as aforesaid,—in such cases application to be made to the Council Clerk.

18. Any person, whether licensed or not as aforesaid, who shall lay any pipe to communicate with the pipes of the said Council without giving two days' notice of the day and hour when such pipe is intended to be made to communicate with the pipes of the said Council, or who shall make such communication except under the superintendence and according to the directions of some officer of the said Council, or shall lay any leaden or other pipe to communicate with the pipe of the said Council, of a strength and material not sanctioned by the said Council, shall be liable for each such offence to a penalty not exceeding five pounds, and in the event of continuing the offence to a further penalty of two pounds for each day after the notice of the offence from the said Council.

19. Lead piping to be of the following weights:—

Diameter of pipe.	Weight of pipe per yard.
⅜″	5 lbs.
½″	6 „
⅝″	7½ „
¾″	9 „
1″	12 „
1¼″	16 „
1½″	20 „

and galvanized iron piping of approved quality only will be allowed for external and internal services; ordinary connections with sub-mains must be made with proper ferules, to which for iron service a length of not less than 2 feet of lead pipe must be attached.

20. If any person shall neglect to repair any service-pipe conveying water from the pipes of the said Council into the premises of such person after having received notice from any officer of the said Council that such service-pipe requires repairing, the said Council may stop the water from flowing into such premises either by cutting off the service-pipe or otherwise as the said Council may see fit until the necessary repairs shall have been effected. The service-pipes from the main being the property of the owners or occupiers of the tenements supplied by such service-pipes, the occupier (if any), and if none the owner, shall in every instance in which any damage shall be caused by reason of such service-pipe being leaky or otherwise, out of repair or broken, be liable to a penalty not exceeding five pounds, and in the event of continuing the offence to a further penalty of two pounds for each day after notice of the offence from the Council.

21. Any person, whether licensed as aforesaid or not, connecting any service-pipe or branch service-pipe with any steam-boiler for the purpose of supplying the same with water without first affixing a self-acting valve for preventing the pressure of the steam reversing or affecting the dial of the meter, shall be liable to a penalty not exceeding five pounds, and in the event of continuing the offence to a further penalty of two pounds for each day after notice of the offence from the said Council.

22. Any person not having agreed to be supplied with water by the said Council who shall take or carry away any water from any drinking tap, or through a private or public service-pipe, shall be liable to a penalty not exceeding five pounds.

23. All charges for water supplied by measure or under special agreement must be paid on the first days in April and October in each year, or as may be agreed on by the said Council.

24. In the construction of these By-laws, the word "person" shall be deemed to extend to and include a corporation whether aggregate or sole, and the words "said Council" shall mean the Council of the Municipality of Balranald.

25. No water-closet or urinal whatsoever shall be connected directly with the service-pipe, but shall be supplied by means of a cistern of an approved kind; any person so offending shall be liable to a penalty not exceeding twenty pounds and a further sum of twenty shillings for each day, if more than one, that such an offence continues.

26. In the case of any lands or tenements becoming liable to be rated for water during the currency of a half-year, the rate shall be immediately payable, but so much thereof only as is proportionate to the unexpired portion of the half-year.

MEMORANDUM OF AGREEMENT this day of 188 , between of of the one part and the Council of the Municipality of Balranald of the other part, whereby the said agrees to take water by measure supplied by the said Council at the rate of per 1,000 gallons, or for the lump sum of £ for the term of twelve months from date hereof, to be used in or upon the land, tenements, or premises in the occupation of the said situated in and such water shall be used for the purposes of only, and the said agrees to pay the said Council for the water so supplied on the first days of April and October in each year; and the said Council agrees to supply such water at the rate aforesaid, provided always and it is hereby agreed, that the said Council shall not be liable to any penalty or damages for not supplying such water, if the want of such supply arises from drought or other unavoidable cause or accident, and the said Council may terminate this agreement at any time by giving the said three weeks' notice in writing to that effect.

As witness the hands and common seal of the said parties hereto, given under our common seal this day of 188 .

The foregoing By-laws were made and passed by the Municipal Council of Balranald; and the seal of the said Council was hereunto affixed the eighth day of November, one thousand eight hundred and eighty-eight.

(L.S.) JOHN GRINHAM,
Mayor.

RICHARD BEATY,
Council Clerk.

Sydney: Charles Potter, Government Printer.—1889.

[3*d*.]

1889.

NEW SOUTH WALES.

COUNTRY TOWNS WATER AND SEWERAGE ACT EXTENSION ACT OF 1887.

(NOTIFICATION OF LOAN OF £8,000 TO MUNICIPAL COUNCIL OF WILCANNIA.)

Presented to Parliament, pursuant to Act 51 Vic. No. 18.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable CHARLES ROBERT, BARON CARRINGTON, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.) CARRINGTON, *Governor.*

WHEREAS by the "Country Towns Water and Sewerage Act Extension Act of 1887" it was amongst other things enacted that it should be lawful for the Governor, by notification in the Gazette, to declare that any of the special provisions contained in Part V of the "Country Towns Water and Sewerage Act of 1880" should apply to the Council of any Borough or Municipal District in respect of any loan authorized to be made by the Colonial Treasurer to such Council, pursuant to the first-mentioned Act, and that upon the publication of such notification the enactments specified in such notification, with such necessary modifications as the Governor might think fit to make, should apply to the Council and to the Water-works therein referred to with as full effect as if the said enactments had been embodied in that Act and specifically applied to such Council and Works: And whereas by an agreement dated the fourteenth day of January, one thousand eight hundred and eighty-nine, made between the Council of the Municipal District of Wilcannia, in the Colony of New South Wales, of the one part, and The Honorable John Sutherland, Minister for Public Works of the said Colony, of the other part, it was agreed that the amount of the loan to be made to the said Council, pursuant to the provisions of the said first-mentioned Act, should be the sum of eight thousand pounds, and that such loan should be made upon the terms and conditions contained in the said agreement now in recital: And whereas by a bond under the seal of the said Council, dated the fourteenth day of January, one thousand eight hundred and eighty-nine, being a bond given pursuant to the provisions of section five of the said first-mentioned Act, the said Council bound themselves in the penal sum of sixteen thousand pounds well and truly to perform and fulfil the terms, conditions, and provisions contained in the said agreement: Now, therefore, I, CHARLES ROBERT, BARON CARRINGTON, the Governor aforesaid, in pursuance of the power and authority so vested in me by the first-mentioned Act, do by this notification hereby direct that the provisions of section one hundred and twenty-five of the "Country Towns Water and Sewerage Act of 1880," with such modifications (if any) as are contained in the said recited agreement, shall apply to the said Council in respect of any loan authorized to be made by the Colonial Treasurer to such Council, pursuant to the "Country Towns Water and Sewerage Act Extension Act of 1887."

Given under my Hand and Seal, at Government House, Sydney, this sixth day of April, in the year of our Lord one thousand eight hundred and eighty-nine, and in the fifty-second year of Her Majesty's Reign.

By His Excellency's Command,

BRUCE SMITH.

GOD SAVE THE QUEEN!

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

MURRAY RIVER.

(REPORT OF MR. D. M'MORDIE ON THE DIVERSION OF WATER FROM.)

Ordered by the Legislative Assembly to be printed, 28 *May*, 1889.

[*Laid upon the Table by the Honorable the Minister for Mines.*]

D. M'Mordie, Esq., B.E., M. Inst. C.E., to The Secretary for Lands.

Sir, Roads and Bridges Department, Sydney, April 30, 1889.

With reference to the minutes of the Hon. W. J. Lyne, M.P., then Secretary for Lands, dated 27th and 28th February, appointing "Mr. M'Mordie, C.E. (late Member of the Water Commission), to visit Victoria as soon as possible and ascertain whether the reports which have gained currency as to the diversion of the Murray waters are correct. Whether these waters are being used by persons, companies, or trusts in Victoria, and for what purposes, if any. Mr. M'Mordie will report upon these matters and upon any others which may appear to him of sufficient importance in connection with the same question" I have the honor to report that Mr. W. C. Bennett, Commissioner for Roads, &c., &c., having relieved me temporarily of my duties in his department, and having been provided by the Hon. the Colonial Secretary with a letter of introduction to the Government of Victoria, I left for Melbourne on 5th March, and having in due course presented my letter of introduction, I was afforded by the Hon. the Minister of Water Supply every facility for pursuing my inquiries, and on the 12th March I was supplied by Mr. Stuart Murray, Chief Engineer of Water Supply, with the following schedule:—

SCHEDULE of Diversions of Water from the River Murray by Waterworks and Irrigation Trusts in the Colony of Victoria.

Name of Trust, &c., Diverting Water.	Means employed to divert Water.	Quantity diverted per twenty-four hours.	Purpose applied to.	Remarks.
Mildura Irrigation Colony	Pumping	Given elsewhere	Irrigation, stock, & domestic supply.	
(Castle Donnington) Swan Hill Waterworks Trust.	Pumping	30,000 gallons	Domestic supply.	
Benjeroop and Murrabit Irrigation Trust.	Natural effluent deepened.	A portion of the flood-waters, quantity not determined.	Domestic and stock supply.	Can only obtain supply when river is above 14 feet on Echuca gauge.
(Direct Cut) Swan Hill Waterworks Trust.	Small channel from river to Gunbower Creek.	A portion of the flood-waters, quantity not determined.	Domestic and stock supply.	Can only obtain supply when river is above 6½ feet on Echuca gauge.
Echuca Boro' Waterworks Trust.	Pumping	200,000 gallons	Domestic supply.	
Yarrowonga Waterworks Trust.	Pumping	50,000 gallons	Domestic supply.	

In a footnote accompanying this schedule are mentioned four Irrigation and Water Supply Trusts, to be supplied from the Murray River, in various stages of development, but not yet in working order, viz.:—

1. Tarrumberry, commanding about 14,000 acres irrigable land.
2. Cohuna, „ 80,000 „ „
3. Koondrook, „ 8,000 „ „
4. Swan Hill, „ 14,000 „ „

and it was estimated that about one-third of these areas would be irrigated annually.

I was also informed that there were, no doubt, private pumping plants along the river, of which the Government had no official knowledge.

I then proceeded to Echuca to commence an examination of the river diversions on the Victorian side.

The first place visited was Mr. O'Shaughnassy's Madowla Park Station, 16 miles up the river from Echuca, where I found a pumping plant erected in a barge, which can be moved about so as to pump water at any point where it may be required on the station or other property along the river. The pump is a 20-inch centrifugal one, and throws when at work 1,600 cubic feet per minute, but the actual diversion by this plant would probably not exceed an average of 1,000 cubic feet per minute during the irrigation seasons. At one place the water is pumped into a large earthen channel 45 feet in width between top of banks at the head. For a distance of 1 mile along the course of this channel the country falls toward the river, and it was therefore necessary to carry the channel in embankment, and it was explained that the earth for forming the banks was taken from inside the channel, and the width was thus fixed by the width of ground required to get sufficient earth to form the banks with shallow excavation.

It was also explained that owing to the large capacity of the channel it could be used as a reservoir from which irrigation could be carried on for a time when, from any cause, it might be found desirable or necessary to stop the pump.

A little down stream from this place there is another pumping station where the water is pumped into an iron flume carried on timber tressels, and is conveyed in this flume across low-lying undulating country a distance of 3,000 feet, and thence along the higher ground in earthen channels. The higher parts of the low undulating ground (called sand hills) are watered from the flume by means of 10-inch canvas hose, of which a length of 1 mile is provided in 1 chain lengths.

Proceeding down the river from Madowla Park the next diversion of water from the river is at a small farm belonging to Mr. Jeffrey, 1½ miles up stream from Echuca. The size of the holding is 25 acres, of which about half is irrigated annually by means of a 4-inch centrifugal pump. Mr. Jeffrey pays a license of five pounds (£5) a year to the Victorian Government for permission to erect and work his pumping plant on the Government reserve along the river bank, and he is allowed to pump 12 cubic feet a minute.

In Echuca the quantity of water being pumped from the river, at the time of my visit, for the town supply, including water used for irrigating gardens and watering streets, was close on half a million gallons a day. The Council Clerk informed me that the quantity used in winter is not so great, but at the time of my visit the quantity being pumped for the town supply and railway requirements may be taken at 55 cubic feet a minute.

On Wharparilla Station, a few miles down the river from Echuca, the erection of a large and substantial timber fluming was commenced a few years ago. It was intended to carry a stream of water, about 15 square feet in section to a distance of 6 miles back from the river, where the high ground would be commanded; but a length of only about 400 yards was actually constructed, and the work was then abandoned, although pumping plant had been purchased. It is still intended to irrigate this property, but I understand it is to be irrigated from the Goulburn River, and the original scheme abandoned.

On the Turrumberry Estate there is a 25 horse-power pumping plant, but the estate was lately sold to a syndicate, which has acquired irrigable property there amounting to 16,000 acres, and they have formed a trust, comprising about 19,000 acres. It is proposed (but not yet decided) to erect a pumping plant of 125 horse-power (indicated) at once, and to duplicate it when a sufficient demand for the water arises. The diversion sanctioned here is 1,800 cubic feet a minute.

Further down the river, near the head of the Gunbower Creek, there is a 10 horse-power 9-inch Tangye pump belonging to Mr. Roberts, with which he irrigates about 160 acres, and the diversion by this plant may be estimated at 50 cubic feet a minute.

Adjacent to Mr. Roberts' pumping plant is that of Messrs. Hayes and Barker, who own irrigable land to the extent of about 2,000 acres. The diversion by this plant may be taken approximately at 225 cubic feet a minute.

Immediately below Messrs. Hayes and Barker's pumping plant the Gunbower Creek takes off from the river, and I may here mention that in March, 1881, Messrs. G. Gordon and A. Black prepared a scheme for taking an increased supply from the river into Gunbower Creek, and for distributing it by various channels through the Gunbower district for domestic and stock supply, and they pointed out how, from the abundance and permanency of the supply obtainable from the river Murray and the favourable nature of the country, the scheme could be easily extended for irrigation on a systematic and extensive scale, and for the supply of water to the Loddon, above Kerang, and to Reedy Lake, Lake Charm, and the numerous natural basins to the westward of the Loddon.

I found trial shafts being sunk across the Gumbower Creek, near its head, which I was informed were to test foundations for the construction of head works of a channel for diverting water to the Loddon *via* Kow Swamp, and, on my return to Melbourne, I was courteously supplied with a blue book, giving particulars of this scheme, which has received the approval of the Government.

It was found that the Loddon could not afford a supply for irrigation to all those claiming to share in its use, and in May, 1887, it was recommended by the Chief Engineer of Water Supply "That the lower portion of the Loddon River, from a point some miles above Kerang, should be supplied from the Murray, by way of Kow Swamp, and that the parties interested in this part of the river, and in the country dependent upon it, be invited to take steps to give effect to this recommendation."

The required steps appear to have been taken, and the execution of the work is likely to be quickly proceeded with. The head of the Gunbower Creek does not admit water from the river until the surface has risen to over 15 feet above summer level at Echuca, and the bed is to be lowered to admit water when the river rises 6½ feet above summer level at Echuca. The bottom width of the new channel is to be 60 feet, and the side slopes 1½ to 1. It is reckoned that in ordinary years this channel will give a supply from the beginning of July till the end of December which, after providing for current wants, will leave an available storage for irrigation in the Kow Swamp basin of 1,267 millions of cubic feet; and the total diversion by gravitation may be reckoned as averaging 7,000 cubic feet a minute for those six months. The area proposed to be irrigated annually by gravitation is 20,000 acres in summer and 10,000 acres in winter, the total irrigable area comprised in the scheme being estimated at 90,000 acres. A portion of the supply is to be delivered into the Loddon above M'Ravey's weir, 6 or 8 miles above the town of Kerang, and another portion into the Loddon above the weir at the junction of the Pyramid Creek, just below Kerang, thus affording means for diverting the Murray water, among other places, into the numerous natural basins, including Reedy Lake and Lake Charm, west of the Lodden, so that there appear to be great facilities for extending this scheme at a future time.

The existing works for diverting Murray water by gravitation into the Gunbower Creek, and thence by various channels through the district for domestic and stock supply, and also for supplying water for irrigation by pumping are the deepened and improved Deep Creek and Bagots Creek, and the channel known as the Direct Cut. The natural level of Deep Creek was considerably lowered, and formed into a channel of 10 feet bottom width, and 10 feet in depth and side slopes of 1 to 1 at the head, and in this improved state it admits water when the river rises above 6½ feet on the Echuca gauge. At the time of my visit, the inlet to Bagots Creek was closed by an earthen dam. This inlet has a bottom width of about 15 feet, and depth of 6 feet. The principal off take however is the Direct Cut. It is provided with a timber bridge and regulator with 4 spans of 10 feet each. The canal or channel below the regulator is 15 feet wide at bottom, 13½ feet deep with side slopes of 1 to 1, and water begins to flow in when the river

river rises above 6½ feet on the Echuca gauge. I could not find sufficient data for calculating the quantity of water diverted by these outlets, but at 13½ feet on the Echuca gauge they would be capable of diverting 40,000 cubic feet a minute, and this may be taken as a moderate estimate.

The next important diversion is that to be made by the Cohuna Irrigation Trust, for which the work is in an advanced state. The main channel is 21 feet wide at bottom, with side slopes 1½ to 1. The main channel bifurcates at 5 miles 25 chains, and the total length of main channels provided for in the scheme is about 80 miles, and of subsidiary channels about 40 miles. The bed level at head corresponds with the level of the water in the river when the Echuca gauge reads 11½ feet. Flood-water above this level will be admitted by iron pipes of 50 inches diameter, two of which are now laid, and the scheme provides for laying two more of the same size when required. There is to be a pumping well sunk to 4 feet below summer level, now in progress, and a pumping plant of 250 horse-power (indicated) is being erected. The scheme provides for duplicating this pumping power when required as demand for water developes. It is proposed at present to divert 6,000 cubic feet a minute for summer irrigation, and 5,000 cubic feet a minute for winter irrigation, but the ultimate sanctioned diversion, when the scheme becomes developed, is reckoned at 9,000 cubic feet a minute for summer irrigation, and 7,500 cubic feet a minute for winter irrigation.

A great deal of irrigation is done by private pumping plants on the Gunbower and other creeks, but these plants need not be further noticed for the purposes of this report, as the water supplying them is included in the diversions already enumerated.

The next diversion is that made by the Koondrook Irrigation Trust, near the township of Koondrook. The channel is 15 feet in width, and a portable pumping plant is brought to pump water when required. I failed to get any definite information about this work, but the diversion is on a small scale, and it will be a sufficiently accurate approximation to estimate the diversion here at 400 cubic feet a minute for summer and winter.

A natural effluent has been deepened for the supply of the Benjeroop and Murrabilt Irrigation Trust, but as it does not divert waters until the river rises above 14 feet on the Echuca gauge it is not of much importance so long as pumping is not resorted to.

Between Koondrook and Swan Hill (Castle Donnington) the diversion by private pumping plants may be taken, at a low estimate, at 600 cubic feet a minute for summer irrigation.

The water pumped for the town supply of Swan Hill is only 4 or 5 cubic feet a minute.

The head work of the Swan Hill Irrigation Trust, now being constructed, is about 1 mile down stream from the town. The main channel has a bottom width of 10 feet; side slopes 2 to 1, fall of 11 inches to the mile; and the bed of the channel is 11 feet 4 inches above summer level. One pumping plant of 16-horse power is being erected, and another of equal power will be provided when required. The inlet to the pump well is 2½ feet below summer level. The quantity of water which the trust is authorized to divert is 1,500 cubic feet a minute for summer irrigation, and 900 cubic feet a minute for winter irrigation.

Some of the works for the diversion of water above described, especially the proposed Kow Swamp scheme, the Cohuna scheme, and the Swan Hill scheme, are of a costly and permanent character.

Between the last-named work at Swan Hill and the South Australian border there is no important diversion of water from the river except that at Mildura. Mildura is situated on the river 18 miles by road upstream from the junction of the Darling River at Wentworth. About two years ago Mr. George Chaffey and Mr. W. B. Chaffey, who had had experience of irrigation in California, acquired under an agreement with the Government of Victoria, a right to occupy, and ultimately to acquire in fee simple, under conditions and stipulations set out in the agreement, an area of land amounting to 250,000 acres at Mildura, and a license to take water from the river Murray, under certain regulations, sufficient for the irrigation of this area, *so far as the Government could authorize them to do so.* The place is known as the Mildura Irrigation Colony, and the business has been converted into a limited liability company under the title of "Chaffey Brothers (Limited)." Some settlement has already taken place. The population at the time of my visit, including settlers on the land, tradesmen, workmen, women and children, was variously estimated at from 400 to 500, and I was told that it had previously reached a much higher figure. 500 acres had been planted with vines and various kinds of fruit trees, and 1,100 acres more had been cleared and prepared for planting. Pumping plant had been erected, and channels constructed, sufficient to supply water for all present requirements, and a further pumping plant, capable of delivering 32,000 gallons a minute to a height of 35 feet, was in course of erection, and altogether the company may be said to have achieved fair results for the time it has been at work.

A great deal has been done in the way of keeping this Mildura irrigation settlement prominently under public attention, and it seems to be sometimes assumed that a great experiment is being tried, by which the value of irrigation in these colonies is to be tested and its progress in the future in a large measure decided. It would be a grievous mistake if any such idea got hold of the public mind, or if the value of the Murray water to this Colony should be estimated on such a basis. The degree of success or failure which settlers (not the licensees) at Mildura may attain can be no more than a measure of how far those people underrated or overrated the possibilities of irrigation in all the circumstances of soil, climate, position as regards markets, cost of land, &c., &c., which to so large an extent must have, in the face of competition, which is sure to arise in other localities more or less favoured, a determining influence on the ultimate financial result of their ventures.

The prices paid for land by settlers and others at Mildura are as follows:—

For horticultural land, £20 an acre.
For agricultural land, £15 an acre.
Town lots, 33 ft. by 155 ft., £20 each.
Villa sites, of 2½ acres, £100 each.

Purchasers at the above prices have to prepare the land for cultivation, fence it, plant it, &c., at their own expense, and to pay a yearly charge per acre for water sufficient to defray the working expenses of the irrigation machinery and works, and maintaining and keeping the same in good order and condition. Every purchaser of land acquires an interest or part ownership in the property of the general irrigation works proportional to the area owned by him, and transferable with the land or each acre of the land.

I have gone into some detail with regard to this place, as the water right conditionally ceded by the Government of Victoria, is of great magnitude, and one which might possibly lead to difficulty in arriving at an agreement between the two Colonies on the general question, if there should appear to be any reasonable probability of the right ever being claimed or claimable to its full extent. The

The agreement sets out that "Her Majesty doth hereby grant unto the licensees their executors administrators and assigns subject to the restrictions and conditions hereinafter contained and to the provisions for determination and resumption hereinafter expressed license and authority to divert and take water from the River Murray at any point or points between the boundaries of the said portion of two hundred and fifty thousand acres as far as Her Majesty can authorize the licensees their executors administrators and assigns to divert and take the same" and then follows a lengthy statement of the maximum quantities which may be diverted month by month subject to certain minimum quantities being allowed to flow past and also limited to a certain water duty for the area under irrigable culture. The terms and provisoes of this license I have for brevity and clearness put into tabular form.

TABULAR STATEMENT showing the maximum quantity of water which may be diverted each month at Mildura, subject to the provisoes stated.

1. Name of Month.	2. Minimum quantity of water which must be allowed to pass down the river below Mildura, stated in cubic feet per minute.	3. Quantity of water diverted must not exceed the rate of 1 cubic foot per minute for the number of acres stated in this column.	4. Maximum quantity of water which may be diverted, subject to the provisoes of columns 2 and 3, stated in cubic feet per minute.
January	30,000	8	30,000
February	24,000	10	24,000
March	20,000	12	20,000
April	24,000	10	24,000
May	30,000	8	30,000
June	60,000	6	40,000
July	60,000	5	48,000
August	100,000	5	48,000
September	200,000	4	60,000
October	240,000	4	60,000
November	150,000	4	60,000
December	60,000	6	40,000

It is further provided in the agreement that the license to divert this water from the river is granted subject to the right of Her Majesty at any time hereafter to make, or to authorize others to make, such diversions from the river, or from the Victorian tributaries of the river above Mildura, as shall still leave sufficient waters flowing through and below Mildura for the purposes of irrigation and water supply within the limitations contained in the license. This proviso I understand to mean, among other things, that the Government of Victoria shall not at any time hereafter make or authorize others to make such diversions from the river, or from the Victorian tributaries of the river, above Mildura as shall not still leave sufficient waters flowing through and below Mildura for the purposes of irrigation and water supply, within the limitations contained in the license, so that the water-right described seems to be fully secured to the licensees as far as the Government of Victoria could secure it.

The limitation expressed in column 3 of the tabular statement as regards the rights of the licensees is a very important one. It will be seen that the quantities stated in column 4 cannot be diverted in any month until an area of 240,000 acres is under irrigable culture. It must, however, be assumed that such a time may arrive, and that the quantities noted in column 4 may ultimately be diverted.

It will be convenient to recapitulate here, in a tabular form, the diversions described.

Name of Authority or Scheme diverting.	Means employed for diversion.	Quantity diverted stated in cubic ft. per min.		Remarks.
		Summer.	Winter.	
1. Mr. O'Shaughnessy, Mudowla Park.	Pumping	1,000	1,000	Plant on barge, and can be employed on any part of river.
2. Mr. Jeffrey	do	12	12	Pays license to Government of Victoria.
3. Echuca Town	do	55	30	
4. Turrumberry Trust	do	1,800	1,800	Sanctioned by Government but the plant not yet erected.
5. Mr. Roberts	do	50	50	Plant at work.
6. Messrs. Hayes and Barker	do	225	225	Plant at work.
7. Kow Swamp Scheme	Gravitation by artificial cut taking off at low flood.	.....	7,000	Sanctioned, but new scheme not yet carried out.
8. Direct Cut and Deep Creek	Artificial cut and natural effluent deepened.	.....	40,000	Supplies water for stock and for irrigation by pumping from Gunbower and other Creeks. Quantity estimated.
9. Cohuna Irrigation Trust	Pumping and gravitation	9,000	7,500	Works far advanced. Quantities sanctioned by Government.
10. Koondrook Irrigation Trust.	do	400	400	At work. Quantity estimated.
11. Benjeroop and Murrabit Irrigation Trust.	Flood water by deepened natural outlet.	.....	2,000	Do do
12. Private Plant between Koondrook and Swan Hill.	Pumping	600	600	Do do
13. Swan Hill Irrigation Trust	Pumping and gravitation	1,500	900	Works far advanced, but not yet working. Quantities sanctioned by Government.
14. Mildura	Pumping	20,000 to 40,000	150,000	Limit of license to Chaffey Bros. (Limited), for diversion.
	Totals	34,642 to 65,502	211,517	

I may add that a proposal has been matured for diverting water at Koonoomoo, near Tocumwal, to the extent of 14,500 cubic feet a minute in winter and 6,000 cubic feet a minute in summer; and another proposal for diverting water near Albury has received a good deal of attention on behalf of the Government of Victoria. As neither of these proposals has, however, yet received the final sanction of the Government, I shall not refer to them further than to say that they are proposals of great importance as affecting the interests of this Colony.

In order to illustrate the significance of the figures in the foregoing tabular statement, I may mention that Mr. George Gordon, C.E., of Melbourne, in his evidence before the late New South Wales Water Commission, in August, 1884, stated that he had had the discharge of the Murray, gauged at Koondrook, in the summer of 1881–82, and that it then fell as low as 50,000 cubic feet a minute, a quantity not sufficient to provide water for licenses already granted by the Government of Victoria without allowing any water for New South Wales. This is a startling result but it is not arrived at by any overstatement or straining of facts.

It may be urged by Victoria, that a discharge so low as that quoted occurs but seldom, but even with a discharge 50 per cent. higher, viz.:—75,000 cubic feet a minute, there would be comparatively little or no water left for New South Wales after providing for the present arrangements of Victoria, and it must further be borne in mind that owing to the wholesale diversion of the Goulburn River and other Victorian tributaries of the Murray, carried out since 1881 or now being carried out, a discharge such as 50,000 cubic feet a minute must be expected to be less exceptional in the future than it may have been in the past.

The arrangements made by Victoria for the disposal of moderate flood waters, are also of very serious import as regards the rights and interests of this Colony. To illustrate this, I append a statement showing what would be the effect of the appropriations authorized by Victoria on the flow of the river in such a year as 1884.

Month.	Mean discharge at Echuca in cub. ft. per min.	Quantity which would be diverted in Victoria above Mildura, under existing arrangements, in cub. ft. per min.	Quantity which Victoria has engaged to pass down for use at Mildura and compensation water below Mildura, in cub. ft. per min.	Balance available above Mildura not appropriated by Victoria.	Remarks.
1884.					
January	199,650	14,637	60,000	125,013	
February.....	186,816	14,637	48,000	124,179	
March	94,756	14,637	40,000	40,119	
April	79,979	14,637	48,000	17,342	
May.....	133,680	14,637	60,000	59,043	
June.....	213,758	14,637	100,000	99,121	
July	251,558	14,637	108,000	128,921	Kow Swamp channel and Direct Cut, &c., not flowing perceptibly.
August.....	286,119	14,637	148,000	123,482	
September.....	381,875	30,000	260,000	91,875	
October	377,437	30,000	300,000	47,437	Kow Swamp channel and Direct Cut flowing.
November.....	349,835	26,500	210,000	113,325	
December.....	281,337	21,500	100,000	159,837	

It will be seen from this statement that the water above Mildura not disposed of by Victoria, in such a year as 1884, is less than 50 per cent. of the entire flow during eight months of the year—being 42 per cent. in March, 22 per cent. in April, 44 per cent. in May, 46 per cent. in June, 43 per cent. in August, 24 per cent. in September, 13 per cent. in October, and 32 per cent. in November; while at the same time the supply to Kow Swamp and Gunbower schemes during the winter period would be from 46,000 to 30,000 cubic feet a minute short of what would be diverted in a higher state of the river.

I find from public records which I have consulted in the preparation of this report, that the value of the Murray waters for purposes of irrigation was forcibly pointed out by Mr. W. C. Bennett, Commissioner for Roads, more than twenty-two years ago in evidence given by him before the Deniliquin-Echuca Railway Commission; but the question of irrigation seems to have secured little or no public attention in this Colony until the time of the appointment of the New South Wales Water Commission, five years ago, under the Presidency of the Honorable W. J. Lyne, M.P., and this brings me to the concluding part of this report. Being a member of that Commission I had the privilege of hearing the question of the utilization of the Murray waters discussed as an intercolonial question at conferences between the New South Wales Commission, and a similar Commission which had been appointed in Victoria under the Presidency of the Honorable A. Deakin, now Chief Secretary and Minister of Water Supply in that Colony.

At the first Conference, held in Melbourne on 22nd and 23rd January, 1886, the members of the N. S. W. Commission had to recognize amongst themselves that New South Wales by insisting to the full on what was thought to be its legal rights, would not—even if it succeeded in making good the contention—place itself in a position to make the most profitable use of the Murray waters in the interests of the Colony, and the conviction forced itself upon all the members of that Commission present that the only way in which New South Wales could succeed in making the most profitable use of the waters would be by making judicious concessions to some of the claims put forward by the Victorian Commissioners, if Victoria would make correspondingly valuable concessions to New South Wales.

The Commissioners sitting in conference did not on that occasion succeed in arriving at an agreement, but a good deal was done to clear the ground in the way of moderating the claims originally put forward by either side, and at a further conference held in Sydney on 5th and 6th May of the same year, a series of resolutions were agreed to for submission to the Governments of the two Colonies with a recommendation that they should form the basis of an intercolonial treaty on the subject of the Murray River. These resolutions were published in the second report of the New South Wales Commission, but I append them here:—

They are as follows:—

"1. That a joint Trust shall be constituted, equally representative of the Colonies of New South Wales and Victoria, in which shall be vested the control of the whole of the Murray River and

its tributaries from its source to Howlong, to be known as the Upper Murray; and of the whole of the Murray River from Howlong to the eastern boundary of the Colony of South Australia, to be known as the Lower Murray; and such Trust shall have power to regulate all diversions of water from the river and tributaries within its jurisdiction.

2. That the waters of the tributaries of the Lower Murray, except such proportions thereof as shall, under the direction of the Trust, be required as compensation water for the main river, may be diverted and used by the respective Colonies through which they flow.
3. The whole of the waters of the Upper Murray and its tributaries, and the whole of the waters of the Lower Murray, shall be deemed to be the common property of the Colonies of New South Wales and Victoria. And, subject to the reservation of such compensation water as the Trust may from time to time determine, each of the said Colonies shall have the right to take and divert one-half of such water at such point or points as may, with the sanction of the Trust, be fixed on as most suitable for the requirements of such Colony. Provided always that the totals of the quantities so diverted by the two Colonies, when the whole surplus (after providing compensation water as above) is utilized, shall be equal.
4. That all natural diversions of water from the Murray shall be gauged under the direction of the Trust, and the portion of such diversions not returned to the channel of the main river shall be debited to the Colony into which such water is diverted, in the same manner as if such diversion had been made under the last preceding section.
5. That the Trust may fix and determine levels to be known as the high-flood levels of the Murray, and may make such regulations for the disposal of water flowing above such levels as to it shall seem expedient.
6. That works for the storage and regulation of the waters of the Murray may, under the supervision of the Trust, be constructed at the joint cost of the Colonies of New South Wales and Victoria, such cost to be borne by each Colony in proportion to the benefits derived by it from such works.
7. That, so far as possible, the two Colonies shall take united action in respect of all works intended to provide for the utilization of the Murray waters.
8. That the Trust shall consist of not more than six members, three of whom may be appointed by the Government of New South Wales and three by the Government of Victoria, such members to hold office for terms of not more than five years. The expenses of the Trust and its officers to be defrayed by the two Colonies in equal proportions.
9. That a Bill, embodying the above resolutions, shall be prepared under the supervision of the Water Supply Commissions, for submission to the Parliaments of New South Wales and Victoria. The Government of each Colony, having approved of the measure, shall be requested to secure for it the earliest possible consideration by its Legislature.
10. That the Governments of the respective Colonies of New South Wales and Victoria shall be requested to hold themselves bound, *ad interim*, by the provisions of the above resolutions until they shall be dealt with by the Legislatures of both Colonies."

As regards Resolution No. 9, no action was taken by the Commissioners.

As regards the question of "compensation water," I would here point out that as the action already taken by Victoria in the matter of diverting water without consulting this Colony must seriously affect the navigation of the river above Wentworth, it seems to me that this Colony may consider itself relieved from any obligation to maintain navigation in the interests of Victoria at any future time. I mention this as it will certainly be found to the interest of New South Wales not to waste water on navigation when means are afforded for using it for irrigation. In this connection I may quote a reply given by Mr. W. C. Bennett in his examination before the late Water Commission where he said he considered the question of navigation entirely secondary to that of water supply; that the navigation of the rivers would be superseded in a few years by railways, and that in future the rivers would be utilized for the purpose of water supply, and in producing something to transport rather than in transporting it.

Among the papers handed to me is some correspondence with the Government of South Australia in which a right is claimed for that Colony to have a voice in any settlement arrived at as regards the Murray River before it reaches South Australian territory. It appears to me that the recognition of any such right would give South Australia a voice in the disposal of the waters of the Darling, the Murrumbidgee, and any other rivers joining the Murray, and ultimately flowing through South Australian territory; but at the same time, having regard to views which may be taken of the law of riparian rights, I would venture to suggest that it would be advisable to have an Intercolonial Conference as regards a final settlement of this very important question, at which South Australia would be represented, as such a course would afford the readiest means of discussing the question and removing possible misapprehension as to supposed rights.

I think it advisable to point out how highly desirable it is in the interests of this Colony that steps should be taken to give effect to a recommendation made by the Water Commissions of Victoria and New South Wales to their respective governments in these words:—"That the Governments of New South Wales and Victoria are invited to take joint and immediate action for a thorough examination of the Murray River and its tributaries, and the accurate gauging of the discharge at various points."

Another matter which attracted my attention in connection with the Murray River seems to me so important that I think it right here to refer to it briefly, and that is the disposal of the liquid sewage of the towns along the banks of the river, which I believe finds its way in most, if not in all, cases to the river in an unpurified condition. As these towns and residents generally along the river use the water of the river for domestic purposes, the importance of the question will be at once recognised.

I have already stated that the Minister of Water Supply in Victoria and the Chief Engineer of Water Supply kindly assisted me in every way possible in the prosecution of my enquiries, and I wish here to add that I met like courtesy from all the gentlemen along the Murray, whether chairmen, or members of trusts, owners of private pumping plants, or their managers, or others with whom the prosecution of my enquiries brought me in contact.

I have the honor to be,
Sir,
Your most obedient servant,
D. M'MORDIE, B.E., M. Inst. C.E.

Sydney: Charles Potter, Government Printer.—1889.

[6d.]

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

WATER SUPPLY, GUNNEDAH.

(CORRESPONDENCE RESPECTING.)

Ordered by the Legislative Assembly to be printed, 3 *July*, 1889.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 7th June, 1889, That there be laid upon the Table of this House,—

"Copies of all correspondence, minutes, and reports between the Government Medical Officer at Gunnedah, the Board of Health, and the Municipal Council of Gunnedah, in reference to the water supply of Gunnedah, together with copies of all analyses made at the said water."

(*Mr. Turner.*)

Telegram from The Government Medical Officer, Gunnedah, to The Medical Adviser to the Government.

Gunnedah.

WATER in river here thoroughly unfitted for human consumption; the Council will not prevent it being sold by carriers; good water available at hand; advise what action to take; writing to-day.

E. J. A. HAYNES,
Government Medical Officer.

Request Dr. Haynes to forward a sample of this water for analysis. One Winchester quart will be required.—H.N.M., 20/12/88. Done.—E.S., 20/12/88.

Telegram from The Secretary, Board of Health, to The Government Medical Officer, Gunnedah.

Sydney, 20 December, 1888.

TELEGRAM respecting river water received. Send sample of water in Winchester quart bottle.

EDMUND SAGER,
Secretary, Board of Health.

358— The

[920 copies—Approximate Cost of Printing (labour and material), £6 1s. 7d.]

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The Government Medical Officer, Gunnedah, to The Medical Adviser to the Government.

Sir, Gunnedah, 19 December, 1888.

In consequence of many complaints being made to me of the filthy state of the water in the river here, which is being sold to the inhabitants, I made an examination, the result of which is contained in report attached herewith.

I may add here that at a very small expense water could be obtained good and in sufficient quantity by sinking a well on the bank of the river, and which could be pumped by the Government engine, which is close at hand.

The only action the Council have taken is to make known that filtered water can be obtained at the railway tanks at 4d. per load of 100 gallons. Now, I may state that the place from which this water called filtered water, is taken, is situated in the bed of the river, and from which a drowned man was taken some few weeks ago. At this place an iron cylinder is embedded, the mouth of which is on a level with the river-bed, so that when the river is a few inches higher than it is at present it flows in the top. It is not filtered water.

There are two slaughter-houses here, from which, in wet weather, refuse collects in the river, and at this time dead cattle and sheep are rotting in the waters of the river.

In conclusion, I may state that there are numbers of private wells in town from which water could be obtained, if the Council only took the matter in hand.

In the interest of the public I think carriers should be prevented from selling this river water. The police inform me that they have no power to act, and the Council will not interfere.

I am, &c.,
E. J. A. HAYNES.

[*Enclosure.*]

THE RIVER WATER.

DR. E. J. A. HAYNES, Government Medical Officer, to his Worship the Mayor of Gunnedah, reporting on the state of the water now in the Namoi River, and which is being supplied to the inhabitants of the town of Gunnedah.

On the 13th December, 1888, I personally inspected the water which is being taken from that part of the river just behind Mr. Cohen's store. The water is stagnant, dirty, and full of animal life, such as is found in impure water. There is also an enormous quantity of decayed animal and vegetable matter suspended in the water, which is to be seen in great quantity when a water-cart backs into the river to be filled.

I give it as my medical opinion that this part of the river water is thoroughly unfitted for human consumption, and that unless immediate steps are taken to prevent it being sold to the inhabitants we will soon have an outburst of fever of the worst kind, viz., typhoid.

I have inspected the river up and down for about a mile, and I find everywhere that the water is in an impure state, full of decaying animal and vegetable matter.

I suggest that steps be at once taken to stop the further sale of the water, and that a well be sunk somewhere near the engine-shed below the bridge ; for I feel sure that there is a current of water at a depth of not more than 30 feet, and which water, although it may be a little hard, is better than the present soft water of the river, which is wholly unfitted for human food. I am personally aware of the beautiful water contained in the wells of Mr. Cohen and Mr. Matthias.

The advantage of the well being near the engine-shed is that arrangements could be made with the Government to pump water into iron tanks situated in the town, and could be supplied to the carters at about 2d. a load.

I send a copy of this report to the local papers, so that the subject be brought before the inhabitants of the town.

This report is drawn up in consequence of several complaints having been made to me as to the state of the river water.

The Government Medical Officer, Gunnedah, to The Medical Adviser to the Government.

Sir, Gunnedah, 22 December, 1888.

I am sending by to-day's mail-train sample of river water which is being sold to inhabitants. I drove into the river in my buggy to the place where water is obtained for sale, and filled the bottle.

I might add that at this place all the town horses are watered and vehicles are washed. On the shores of the river black looking mud is stirred up, and a smell of sulphuretted hydrogen liberated.

In private wells, sunk on the banks of the river, good and wholesome water is obtained ; so that at the outlay of about £30 the Council, if they wished, could obtain water by sinking, and could easily fix thereto a common town pump.

Every day from this out the water will get worse, and we are hardly yet into summer heat, and you may imagine at our temperature of from 106 to 112 degrees in the shade and bad water what the result will be in about a month's time.

Diarrhœa is now very prevalent here, and I look on that as the forerunner of typhoid (enteric) fever.

I have, &c.,
E. J. A. HAYNES.

Urgent. Will Mr. Hamlet kindly examine and report on this water as soon as possible.—E.S. (for the Medical Adviser), B.C., 28/12/88. The Government Analyst.

The

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The Government Analyst to The Medical Adviser to the Government.

Government Laboratory, Sydney, 31 December, 1888.

ANALYSIS of a sample of Water received from Gunnedah from the Medical Adviser, 28/12/88, labelled, Namoi River, Gunnedah.

	Results expressed in	
	Grains per gallon.	Parts per 100·000.
Appearance in 2-foot tube	Muddy deposit.	
Odour on heating to 100° Fah.	Much sulphuretted hydrogen.	
Chlorine as chlorides...	1·7	2·4
Phosphoric acid in phosphates	traces.	
Nitrogen in nitrates and nitrites	do	
Do equivalent in nitric acid	do	
Do existing as free ammonia	·022	·032
Organic nitrogen, or "albuminoid ammonia"	·028	·040
Oxygen absorbed in 15 minutes at 80° Fah.	.....	.....
Do 4 hours do	·210	·300
Hardness in degrees, Clark's scale, before boiling ...	.....	.....
Do do after do ...	.....	.....
Poisonous metals	None.	
Total solid residue dried at 220° Fah.	16·94	24·20

Culture examination for pathogenic organisms:—Full of organic life.

General observations on the character of the water:—An exceedingly bad water and totally unfit for domestic purposes.

WILLIAM M. HAMLET, F.I.C., F.C.S.,
Government Analyst.

Inform Mayor of Gunnedah and Government Medical Officer in terms of this report. And inform Dr. Haynes that the Municipality have been communicated with.—H.N.M., 2/1/99.

The Secretary, Board of Health, to The Mayor of Gunnedah.

Sir, Board of Health Office, 127, Macquarie-street, Sydney, 3 January, 1889.

The Government Medical Officer for the Gunnedah District having drawn the attention of this department to the condition of the water of the Namoi River, which is being used for drinking purposes by the residents of your Municipal District, a sample of the water was duly obtained and subjected to analysis.

The analyst's report discloses that this water is full of organic life, an exceedingly bad water and totally unfit for domestic purposes. I have therefore the honor to request you to take such action as may be possible to prevent the public from using this river water.

I have, &c.,
EDMUND SAGER,
Secretary.

The Secretary, Board of Health, to The Government Medical Officer, Gunnedah.

Sir, Board of Health Office, 127, Macquarie-street, Sydney, 3 January, 1889.

I have the honor, by direction of the Medical Adviser to the Government, to acknowledge receipt of your letters of the 21st and 22nd ultimo, and also a sample of water from the river Namoi, which was immediately handed to the Government Analyst for examination and report.

The analyst's report discloses that this water is full of organic life, an exceedingly bad water, and totally unfit for domestic purposes. His Worship the Mayor has been informed accordingly and requested to take such action as may be possible to prevent the public from using the river water.

I have, &c.,
EDMUND SAGER,
Secretary.

The Mayor of Gunnedah to The Secretary, Board of Health.

Sir, Council Chambers, Gunnedah, 9 January, 1889.

I have the honor to acknowledge the receipt of your communication of the 3rd instant, *re* the condition of the water in the Namoi River, and beg to enclose a copy of the sub-committee's report appointed to examine the water in the tanks in the railway yard. I am also sending, by to-day's train, a bottle of water from the railway tanks for analysis, and shall anxiously wait the result.

I have, &c.,
JOHN J. SMYTH,
Mayor.

[*Enclosure.*]

[*Enclosure.*]

To the Municipal Council, Gunnedah,— Gunnedah, 18 December, 1888.

We, the Sub-committee appointed to make inquiry *re* water supply for the inhabitants, and to ascertain if water can be procured at the railway tank, and upon what conditions and terms, have to report :—

We waited upon the Stationmaster (Mr. G. Beal) to-day, and he informed us the water-carters and others can obtain water from the railway tanks at the rate of 2d. per hogshead of 56 gallons, or (say) 4d. per 100 gallons, and is procurable between the hours of 6 a.m. and 3 p.m., and no doubt, if necessary, more convenient arrangements might be made, upon application to the Department. This arrangement has been in existence since 1883, and the average demand has been less than 1s. per month, of which Mr. Curll was the largest consumer, having used the tank when making bricks. Mr. Beal informs us that more than 200 miles on the line are being supplied with this water, and he has not heard a single complaint, or heard of any individual suffering from the use of it.

We visited the tank, and found it nearly full, looking clear, and without any appearance of vegetable or other objectionable matter. The water is pumped from the river every day, and the supply-pipe at the river passes into a perforated iron cylinder sunk in the river.

We find the Department has gone to heavy expense connecting the tank by tubing attached to a stand-pipe on the side of the street, where the carts can be conveniently and expeditiously supplied.

Following up our inquiries, we authorized the Council Clerk to make the fact known, through the local papers, that water can be obtained at the railway tank at 4d. per 100 gallons, and we think the ratepayers that do not approve of the water being carted from the river have the matter in their own hands, by refusing to accept other than the tank water.

We are, &c.,
JOHN SMYTH (Mayor).
J. L. CUSHAN.
ROBERT DOOLAN.

Perhaps Mr. Hamlet will kindly examine and report upon this sample.—E.S., B.C., 11/1/89.
The Government Analyst.

The Government Analyst to The Medical Adviser to the Government.

Government Laboratory, Sydney, 16 January, 1889.

Analysis of a sample of water received from the Mayor and Municipal Council of Gunnedah, 11th January, 1889 :—

	Results expressed in	
	Grains per gallon.	Parts per 100,000.
Appearance in 2-foot tube	Bright and clear.	
Odour on heating to 100° Fah.	none.	
Chlorine as chlorides...	2·2	3·14
Phosphoric acid in phosphates	none.	
Nitrogen in nitrates and nitrites	none.	
Do equivalent in nitric acid	none.	
Do existing as free ammonia	none.	
Organic nitrogen, or "albuminoid ammonia"	·002	·003
Oxygen absorbed in 15 minutes at 80° Fah.	.....	.....
Do 4 hours do	·028	·04
Hardness in degrees, Clark's scale, before boiling... ...	9·0	.....
Do do do after do	.....	.....
Poisonous metals	none.	
Total solid residue dried at 220° Fah.	28·98	41·4

Culture examination for pathogenic organisms :—Negative results.

General observations on the character of the water :—A good drinking water, suitable for domestic purposes.

WILLIAM M. HAMLET, F.C.S.,
Government Analyst.

A copy of this certificate should be forwarded to the Mayor of Gunnedah.—H.N.M., 17/1/89.

The Secretary, Board of Health, to The Mayor of Gunnedah.

Sir, Board of Health Office, 127 Macquarie-street, Sydney, 17 January, 1889.

I have the honor to acknowledge receipt of your letter of the 9th instant, forwarding a sample of water from the railway tanks in your town and in reply thereto to forward you, herewith, a copy of analysis of the water.

I have, &c.,
EDMUND SAGER,
Secretary.

[Copy of Government Analyst's certificate dated 16 January, forwarded herewith.]

The Government Medical Officer, Gunnedah, to The Medical Adviser to the Government.

Sir, Gunnedah, 26 March, 1889.

Last Christmas I wrote you *re* the supply of water to this town and also sent you a bottle of the water on which the Government analyst reported as unfit for human consumption.

I am again compelled to write you, and you may well imagine in what state the water of the river is now after three months drought and a continued temperature of about 108° in the shade. The water now is simply filthy, and the inhabitants are using this for all the ordinary purposes, and that typhoid has not broken out, I attribute the excessive temperature, which I maintain is too high for its development, but this

the last few days we have had a fall in temperature, and as a consequence an enormous amount of dysenteric diarrhœa, which I accept as the forerunner of an outbreak of enteric fever. No doubt, should an outbreak of typhoid take place, Government aid will have to be applied for, as in the case of Balranald, and I submit that the Board of Health should devise some means of compelling the town Council of Gunnedah to prohibit the sale of this river water, and compel the water-carriers to take the water from the railway tanks. These are the tanks from which some water taken by the town clerk and sent to you and reported as wholesome, but you should also be aware that, always presuming that this water was taken from the railway tanks by the town clerk, the inhabitants here say the tank water is worse than the river water. That the people admit this the sergeant of police here can testify to. I pointed out in my report last December that the water conveyed to these railway tanks was taken from an iron cylinder sunk in the bed of the river, the mouth of which was flush with the river-bed.

I have pointed out to the Council that a well sunk on the high bank of the river some 60 feet deep would reach well below the river bed, and natural drainage would take place from the bed of the river, and that we had proof of this in the existence of several wells sunk on private property. If a town pump were fixed to the well so sunk it would meet all requirements in drought and in flooded states of the river. This opinion is also endorsed by several competent judges amongst whom I can refer you to Mr. Dewhurst, district surveyor.

I wish also to point out that on the bank of the river, about 500 yards above the watering place, there is situated a slaughter-house; this is also within the municipal boundary. The river water flows from this place towards the town, and the stream is always small, about 10 feet wide and about 2 to 3 feet deep. I have myself seen pigs after rolling in the filth of the slaughter-house go into the river and bogey. The natural consequence of this is that all offal and usual filth of the slaughter-house is carried down and so contaminates the drinking water the town depends on. I have pointed this out to the mayor, but nothing has been done, and may also mention that the owners of this slaughter-house are in the Council, one being an alderman and the other town clerk. I have been applied to frequently by the township above the place, so I now place the matter of this slaughter-house in your hands, as I am powerless.

I am constantly annoyed by people calling on me to take action as Government Medical Officer, or to have the Board of Health in Sydney take action in the matter of water supply, but I see nothing further I can do than I did last December, and that which I am doing now by bringing the matter under your notice. I understand that an indignation meeting is to be held, when resolutions will be forwarded to the Government.

Trusting that you will, in the interests of the public here, make this matter urgent.

I have, &c.,
E. J. A. HAYNES, L.R.C.P., Lond., M.R.C.S., Eng.,
Government Medical Officer.

Letters forwarded to the Mayor and the Government Medical Officer of Gunnedah as instructed.—E.S., 30/3/89.

The Secretary, Board of Health, to The Mayor of Gunnedah.

Sir, Board of Health Office, 127, Macquarie-street, Sydney, 30 March, 1889.

I have the honor to inform you that the Government Medical Officer for Gunnedah has directed the attention of the Board of Health to the fact that water is still being taken from the river for domestic purposes at a point below the spot where the refuse from a slaughter-yard enters the river.

I am directed to draw your attention to the certificate of analysis forwarded to you on the 3rd of January last, wherein it is shown that at that time the river water was "exceedingly bad, and totally unfit for domestic purposes," and to urge upon your Council the desirability of taking immediate steps to cause a discontinuance of this and to obtain a supply from some other source.

I would specially point out the great danger arising from taking water from the river below the point where the refuse from a slaughter-yard enters it.

I have, &c.,
EDMUND SAGER,
Secretary.

The Secretary, Board of Health, to The Government Medical Officer, Gunnedah.

Sir, Board of Health Office, 127, Macquarie-street, Sydney, 30 March, 1889.

I have the honor, by direction, to acknowledge receipt of your letter of the 26th instant, drawing attention to the river water used by the inhabitants of Gunnedah for domestic purposes.

In reply, I am instructed to inform you that the Board of Health has at present no power to compel the Municipal Council of Gunnedah to prohibit the sale of river water, but that a letter has this day been forwarded to the Council pointing out the objectionable character of the river water, as shown by analysis and the special danger arising from taking it below the point where the refuse from a slaughter-yard enters the river, and urging the desirability, in the interests of the public health, of obtaining some other supply.

I have, &c.,
EDMUND SAGER,
Secretary.

The Mayor of Gunnedah to The Secretary, Board of Health.

Sir, Council Chambers, Gunnedah, 2 April, 1889.

I have the honor to acknowledge the receipt of your communication of the 30th ultimo *re* water being taken from the river for domestic purposes, and beg to inform you that a supply of good water can be obtained from the railway tank, a sample of which was forwarded to you for analysis, and to request that you will be good enough to forward me a copy of the Government Medical Officer's report.

I have, &c.,
JOHN SMYTH,
Mayor.

Extract forwarded with letter, 5/4/89.—E.S.

The

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The Secretary, Board of Health, to The Mayor of Gunnedah.

Sir, Board of Health Office, 127, Macquarie-street, Sydney, 5 April, 1889.

I have the honor to acknowledge receipt of your letter of the 2nd instant, and to forward you herewith an extract from a report by Dr. Haynes, Government Medical Officer for Gunnedah, dated 26th March, containing a suggestion for the better supply of water to your town.

I have, &c.,
EDMUND SAGER,
Secretary.

[*Enclosure.*]

EXTRACT.

I HAVE pointed out to the Council that a well sunk on the high bank of the river, some 60 feet deep, would reach well below the river bed, and natural drainage would take place from the bed of the river, and that we had proofs of this in the existence of several wells sunk in private property. If a town-pump were fitted to the well so sunk it would meet all requirements in drought and in flooded states of the river. This opinion is also endorsed by several competent judges, among whom I can refer you to Mr. Dewhurst, District Surveyor."

The Mayor of Gunnedah to The Secretary, Board of Health.

Sir, Council Chambers, Gunnedah, 8 April, 1889.

I have the honor, by resolution of this Council, to forward you by to-day's train two bottles of water, numbered 1 and 2, taken from the river, for separate analysis.

Waiting for the report.

I have, &c.,
JOHN J. SMYTH,
Mayor.

Will Mr. Hamlet kindly analyse and report on these samples as soon as possible.—F.N.M., 9/3/89. The Government Analyst.

The Government Analyst to The Medical Adviser to the Government.

Sir, Government Laboratory, Sydney, 12 April, 1889.

I have the honor to report the following results of my analyses of the two samples of water taken from the river at Gunnedah, the details of which are given on the accompanying forms.

Both specimens are heavily charged with organic matter, some of which, being in a state of suspension, may be readily removed by suitable means; but after such removal the amount of organic impurity is still excessive.

Owing to the small proportion of chlorine it may be inferred that the nature of the pollution is of a vegetable rather an animal character. No. 2 is on all points more polluted than No. 1.

In their present condition, I am of opinion that both are unfit for drinking purposes, but that No. 1 may be rendered sufficiently pure for ordinary domestic use by subsidence and efficient filtration.

I have, &c.,
WILLIAM M. HAMLET, F.C.S., F.I.C.,
Government Analyst.

Copy to Municipal Council of Gunnedah.—F.N.M., 12/4/89.

[*Enclosures.*]

Government Laboratory, Sydney, 12 April, 1889.

ANALYSIS of a sample of Water received from the Mayor of Gunnedah, 10th April, 1889, labelled No. 1 :—

	Results expressed in	
	Grains per gallon.	Parts per 100,000.
Appearance in 2-foot tube	Clear, with suspended matter.	
Odour on heating to 100° Fah.	Slight organic.	
Chlorine as chlorides	1·7	2·4
Phosphoric acid in phosphates	Traces.	
Nitrogen in nitrates and nitrites	do	
Nitrogen equivalent in nitric acid	do	
Nitrogen existing as free ammonia	·045	·065
Organic nitrogen, or "Albuminoid Ammonia"	·025	·036
Oxygen absorbed in 15 minutes at 80° Fah.	.....	.....
,, 4 hours ,,	·175	·250
Hardness in degrees, Clark's scale, before boiling	Under 10.	
,, ,, after ,,	do	
Poisonous metals	None.	
Total solid residue dried at 220° Fah.	18·48	26·4

General observations on the character of the water :—See Report.

WILLIAM M. HAMLET, F.C.S., F.I.C.,
Government Analyst.

ANALYSIS

7

ANALYSIS of a sample of Water received from the Mayor of Gunnedah, 10th April, 1889, labelled No. 2.

	Result expressed in	
	Grains per gallon.	Parts per 100,000.
Appearance in 2-foot tube	Suspended matter, but clear.	
Odour on heating to 100° Fah.	Slight organic.	
Chlorine as chlorides	2·3	3·28
Phosphoric acid in phosphates	Traces.	
Nitrogen in nitrates and nitrites	do	
Nitrogen equivalent in nitric acid	do	
Nitrogen existing as free ammonia	·028	0·4
Organic nitrogen, or 'albuminoid ammonia'	·053	·076
Oxygen absorbed in 15 minutes at 80° Fah.	.....	.....
,, 4 hours ,,	·234	·335
Hardness in degree, Clark's scale, before boiling	Under 10.	
,, ,, after ,,	do	
Poisonous metals	None.	
Total solid residue, dried at 220° Fah.	19·88	28·4

General observations on the character of the water :—See Report.

WILLIAM M. HAMLET, F.C.S., F.I.C.,
Government Analyst.

The Secretary, Board of Health, to The Council Clerk, Gunnedah.

Sir, Board of Health Office, 127 Macquarie-street, Sydney, 13 April, 1889.

Referring to your letter of the 2nd instant, I have the honor to forward you enclosed copies of report and certificates of analyses of samples of water forwarded therewith.

I have, &c.,
EDMUND SAGER,
Secretary.

[Copies of Analyst's report and two certificates of the 12th April were forwarded herewith.]

The Mayor of Gunnedah to The Secretary, Board of Health.

Sir, Council Chambers, Gunnedah, 16 April, 1889.

I have the honor to acknowledge the receipt of your letter of the 5th instant, conveying an extract from a report by Dr. Haynes, Government Medical Officer for Gunnedah, and to request, in accordance with a resolution of this Council, that you will be good enough to forward me a copy of the full report by the Government Medical Officer for Gunnedah, dated 26th March last.

Yours, &c.,
JOHN SMYTH,
Mayor.

Request cannot be complied with.—F.N.M., 18/4/89.

The Secretary, Board of Health, to The Council Clerk, Gunnedah.

Sir, Board of Health Office, 127 Macquarie-street, Sydney, 18 April, 1889.

I have the honor, by direction of the Medical Adviser to the Government, to acknowledge receipt of yours of the 16th instant, in which you request that a full copy of the Government Medical Officer's report may be supplied, and in reply to inform you that your request cannot be complied with.

I have, &c.,
EDMUND SAGER,
Secretary.

The Mayor of Gunnedah to E. W. Turner, Esq., M.P.

Sir, Council Chambers, Gunnedah, 2 May, 1889.

I have the honor, by a resolution of this Council, to respectfully request you to obtain a full copy of the report sent by the Government Medical Officer for Gunnedah to the Board of Health, dated 26th March last.

Yours, &c.,
JOHN SMYTH,
Mayor.

The Secretary, Board of Health,—May I ask that you will kindly comply with this request at an early date.—E. W. TURNER, M.P., 8/5/89.

The Secretary, Board of Health, to E. W. Turner, Esq., M.P.

Sir, Board of Health Office, 127, Macquarie-street, Sydney, 10 May, 1889.

In reply to yours of the 8th instant, requesting that a copy of the report of the 26th March last from the Government Medical Officer for Gunnedah might be furnished to the Gunnedah Municipal Council, I have the honor, by direction, to inform you that such parts of the report as appeared necessary for the information of the Council with regard to sanitary matters have already been forwarded.

I have, &c.,
EDMUND SAGER,
Secretary.

Sydney : Charles Potter, Government Printer.—1889

[6d.]

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

METROPOLITAN WATER AND SEWERAGE ACT AMENDMENT BILL.

(MESSAGE No 12.)

Ordered by the Legislative Assembly to be printed, 4 *April*, 1889.

CARRINGTON, *Governor.* *Message No.* 12.

In accordance with the provisions contained in the 54th section of the Constitution Act, the Governor recommends for the consideration of the Legislative Assembly the expediency of making provision to meet the requisite expenses in connection with a Bill to make further provision for carrying out and completing the approved scheme of sewerage authorized by the "Metropolitan Water and Sewerage Act of 1880," to authorize the completion of certain sewerage works within the Municipalities, for which funds have been provided by the Councils thereof, and to amend the said Act in certain respects for the better carrying out of the approved and other schemes of water supply and sewerage thereby authorized, and for other purposes.

Government House,
Sydney, 4th April, 1889.

[3*d*.] 129—

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

METROPOLITAN WATER AND SEWERAGE ACT AMENDMENT BILL (NO. 2.)

(MESSAGE No. 58.)

Ordered by the Legislative Assembly to be printed, 24 September, 1889.

CARRINGTON,
Governor.

Message No. 58.

In accordance with the provisions contained in the 54th section of the Constitution Act, the Governor recommends, for the consideration of the Legislative Assembly, the expediency of making provision to meet the requisite expenses in connection with a Bill to make further provision for carrying out and completing the approved scheme of sewerage authorized by the "Metropolitan Water and Sewerage Act of 1880"; to provide for the valuation and crediting of sewerage works constructed by Municipal Councils in certain cases; to make special provision in the case of the Municipality of Redfern; and to amend the said Act in certain respects, for the better carrying out of the approved and other schemes of water supply and sewerage thereby authorized; for the making of fresh assessments and for providing for appeals therefrom in certain cases; for simplifying the recovery of rates and other moneys by the Board; for increasing the rate of remuneration paid to the Board, and for other purposes.

Government House,

Sydney, 19th September, 1889.

[3*d.*] 661—

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

POTTS' HILL STORAGE RESERVOIR BILL.

(MESSAGE No. 8.)

Ordered by the Legislative Assembly to be printed, 4 *April*, 1889.

CARRINGTON,
Governor.

Message No. 8.

In accordance with the provisions contained in the 54th section of the Constitution Act, the Governor recommends, for the consideration of the Legislative Assembly, the expediency of making provision to meet the requisite expenses in connection with a Bill to sanction the completion of a storage reservoir, in connection with the Sydney Water Supply at Potts' Hill, in the county of Cumberland.

Government House,
Sydney, 4th April, 1889.

[3*d*.] 125—

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

SYDNEY WATER SUPPLY (PARTIAL DUPLICATION) BILL.

(MESSAGE No. 9.)

Ordered by the Legislative Assembly to be printed, 4 April, 1889.

CARRINGTON, *Governor.* *Message No. 9.*

In accordance with the provisions contained in the 54th section of the Constitution Act, the Governor recommends, for the consideration of the Legislative Assembly, the expediency of making provision to meet the requisite expenses in connection with a Bill to sanction the laying of a second pipe in connection with the Sydney Water Supply, between Potts' Hill, in the parish of Liberty Plains, and Crown-street, in the city of Sydney, county of Cumberland.

Government House,
Sydney, 4th April, 1889.

1889.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE, APPENDICES, AND PLANS,

RELATING TO THE

PROPOSED DRAINAGE WORKS

FOR THE

WESTERN SUBURBS.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37, section 8.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1889.

20—*a*

[10s.]

NAMES OF THE MEMBERS OF THE COMMITTEE WHO HAVE INQUIRED INTO THE PROPOSED WORKS.

SECOND COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable JOHN LACKEY, Chairman.
The Honorable GEORGE CAMPBELL.
The Honorable WILLIAM HENRY SUTTOR.
The Honorable JAMES WATSON.
The Honorable FREDERICK THOMAS HUMPHERY.

LEGISLATIVE ASSEMBLY.

JOSEPH PALMER ABBOTT, Esquire, Vice-Chairman
HENRY COPELAND, Esquire.
JACOB GARRARD, Esquire.
ALEXANDER KETHEL, Esquire.
SYDNEY SMITH, Esquire.
THOMAS MICHAEL SLATTERY, Esquire.
JOHN RENDELL STREET, Esquire.
DANIEL O'CONNOR, Esquire.

THIRD COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable JOHN LACKEY, Vice-Chairman.
The Honorable ANDREW GARRAN.
The Honorable FREDERICK THOMAS HUMPHERY.
The Honorable WILLIAM JOSEPH TRICKETT.
The Honorable JAMES WATSON.

LEGISLATIVE ASSEMBLY.

JOSEPH PALMER ABBOTT, Esquire, Chairman.
JACOB GARRARD, Esquire.
HENRY COPELAND, Esquire.
JAMES EBENEZER TONKIN, Esquire.
WILLIAM SPRINGTHORPE DOWEL, Esquire.
JOHN SUTHERLAND, Esquire.
EDWARD WILLIAM O'SULLIVAN, Esquire.
JOHN HURLEY, Esquire.
CHARLES ALFRED LEE, Esquire.

[Shortly after the first meeting of the third Committee John Sutherland, Esquire, became deceased, and his place was filled by the appointment of Charles Alfred Lee, Esquire. At a subsequent point of the inquiry the Honorable James Watson resigned his seat on the Committee.]

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Plan IV.—Plan of the Western Suburbs of Sydney showing the proposed low-level areas.

Plan V.—Plan showing an alternative low-level drainage scheme for Balmain.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

DRAINAGE WORKS FOR THE WESTERN SUBURBS.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the present Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, and the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, to whom was referred the duty of considering and reporting upon "the expediency of carrying out drainage works for the Western Suburbs, including the Boroughs of Alexandria, Ashfield, Balmain, Burwood, Camperdown, Darlington, Glebe, Macdonaldtown, Marrickville, Newtown, Petersham, Redfern, and Waterloo, with the Municipal Districts of Canterbury, Concord, Five Dock, Leichhardt, St. Peters, and Strathfield," have, after due inquiry, resolved that it is expedient the works should be carried out; and, in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

General description of proposed scheme.

1. The proposed scheme, so far as it has been referred by the Legislative Assembly to the Committee, provides for the main sewerage with outfall works of nineteen suburbs at a cost of £830,304. It forms a portion of a proposed complete scheme, and does not include the construction of subsidiary sewers; but the position of the main and branch sewers has been devised to facilitate the construction of the subsidiary sewers in such a manner as to avoid all unnecessary depths and expense. The principal object sought in the scheme is the removal of as much of the sewage as is practicable by gravitation, and to attain this end the situations and points of termination of the various sewers and sub-mains have been determined with a view to serve as large a gravitating area as possible. Some parts of the districts included in the scheme—nearly 29 per cent. of the area—are, however, too low to admit of their being drained by a gravitating system, and the requirements of those parts will be met by means of low-level sewers and branches, which will be emptied by means of pumping machinery or other mechanical power, the sewage being discharged into and carried off by the gravitating sewers. The localities included in the scheme which it is proposed to drain by gravitation are the high-level portions of the nineteen suburbs already mentioned. The low-level area, for which drainage is provided in the present scheme, is a portion of Marrickville and St. Peters. Darlington and part of Redfern possess recently-constructed sewers, which are now in operation, these sewers being branches of the Prince Alfred Hospital sewer; but, in other respects, these two boroughs come into the general scheme for the Western Suburbs.

Low-level areas.

2. In addition to the low-level area in the Borough of Marrickville, there are twenty-two other low-level areas in the Western Suburbs—two at the Glebe, three at Leichhardt, ten at Balmain, one at Ashfield, one at Five Dock, two at Burwood, one at Concord, and two at Strathfield. Provision has been made in the capacity of the main sewers and sub-mains for the removal of the sewage from the whole of the low-level areas; but, in the case of most of these localities, the existing conditions

do

do not demand the immediate construction of sewers, and where this is so, no provision for their drainage has been made in the estimate of the present scheme. The low-level system at Marrickville will necessitate the erection of a pumping station in Marrickville Valley, in the vicinity of Meek's Road; and central compressing stations under the Shone system will be required in connection with some of the low-level areas in other suburbs.

The proposed plan, and the area to be drained.

3. The drainage area of the scheme is 22 square miles, and the plan proposed for dealing with the sewage of this area comprises three systems of sewers, which, respectively, are designated the Northern, Southern, and Western systems. The Northern and Southern will serve an area of nearly 5 square miles, dealing with the Glebe, Leichhardt, and Balmain; Newtown, Camperdown, and Petersham; Darlington and Redfern; part of the city, Redfern, and Waterloo; Alexandria, Macdonaldtown, and Newtown; and these localities will be drained into the existing sewerage systems which discharge at Bondi and at the Sewage Farm, Webb's Grant, Botany. The Western area, embracing nearly 17 square miles, and dealing with Marrickville, Petersham, Newtown, and Leichhardt; Marrickville, St. Peters, Macdonaldtown, and Alexandria; Marrickville, Ashfield, Petersham, and Leichhardt; Ashfield, Burwood, Strathfield, Concord, and Five Dock; Canterbury, and Southern Slopes, it is proposed to drain by an entirely new system discharging at the Sewage Farm, Webb's Grant, Botany.

The new sewers.

4. The proposed new works comprise,—

(1.) A main intercepting sewer and branches from Newtown Road and George-street West through The Glebe, Leichhardt, and Balmain, for the area which will be found coloured purple on plan No. III accompanying this Report.

(2.) An extension of the Prince Alfred Hospital sewer through Camperdown to Liberty-street, Petersham.

(3.) A main intercepting sewer and branches from the southern outfall sewer at Alexandria through Macdonaldtown to Wilson-street, Newtown, for the area coloured green on the plan.

(4.) An outfall sewer for the Western Branch sewers from the outfall at Webb's Grant to Marrickville, a distance of 2 miles 380 yards.

(5.) An eastern intercepting sewer and branches from Marrickville to Leichhardt, for the drainage of parts of Marrickville, St. Peters, Newtown, Macdonaldtown, Alexandria, Petersham, Leichhardt, and Camperdown, as coloured yellow on the plan. This includes a low-level system for Marrickville Valley and St. Peters.

(6.) A northern intercepting sewer and branches for the western parts of Marrickville, Petersham, and Leichhardt, as shown in red colour on the plan.

(7.) A western intercepting sewer and branches from Marrickville and Strathfield, for the drainage of Burwood and parts of Ashfield, Five Dock, Concord, and Strathfield, as shown by blue colour on the plan.

The additional area required at Webb's Grant.

5. It is proposed to resume about 250 acres of land near Webb's Grant, Botany, as edged green on plan No. III, for the future disposal and purification of the sewage by means of filtration and irrigation, and to construct the necessary outfall works and carriers thereon.

Description of the sewers.

6. The scheme generally has been designed, its author explains, with a view to the sewers being laid in straight lines as far as practicable, and at a sufficient depth to drain the lowest part of the adjacent premises. The main intercepting sewers are oviform, with the narrow part at the bottom, this form giving the greatest hydraulic mean depth, and consequently the greatest velocity or scouring power during the periods of minimum dry-weather flow. The areas and gradients, together with steps at the intersections, are so regulated as to ensure self-cleansing and to carry off effectively the maximum quantity of sewage and rainfall. Due provision is made by shafts for inspection and ventilation, also for storm-water overflows, for automatic flushing tanks or chambers, and for air-flaps.

7. The cost of the works, including land and compensation, is estimated as follows:— Cost of the works.

		£	£
Northern System—Main sewer		75,518	
Sub-mains		70,376	
Camperdown branch		12,454	
			158,348
Southern System—Main sewer		10,289	
Sub-mains		2,856	
			13,145
Western System—Outfall sewer		190,557	
Eastern high-level main sewer		56,690	
„ sub-mains		27,530	
„ low-level main sewers		62,076	
„ „ sub-mains		16,217	
Northern main sewer...		65,776	
„ sub-mains		20,434	
Western main sewer		133,001	
„ sub-mains		29,930	
			602,211
Marrickville pumping station (including duplicate engines, boilers, penstocks, buildings, &c., complete)			11,000
Outfall works (including additional land and laying out first section of Sewage Farm)			45,600
	Total		£830,304

8. This amount of £830,304, as already intimated, is only a portion of the cost of the entire scheme. There are works, consisting of the northern and southern outfall sewers, already executed or nearing completion, a proportionate part of the cost of which must be charged to the Western Suburbs, and that proportion of the cost is set down at £274,000. Then there is what is described as the first section of additional works which it is proposed shall follow the works comprised in the amount of £830,304, and these additional works will cost £340,741. Further additional or subsequent works will cost £372,851, and thus an estimate of the cost of a complete scheme, providing for every contingency, is made, amounting to £1,817,896. With the complete scheme, however, the Committee have nothing to do, except incidentally. It has been necessary for them to take evidence to a large extent on the entire scheme, because ultimately the entire scheme will have to be carried out, and on the scheme as a whole must be calculated the sewerage rate which the residents of the Western Suburbs will eventually have to pay. With the scheme as referred to them by the Legislative Assembly the Committee have, however, more immediately to do. Cost of the entire scheme.

9. In the consideration which they have given to the proposed works referred to them, the Committee have had before them very complete information. The author of the scheme is Mr. G. H. Stayton, M. Inst. C.E., an engineer of considerable English experience, who for some years, and until recently, was connected with the Sewerage Branch of the Department of Roads and Bridges in this Colony, and who devised the works which are to be carried out for the drainage of North Shore and Manly. After a close personal investigation of the suburbs, covering a period of nearly two years, Mr. Stayton produced an elaborate and comprehensive report, with accompanying plans, in which the scheme for the effectual drainage of the Western Suburbs, as it has been before the Committee, was carefully explained; and this report with its plans has formed one of the principal features of the Committee's inquiry. The report has been laid before Parliament, and has been distributed amongst the Borough Councils of the suburbs affected by the proposed drainage scheme, and it has been issued to the Press. Those chiefly concerned with its recommendations are, consequently, not unfamiliar with them; and as the document was made public in the early part of last year there has been ample time for all interested to examine the details of the scheme, and to be satisfied as to its value or otherwise. The information before the Committee.

10. In addition to having this report before them, the Committee have had Mr. Stayton and Mr. W. C. Bennett, late Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers (who concurs in Mr. Stayton's recommendations), under examination as witnesses; and were accompanied by them and other officers connected with sewerage works on visits of inspection to Webb's Grant, Botany, the locality Witnesses examined by the Committee.

 where

where it is proposed to deposit a large part of the sewage from the suburbs which would be drained by the new system. The Committee have also examined, as witnesses, the Hon. H. N. MacLaurin, M.D., M.L.C., late Medical Adviser to the Government and President of the Board of Health, and Dr. J. Ashburton Thompson, Deputy Medical Adviser to the Government, as to the present unhealthy condition of the Western Suburbs, and the urgent necessity for a proper system of drainage as a preventive against the spread of disease and the existence of an abnormal rate of mortality. Mr. T. A. Coghlan, Government Statistician, has been examined with reference to the health statistics of the suburbs, and Mr. J. N. Oxley, superintendent of the Sewage Farm at Webb's Grant, in relation to the operations at present carried on there in the reception and disposal of sewage, and the probable effects from the increased quantity of sewage that would have to be dealt with under the proposed system. Furthermore, there have been before the Committee as witnesses representatives from every Borough or Municipal Council interested in the scheme, and the opinions of those in any way opposed to it have been ascertained, as well as the views of those in favour of it. It should also be mentioned that, in order to obtain any evidence of importance which might be available, apart from that given by persons summoned as witnesses by the Committee, an invitation to all who might be desirous of being examined with reference to the scheme to forward their names to the Secretary, was made by advertisement in the daily newspapers of Sydney.

Objections to the proposed scheme.

11. By the appendices to the evidence attached to this Report it will be noticed that some objections have been raised to the scheme by three gentlemen, one of whom favours a rival system for one of the boroughs included in the present proposals. Only one of these gentlemen was called as a witness. The ideas advanced by the two others have been very completely answered by Mr. Stayton, and, in the case of one, by the Borough Council immediately concerned.

Why all the low-level areas are not immediately dealt with.

12. It has already been stated that in devising the main sewers and sub-mains provision has been made in their capacity for the removal of the sewage from the whole of the low-level areas. The first areas to be dealt with, apart from Marrickville and St. Peters, are, in the engineer's opinion, at the Glebe, Leichhardt, and Balmain; the other low-lying localities can be provided for, from time to time, as may become necessary. It is considered prudent to postpone the full consideration of any such works until the gravitating sewers are complete and in operation, as under those conditions, it is pointed out, the actual requirements of each area can be better ascertained.

The provisions for storm-water.

13. Storm-water may cause considerable difficulty in any system of sewerage, and the subject has not been overlooked in the present proposals. Overflow weirs will carry off any excess of storm-water, or, if necessary, at some future time relief sewers can be provided, and the small quantity of sewage contained in storm-water so discharged into natural watercourses would be so greatly diluted, it is considered, as to render it perfectly unobjectionable. These provisions for storm-water would not be sufficient to prevent flooding in a portion of the Marrickville Valley, and for the effectual draining of that locality from any excess of storm-water, certain special works would have to be carried out. The same thing would probably be necessary in some other localities.

Points upon which the Committee elicited information.

14. In their examination of the report and plans and other documents before them, and of the various witnesses summoned to give evidence, the Committee have endeavoured to elicit information, and to come to a sound conclusion upon the following points :—

I. What the proposed scheme is in all its details.

II. What necessity there is for a drainage scheme for the Western Suburbs.

III. Whether the scheme is likely to meet the requirements of the suburbs proposed to be drained, and to prove generally satisfactory.

IV. Whether the cost of the proposed works has been accurately estimated, and is such as the population of the suburbs concerned can defray.

V. Whether there are any sound objections to the carrying out of the scheme.

15. These main points of the Committee's inquiry embrace a number of relative matters which also have been kept in prominent view, viz. :— Relative matters inquired into.

I. The details of the scheme.

(*a*) Whether Mr. Stayton's proposals are concurred in by the head of the Government Department with which Mr. Stayton was connected when the scheme was designed.

(*b*) Whether the details include everything likely to be required.

II. The necessity for a West Suburban Drainage Scheme.

(*a*) What is the present condition of the Western Suburbs in regard to drainage.

(*b*) What is the method at present adopted for the disposal of nightsoil.

(*c*) What is the condition of the Western Suburbs in relation to disease and death.

III. Whether the scheme will meet requirements and prove satisfactory.

(*a*) As to the comprehensiveness of the scheme in regard to the area it is proposed to drain.

(*b*) As to the style and capacity of the sewers.

(*c*) To what extent storm-water, as well as sewage, will be dealt with.

(*d*) How the sewage is to be disposed of.

(*e*) Whether the scheme, as a whole, presents any feature indicating that, though the proposed works may be beneficial to the population of the Western Suburbs, they are such as it is not in the interests of the people of the Colony generally to approve.

IV. The cost of the works.

(*a*) An examination of Mr. Stayton's figures, and the extent to which they are supported by others.

(*b*) The method proposed for paying the interest on the sum expended, and repaying the principal.

(*c*) The opinions of the Borough Councils upon the question of payment on the cost of the works.

(*d*) The cost to the ratepayers in the Western Suburbs in connection with the present method for disposing of nightsoil, and the difference between it and the rate that would be charged under the proposed sewerage system.

V. Objections to the scheme.

(*a*) The nature of the objections raised.

(*b*) Whether the objections are such as to justify the Committee in reporting against the scheme, or in recommending any modification.

16. One other important point which has engaged the attention of the Committee is whether the experiments which have been made recently in England to ascertain the effect of employing electricity as an agent for the purification of sewage are of such a character as to justify a postponement of the whole or any portion of the proposed works until further information on the subject of electrolysis has been obtained. Electrolysis.

17. The evidence and appendices, including plans, which have been before the Committee will show that the details of the scheme as prepared by Mr. Stayton are very fully explained. Mr. Stayton's report describes the proposed works minutely; the accompanying plans illustrate in a clear and accurate manner the localities affected by the scheme, and the routes and areas to be drained by the proposed sewers; and the evidence obtained from Mr. Stayton, Mr. W. C. Bennett, and other witnesses who have been examined, supplements anything which the documents and plans before the Committee may in any respect have left incomplete. That the late head of the department in which Mr. Stayton was employed by the Government when he formulated his scheme entirely concurs in his proposals, will be seen from a memorandum written by Mr. W. C. Bennett at the date of forwarding Mr. Stayton's report to the Secretary for Public Works, and from his evidence before the The evidence, &c., with regard to the details of the scheme. Concurrence of the Engineer-in-Chief in Mr. Stayton's proposals.

the Committee. In the memorandum referred to Mr. Bennett writes: "He" (Mr. Stayton) "has conferred with me from time to time, and I have studied the case sufficiently to enable me to concur in all his recommendations." In his evidence he states that he has superintended the preparation of the plans, he has devoted considerable attention to the project, and the work has been done by Mr. Stayton under his (Mr. Bennett's) particular surveillance. The other point in relation to the details of the scheme—as to whether they include everything likely to be required for the effectual drainage of the Western Suburbs—will be found satisfactorily answered in both Mr. Stayton's report and the evidence generally, keeping in view, of course, the fact that the works proposed, and under immediate consideration, consist of main sewers only.

Whether the scheme includes everything likely to be required.

The evidence as to the necessity for a West Suburban Drainage Scheme.

18. As to the necessity for a drainage scheme for the Western Suburbs the evidence is overwhelming. Mr. Stayton, in his report, says the existing sanitary condition of these suburbs is most unsatisfactory, that glaring sanitary defects exist in nearly every municipality, and that great inconveniences and nuisances are occasioned. The method in which the land has been laid out for building purposes has been conducive to the soil becoming "charged with filth and fever-poison," and the evils arising from this state of things are becoming aggravated by additional surface drainage as a consequence of the increase in population. Dr. MacLaurin states that during the period of his duties as Medical Adviser to the Government and President of the Board of Health his attention was especially drawn to the necessity for sanitary improvements in the Western Suburbs; and the necessity for proper drainage in those and other suburbs, in the interests of the health of the community, was a subject that had frequently been brought under the notice of the Board of Health. It will be seen also from the evidence of the municipal representatives of the different suburbs, who were summoned before the Committee, that the necessity for a proper drainage scheme for these suburbs cannot be denied, and that it is a matter of great urgency. There is, in the case of most of the suburbs, absolutely no system of drainage, and sewage in the form of house slops remains upon the surface of the soil in the vicinity of many of the houses, or sinks into and saturates it. In other instances there are open drains in which the drainage of populous localities frequently stagnates and becomes ill-smelling and pestiferous. Nightsoil is disposed of in a very unsatisfactory manner, and in addition to being the cause of considerable trouble to the Borough Councils is a source of very great danger to the health of the public. The method adopted for getting rid of it is in most instances to send it anywhere outside of the municipality disposing of it. Each municipality is actuated by one idea, which is to get the nightsoil outside its own boundaries, regardless of where it may be taken to afterwards. In this way the suburban municipalities have been a source of constant danger to each other, the only remedy for which, and this an ineffectual one, has been the passing by some of the Borough Councils of a by-law prohibiting the passage of nightsoil from other municipalities through their boroughs. The enforcement of such a by-law in some cases, it can easily be understood, may place the residents of a suburb in a position of insurmountable difficulty, and greatly aggravate the danger to health to which, in common with the residents of other suburbs, they are now exposed. This danger to health is undeniably very great. Dr. MacLaurin states there is no doubt that there has been more sickness in the suburbs than in the city of Sydney, and that the diseases are largely traceable to the bad drainage, particularly in the case of diseases of childhood. The statistics of typhoid also show that this fatal disease has been much more excessive in some of the suburbs than in Sydney, and it is "in all likelihood to be attributed," he says, "to the want of proper means of disposing of nightsoil." His evidence upon these matters will be found of much interest. "It is absolutely necessary," he urges, "that there should be some means of getting rid of the nightsoil from the suburbs. As long as we go on as we are the death-rate will increase. At present it is higher than it ought to be, and steps should be taken to reduce it; and the first step to be taken is to adopt some method of getting rid of the nightsoil." Further, he gives it as his opinion with regard to the proposed scheme, that if it were brought into existence "there can be no doubt there would be a decided reduction in the mortality, especially in the infant mortality, which is very high in the suburbs; and" he proceeds, "I think it would be money well laid out." Mr. T. A. Coghlan, Government Statistician, in a statement furnished to the Secretary for Public Works respecting the occurrence of specific febrile or zymotic

Condition of the Western Suburbs in regard to drainage.

Present method of disposing of nightsoil.

The condition of the Western Suburbs in disease and

zymotic diseases in the Western Suburbs, and published as an appendix to the evidence given before the Committee by Mr. J. Barling, Under Secretary for Public Works, says, in allusion to deaths from these diseases, that "although it may not be possible, even with the most complete sanitation, to save all these lives, there is ample evidence that an efficient sewerage scheme would have prevented the sacrifice of many lives, have saved much sickness, and have ensured a greater length of life to those who survived."

Evidence from private residents as to necessity for proper system of sewerage.

19. Evidence pointing quite as strongly to the necessity for a proper sewerage system is given by residents of the suburbs who are not connected with either the Government or the Borough Councils, and one statement, made by Mr. Charles Edward Pilcher, Q.C., a resident of the borough of Burwood, is both important and serious:—"Recently," he says, in referring to the present method of disposing of nightsoil, "they have begun to remove the nightsoil on a system which is very pernicious. It is what they call the interchangeable pan system, and it is extremely dangerous, because, although it gets rid of the offensive matter very completely, a pan may be in a house where there is typhoid one day, and next day brought to your own house, and so the typhoid germs are spread throughout the district."

Whether the scheme will meet requirements and prove satisfactory.

20. The third of the principal points kept in view by the Committee during the course of their inquiry—whether the scheme will meet requirements and prove satisfactory—is, in the opinion of the Committee, very clearly established. The scheme as it was specially referred to them, estimated to cost £830,304, provides for the construction of the main sewers necessary for the drainage of the Western Suburbs, mostly by gravitation. Other works, however, will be necessary for the drainage of the low-level areas, and for completing the scheme as a whole, so that a proper system shall be in operation throughout the Western Suburbs; and for these there is a supplementary estimate and statement by Mr. Stayton which, to a certain extent, have been under the consideration of the Committee, and will be laid with this Report before Parliament. This supplementary estimate amounts to £713,592, and is made up of £340,741 for what Mr. Stayton describes as "the first section of additional works," and £372,851 for subsequent works. The first section of additional works consists of 300 miles of subsidiary sewers, costing £300,000; the first part of a main sewer for Canterbury and Enfield, to cost £20,741; and a provision for the storm-water drainage of Marrickville, estimated to cost £20,000. The subsequent works comprise another 100 miles of subsidiary sewers, costing £100,000; the completion of the Canterbury and Enfield main sewer, at an expense of £65,410; the establishment of low-level systems which are to cost £119,650; the completion of the western outfall sewer, at a cost of £48,374; the completion of the Marrickville pumping station, costing £6,817; and the completion of the sewage farm at Webb's Grant, at a cost of £32,600. These proposed additional works, considered in connection with those included in the estimate of £830,304, and with works described by Mr. Stayton as "already executed or nearing completion," and meaning the northern and southern outfall sewers, which will be used for the drainage of some portions of the Western Suburbs, are declared by him "to provide for every contingency," and to include "all works which can possibly be foreseen at the present time." The total suburban area included in the scheme is 14,077 acres, and the existing population on that area is about 170,000 persons; but the scheme has been designed for a prospective population of 482,608 persons, which, at the present rate of increase, may be looked for in the Western Suburbs in from eighteen to twenty years. The comprehensiveness of the proposal is, therefore, quite apparent.

The comprehensiveness of the scheme.

Style and capacity of the sewers.

21. The style and capacity of the sewers appear to have been well designed. It has already been stated that the scheme generally has been planned with the object of the sewers being laid as far as practicable in straight lines, and at a sufficient depth to drain the lowest part of the adjacent premises; that the areas and gradients have been regulated so as to ensure self-cleansing and the carrying off effectively of the maximum quantity of sewage and rainfall; and that due provision has been made for inspection and ventilation and other necessary matters inseparable from an effective drainage system. In addition to this it has to be mentioned that the sewers will carry off the combined sewage and rainfall when flowing about three-quarters full, ample provision being made for the accommodation of an excess of storm-water. The capacity of the sewers will be such, it should also be noted, that several years must pass before the catchment area will be so great as to cause overcharging or back-flooding.

flooding. The greater part of the intercepting sewers and submains is intended to be in tunnel, the cost of which through ordinary sandstone or shale formations is said to be not greater than for moderately-deep open cuttings, and the inconvenience from the closing of streets while the work of excavation is in progress much less. The details in relation to each sewer will be found in Mr. Stayton's report.

Extent to which storm-water as well as sewage will be dealt with.

22. The extent to which storm-water as well as sewage will be dealt with is a matter of considerable importance. The scheme before the Committee is what is called the "partially separate system," by which, as Mr. Stayton explains, all sewage, and a limited portion of surface water, are removed; and this he considers, after a careful study of the question, the best method to adopt. "I have," he says, "no hesitation in recommending as the most practical, efficient, and economical remedy, a comprehensive scheme upon the 'partially separate' system." His report deals very fully with this question. The sewers, he explains, are intended not only for the removal of fœcal matter from water-closets, but for all kinds of liquid refuse, such as domestic slops and urine, together with the waste water from baths, sculleries, wash-houses, stables, dairies, and other premises; and, in addition to this, the scheme provides for the carrying off of the rain water from back yards and from a certain portion of the roofed surface of the houses. An excessive combination of rain water with sewage dilutes the sewage to a degree that injures it as a fertiliser, and the admission to the sewers of more than a certain proportion of the rainfall would necessitate the construction of larger sewers than are considered desirable; and therefore Mr. Stayton recommends that a certain catchment area should be allowed for back yards and for roofed surfaces, and that the other part of the rainfall should be conducted to the street channels, whence it would flow into storm-water drains or culverts, and be discharged into natural watercourses. All surface water from roads and streets is also to be excluded from the sewers. As a reason for admitting the rainfall from back yards, Mr. Stayton points out that "rainfall from paved yards is invariably more or less foul, and should therefore be admitted to the sewers. In fact," he proceeds to say, "it would materially help to scour out the house drains."

How the sewage will be disposed of.

23. The outflow from the sewers will be disposed of partly at Bondi, but chiefly at Webb's Grant, Botany, where there is what is termed a sewage farm. This locality is at present receiving the drainage that runs through what is known as the southern outfall sewer, which commences at Redfern, and passes through Waterloo, Alexandria, and a part of Botany, and then crosses Cook's River to the land upon which the sewage is discharged.

Methods of sewage disposal or treatment.

There appear to be four methods of sewage disposal or treatment, generally stated as follows:—

1. By discharge into the sea or into a tidal estuary or river, without treatment.
2. On land, by irrigation.
3. On land, by intermittent downward filtration.
4. By chemical treatment.

24. Each of these methods is good, and has in one place or another proved its value. But everything, Mr. Stayton points out in his report, "depends upon local conditions, or, in other words, every place must be dependent upon its own physical circumstances and requirements." In the case of the Western Suburbs the method of disposing of the sewage believed to be the best is on land, by irrigation, or, otherwise stated, by discharging it on the sewage farm at present at Webb's Grant, and on land which will be added to the present area now operated upon there. "Irrigation," Mr. Stayton says, "is not the universal mode of sewage purification, but where favourable conditions exist it is the cheapest and most efficient process, especially where sewage can be delivered by gravitation." These conditions are present in the case before the Committee. A warm climate is suitable for irrigation; the area of land at present available for this system is twice as large as is required for the existing population, and can be increased as it may be wanted, from time to time, and what it may be necessary to do in addition to the mere discharge of the sewage upon the land, as the population increases, can be done. So far as relates to the method recommended for disposing of the sewage and the area of land upon which it will be discharged the advantages of the system appear to be unquestionable.

The sanitary conditions and results attendant upon the disposal of the sewage at the Sewage Farm.

Then arises the question as to the sanitary conditions and results attendant upon such a process. Will the discharge of such a large quantity of sewage upon an area of land, however extensive, be in any way detrimental to public health or comfort? Is it likely to disseminate disease, or prove offensive to the residents in the immediate neighbourhood?

neighbourhood? The evidence before the Committee goes to show that it will not. Mr. Stayton's report deals minutely with the various provisions which it will be wise to introduce in order that the operations at the sewage farm may be entirely unobjectionable, and it is necessary here only to refer to the matter in general terms. The area of what is called Webb's Grant is at the present time 300 acres, and it is proposed to add 254 acres to it, part of the additional area being Government land and part land that will have to be purchased. The method of sewage disposal now adopted there is a combination of ordinary sewage irrigation and deep filtration, the solids in the sewage being slightly separated from the liquids by passing through screens, and the system has been found most successful. The soil or sand is particularly suited to the purification of sewage, and there is practically nothing in connection with the process which can be called a nuisance. This is both the tenor of the evidence, and the conclusion at which the Committee have arrived after visiting the farm and carefully inspecting the operations carried on there. The most valuable testimony upon the question as to whether the discharge of the sewage upon the land in this locality is likely to prove detrimental to health, apart from the statements of the engineers, is to be found in the evidence of Dr. MacLaurin and Dr. Ashburton Thompson. The former states that he has visited Webb's Grant, and gone into every part of it, and the system seemed to him to answer remarkably well. "There is practically," he says, "no nuisance there at all. Of course you can tell on examining the effluent water that it is the result of sewage, but there is no apparent nuisance about it. * * * There is a certain amount of smell if you go alongside the large open carrier for the sewage, but not very much." "I am sure," he replies to another question, "there is no nuisance at present, and I do not see any reason to suppose that there will be at any future time, because the water, as far as I could see, is absolutely free from any smell, though when you come to analyse it you can see that it has been sewage water." Nor does he see any danger in using sewage in connection with the growth of cattle food or vegetables. "There is not the slightest possible objection to it," he states, "because when it is turned into vegetable matter any noxious quality it may have had before must be gone." This is important in relation to the sale of vegetables or other produce that may be grown upon the sewage farm. Dr. MacLaurin is of opinion that "if sewage is properly treated on a sewage farm at a suitable place, it can be done without any nuisance or injury to the public health," and he does not think that a continuous deposit of sewage on the same piece of land for a number of years would destroy the absorbent and purifying qualities of the soil, because every year the vegetation would consume the greater part of the sewage deposited. Dr. Ashburton Thompson has very frequently visited Webb's Grant, and considers the system carried out there eminently satisfactory. The place, he thinks, is most favourable for sewage farming, and the climate also; and, as to the danger to the public health, "there is actually," he says, "no evidence whatever that sewage farms are hurtful to the health of neighbouring populations, even in places very much less fitted for sewage farms than is Webb's Grant." The process at the sewage farm he describes in this way: The fresh sewage, "which comes down rapidly, really has not very much smell of its own; it is only with putrefaction that it begins to smell. If it is run on to the sand within twenty-four hours of its production it will go into the soil practically odourless; then it is attacked by chemical processes and begins to be oxydised. It has not time to putrefy, that is to give off offensive gases, before it is altered into odourless compounds." As for vegetables grown upon the farm, he is of opinion that the things which are grown upon a sewage farm and are intended for human use should be those which require cooking before they can be eaten. Fodder for cattle thus grown, he says, is excellent, and quite devoid of harmful properties; but the danger to man, he points out, is from the mechanical adherence to vegetables of particles of sewage—"just a mechanical danger." Much of the evidence given by both these medical gentlemen, and that by Mr. J. N. Oxley, who is the superintendent of the Sewage Farm at Webb's Grant, bears in an important manner upon these matters, and is very favourable to the proposed system.

25. With regard to the area which will be available at the Sewage Farm, Mr. Stayton is of opinion that there will be more than sufficient land for a population of half a million. "In the first instance," he says, "it would only be necessary to gradually clear and prepare a portion of the land, and month by month and year by year,

Area available at the Sewage Farm.

year, as additional sewage was brought in by the new sewers, the area would be increased; but as far as we can see there is not the slightest doubt that the area, including the additional part, will be more than ample for many years to come; and then, if it should so happen that there is any difficulty in the question of disposal, it will be a simple matter to resort to some other mode of treating the additional volume of sewage—either by electricity, by a chemical process, or by continuing the outfall across George's River to the Pacific Ocean."

Sewage farms in England.

26. It should also be stated that the evidence before the Committee respecting sewage farms in England is to the effect that they have, from a sanitary point of view, proved successful.

Whether the scheme is such as to be objectionable to the general public.

27. In considering any scheme such as that under review it is wise to inquire whether, while it may be beneficial to the people immediately interested, it is of a kind likely to be objectionable to the general public, and this has not been lost sight of by the Committee. The manner in which extensive works such as those proposed for the Western Suburbs may affect the general public is chiefly in relation to the questions of cost and repayment, and whether the general body of the people will be burdened with the indebtedness brought about by making provision for what is principally for the benefit of a certain number. This important matter, it will be seen further on, is disposed of satisfactorily. The money required for the proposed works will have to be obtained by loan, and to that extent the public indebtedness of the Colony will be increased. But the interest, and, within a fixed period, the principal, will be paid by the residents of the Western Suburbs—the general public will not be called upon to contribute in any degree.

Examination of Mr. Stayton's figures as to the cost of the works.

28. The cost of the work, as at present proposed, is, as already mentioned, estimated at £830,304, and the complete scheme at £1,817,896. Mr. Stayton appears to have made his calculations with carefulness, and he has sworn to the correctness of his figures. In addition to this, his figures are confirmed by officers of the Sewerage Branch of the Department of Public Works, who have shared in the work of making the calculations or have checked them. The Committee have not thought it necessary to have the whole of the figures checked by a competent person outside the Department. To have handed the whole of the calculations to someone unconnected with the Department, with the intention that he should thoroughly examine and inquire into them, would have entailed upon that person the necessity to investigate the data upon which the calculations were made, and that would mean, if properly done, a labour for as long a period as Mr. Stayton was occupied in getting together the information upon which he based his report and made his estimates. There is no reason to doubt the accuracy of Mr. Stayton's figures, and in the opinion of the Committee it is quite sufficient to have them confirmed by other competent officers of the Sewerage Department. This has been done, and it is shown that Mr. Stayton's calculations and figures are substantially correct.

Method proposed for paying the interest and repaying the principal.

29. The method proposed for paying the interest on the sum expended and repaying the principal is that of charging a certain sewerage rate, which will be paid by the residents of the Western Suburbs. The rate has been calculated for each of two periods—for twenty-eight years, as provided for in the Metropolitan Water and Sewerage Act, 43 Vic. No. 32, and for a suggested extended period of sixty years, so that posterity may share the expense as well as experience the advantages of the proposed works. Should the works be carried out under the provisions of the existing Act, the annual payment to repay principal and interest, at 4 per cent. per annum, would amount to 6 per cent. on the sum expended, for a period of twenty-eight years, and this would mean an annual sewerage rate of 10½d., calculated on the amount necessary to construct, not only the works included in the £830,304, but the works already executed or nearing completion, costing £274,000, and the first section of additional works, to cost £340,741. Under the suggested amendment of the Act, the rate would be 8d., and with interest at 3½ per cent., for which possibly the money may be borrowed, it would be 7¼d. The sewerage rate chargeable upon the cost of the entire scheme when completed would be, under the existing Act, 9¼d., under the suggested amendment of the Act, at 4 per cent. interest, 7d., and with the interest at 3½ per cent., 6½d. The sewerage rate upon the cost of the works immediately before the Committee, £830,304, would be, under the existing Act, 6·68d., and under the extended period for repayment of the loan 5·12d., but as this deals with only a portion of the entire scheme, and the entire scheme must eventually be carried out, it is advisable that the people of the Western

The sewerage rate which will have to be paid.

Suburbs

Suburbs should understand what they ultimately will be called upon to pay, and that, as already stated, will be 7d. or 6½d. This rate will provide interest, repayment, and working expenses. Information in detail upon this subject will be found in Mr. Stayton's evidence, Questions 111–113, on pages 21–22 of his report, published as appendix C, and in appendices C1, C2, and C3.

Opinions of the Borough Councils as to the willingness of the residents to incur the expense.

30. In eliciting evidence respecting the sewerage rate that will have to be charged to meet the cost of the proposed works the Committee have been careful to obtain the opinions of the Borough Councils upon the willingness or otherwise of the residents of the Western Suburbs to incur the expense attendant upon the carrying out of the proposed drainage scheme, and from the statements made it may be said that the Borough Councils are practically unanimous in favouring the proposals, and that the scheme has the approval of a large majority, if not of the whole, of the residents. There is apparent in the evidence of the representatives of municipalities, and in that of private residents of the Western Suburbs, not only a distinct approval of the proposed works, but an earnest wish that they should be commenced and carried to completion with the least possible delay. The readiness to incur the responsibility of repaying the interest and principal by a fixed sewerage rate of the amount indicated is, however, accompanied by a desire that the period of repayment should be extended to sixty years. At present the ratepayers are charged for the removal of nightsoil a sum which shows that the proposed sewerage rate will not be a seriously additional burden, and any excess of cost will be counterbalanced by the greater cleanliness, comfort, and freedom from the risk of disease, which will be the immediate results of the new system.

The present charge for the removal of nightsoil compared with the proposed sewerage rate.

Nature of the objections raised to the scheme.

31. Some objections have been raised to the proposed scheme, but they are of the nature of rival schemes. It is remarkable that no one has come forward and challenged the soundness of the scheme referred to the Committee, apart from suggesting a system which it is thought might be better. It is noticeable also that these objections have come from only three persons, one of whom is opposed to the scheme so far as it relates to the suburb of Burwood; the second recommends a system—the Liernur system—which the Committee do not consider themselves in a position to recommend; and the other advocates a system which it is clearly shown does not, except in theory, exist in any part of the world. Only one of these three objectors was examined by the Committee. He advocates what is known as the separate system of sewerage, by which is meant a system that deals with the sewage and the rain water separately. The scheme before the Committee is the partially separate system, by which a portion of the rain water is admitted to the sewers. This partial admission of rain water is to be found, the evidence shows, even in cases where the system in operation is called the separate system; and an absolute separation of the sewage from the rain water could, in the opinion of the Committee, only be effected at an increased cost and with doubtful advantage. The witness' ideas upon the advantage of the system he recommends are replied to in a special paper by Mr. Stayton, which is published as an appendix to Mr. Stayton's evidence, and similar papers are included in the Appendix dealing with the schemes or systems recommended by the two other gentlemen who think that the proposals before the Committee might be improved by substituting for them something else. In the case of one of these gentlemen his recommendations are effectually dealt with by the Borough Council of Burwood declining to support them, and accepting the scheme of Mr. Stayton. The objections that have been raised are, therefore, not such as to justify the Committee in reporting against the scheme or in recommending any modification of it.

Experiments in electrolysis and the effect of the evidence on this subject.

32. The other point of importance which has engaged the attention of the Committee—whether the experiments in electrolysis have been such as to justify the Committee in recommending a postponement of the whole or any portion of the proposed works—is disposed of by the tenor of the evidence relating to this subject, which is that the process has not yet emerged from the stage of experiment, and is very expensive. The possibility of purifying the sewage by means of electricity was brought prominently under the notice of the Committee by a report of a recent visit made, at the instance of the Secretary for Public Works, by Professor Threlfall, of the University of Sydney, to some experimental works which are being carried on by Mr. William Webster, F.G.S., at Crossness, England, but the matter was mentioned in an early stage of the Committee's inquiry by Mr. Stayton and Mr. W. C. Bennett.

It would appear that almost simultaneous experiments in electrolysis were made by Mr. Webster, in England, and Mr. Roberts, of the Sewerage Branch of the Department of Roads and Bridges in Sydney, and the possibility of applying the process with advantage to the scheme for the drainage of the Western Suburbs became at once apparent. But, as already stated, and as will be seen from the very full information on the subject which will be found in the evidence and the Appendix, the experiments have not reached a point which would justify the Committee in recommending that the process should be introduced in the scheme under consideration. Electrolysis, shortly described, means the purification of the sewage outflow by the precipitation of the solid portion of the sewage, produced by electrical agency, and the question to be determined in connection with it is, as a leading professional paper, the *Engineer*, puts it, "whether an effluent, inoffensive to sight and smell, free from all secondary fermentation, exercising no precipitating action on the water of a river, and having no matters in suspension, can be produced at a reasonable cost." This question has not yet been satisfactorily answered. It is clearly established that electrical action can be applied to sewage with a purifying result, but it is not as satisfactorily shown that the process is a profitable one to adopt. In a paper published in the Appendix, it will be seen that Mr. Robert Hickson, the present head of the Sewerage Department in this Colony, states, that according to a calculation made by an officer of his department it would cost something like £300,000 extra to apply the system to the scheme for the drainage of the Western Suburbs.

Extra cost of applying electrolysis to the scheme for the Western Suburbs.

33. But while the Committee do not consider themselves to be in a position to recommend in this Report the application of the electrical process to the Western Suburbs Sewerage Scheme, they desire to point out that it may be advisable at some future time, when the experiments shall have reached a more advanced stage, and before the final completion of the works comprised in the entire scheme for the Western Suburbs, to introduce electrolysis as a means of purifying the sewage outflow. Where it would be of special advantage, supposing the cost of applying it to be reasonable, is in connection with the sewage from the low-level areas. But the time may arrive when it will be an advantage to apply it to the sewage outflow generally. When the population shall have increased so largely that the area of the sewage farm at Webb's grant is insufficient to receive and absorb the whole of the sewage, it will be necessary to apply some special process, either electrical or chemical, for the treatment of the sewage before anything is permitted to flow from the sewers, and at that time electrolysis may be the best process to employ. At present, the Committee do not make any recommendation in regard to it.

The conditions under which electrolysis, in connection with the Western Suburbs scheme, may be an advantage.

34. One other matter it is necessary to mention before bringing this report to a close. On page 26, and in question 683, of the evidence, it will be noticed that Mr. Stayton recommends an alternative scheme for the drainage of the eastern part of Leichhardt, and for Balmain. The Committee are not disposed to recommend that this alternative scheme be adopted. The best course to follow is, in their opinion, to adopt the original scheme which proposes that the borough of Balmain shall be drained by gravitation sewers, supplemented by the "Shone" system. Any special process which in the future may be considered necessary for the more effectual drainage of the low-level areas can be attended to.

Proposed alternative scheme for Balmain.

35. The final conclusion at which the Committee have arrived upon the scheme, as submitted to them by the Legislative Assembly, is expressed in the following resolution, which on Wednesday, 21st August, was moved by Mr. O'Sullivan, seconded by Mr. Trickett, and agreed to :—

The final resolution of the Committee.

> "That the Committee consider it expedient that the proposed drainage works for the Western Suburbs, as submitted to them by the Legislative Assembly, be carried out to the extent of the amount before the Committee, viz., £830,304."

J. P. ABBOTT,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
27th August, 1889.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

DRAINAGE WORKS FOR THE WESTERN SUBURBS.

FRIDAY, 7 DECEMBER, 1888.

Present:—

The Honorable JOHN LACKEY (CHAIRMAN).

The Hon. GEORGE CAMPBELL.	JACOB GARRARD, Esq.
The Hon. WILLIAM HENRY SUTTOR.	ALEXANDER KETHEL, Esq.
The Hon. JAMES WATSON.	SYDNEY SMITH, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	THOMAS MICHAEL SLATTERY, Esq.
JOSEPH PALMER ABBOTT, Esq.	JOHN RENDELL STREET, Esq.
HENRY COPELAND, Esq.	DANIEL O'CONNOR, Esq.

The Committee proceeded to consider the proposed Drainage Works for the Western Suburbs.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined :—

J. Barling, Esq. 7 Dec., 1888.

1. *Chairman.*] You have considerable knowledge of the action proposed to be taken with reference to the drainage works for the western suburbs? Yes.

2. The term western suburbs I suppose includes all the boroughs? It includes Alexandria, Ashfield, Balmain, Burwood, Camperdown, Darlington, Glebe, Macdonaldtown, Marrickville, Newtown, Petersham, Redfern, Waterloo, Canterbury, Concord, Five Dock, Leichhardt, St. Peters, and Strathfield. Three of these municipalities however, viz., Darlington, Redfern, and Waterloo are not immediately affected, as outfall sewers for those districts have already been provided by the Government.

3. What is the approximate cost of the works? I have a statement here containing the whole of the information, which I will read :—

"This question has frequently occupied the attention of the Government during the past four or five years, and voluminous correspondence has taken place between the Department and the various boroughs and municipal councils. Joint deputations from the municipal authorities waited on Mr. Secretary Wright, in September, 1885, on Mr. Secretary Lyne, in August, 1886, and on the present Minister for Works, Mr. Sutherland, in August, 1887, urging the preparation of a main sewerage scheme. In July, 1886, on the strong recommendation of Mr. Bennett, the Commissioner for Roads and Engineer-in-Chief for Sewerage, Mr. Lyne appointed Mr. G. H. Stayton, M. Inst., C.E., to specially deal with the question, and in January last a comprehensive scheme was prepared by him and submitted to and approved by Mr. Bennett, who forwarded the report to Mr. Sutherland, the Minister for Works. The approximate cost of the works is £830,304. Copies of the report and plan were subsequently forwarded to the nineteen municipal councils interested. Up to the present time the following municipalities have expressed approval, viz. :—Ashfield, Burwood, Camperdown, Macdonaldtown, Marrickville, Newtown, St. Peters, Strathfield, and Leichhardt. I may also mention that yesterday, on the invitation of Mr. Sutherland, a conference, convened by circular, of the mayors and aldermen of the different Municipalities interested was held. We had a very large meeting. I think there were between thirty and forty mayors or aldermen and Members of Parliament interested in the districts, present, and the outcome of the meeting was that the following resolution was passed unanimously: 'That this conference of mayors and aldermen of the western metropolitan districts, after considering and discussing the proposed sewerage scheme of Messrs. Bennett and Stayton, approve of the same, and respectfully urge upon the Minister for Works the necessity of obtaining legislative powers for the early and simultaneous commencement of the work at different points.'" [*Vide Appendix A.*]

This resolution was moved by Mr. Frederick Walsh, Alderman of Leichhardt, and seconded by Mr. E. Dean, Mayor of Ashfield.

4. *Mr. Garrard.*] Have you a list of the municipalities represented at the meeting? I have not, but I think I could obtain it.

5. *Chairman.*] Are you aware whether any of the mayors are opposed to the scheme? I do not think I can say that there are any absolutely opposed to it.

6. You do not recollect whether the whole of the mayors of the municipalities were present? I am sure the whole of them were not present.

7. If there were any dissentients among the representatives of the municipal bodies you would probably be aware of the fact? Yes.

J. Barling, Esq. 7 Dec., 1888.

8. Has there been any correspondence between the Department and any municipalities opposed to the scheme? No; the only thing is that there was a rival scheme proposed by Mr. Cowdery, an engineer at Burwood, and affecting Burwood only.
9. If any correspondence of the kind that I suggest had taken place you would be cognizant of it? Yes. I am aware of the correspondence referring to Mr. Cowdery's scheme, but no other. Burwood has approved of the Government scheme.
10. As far as you are aware, then, there is no dissentient feeling among the municipalities? I cannot say positively, although I am pretty sure there is not.
11. The scheme has been proposed by the Roads Department, under Mr. Bennett? Yes. The total area included in the scheme comprises 14,077 acres. The existing population on that area is about 170,000, but the scheme is designed for a prospective population of 482,608 persons, and at the present rate of increase this will be realized in eighteen to twenty years. Of the total drainage area of 22 square miles, 5 square miles will be drained to Bondi and Webb's grant, by means of the recently constructed northern and southern outfall sewers, and 17 miles will be drained to the enlarged sewage farm at Botany by means of the proposed western outfall sewer shown on the plan.
12. We can obtain all that information from the professional officers? Very well. I should like in conclusion to say that Mr. Sutherland has taken great interest in this matter, and some correspondence has passed between the Department and the Government Statistician with the view of obtaining some statistics relating to health, and I should like, with the permission of the Committee, to hand in Mr. Coghlan's reply to the letter which was sent to him by the Minister. [*Vide Appendix* A 2.] There is also a sanitary map showing the deaths which have occurred from measles, scarlet fever, diphtheria, typhoid fever, cholera, diarrhœa, and dysentery; they are illustrated on the map in different colours. [*Vide Plan* No. 1.] There is also a diagram showing the death rate of the city and suburbs from 1870 to 1888. This diagram shows the much healthier state of the city as compared with the suburbs. [*Vide Plan* No. 2.]
13. Are there any other items of information you desire to submit? I think not, except a minute on suburban sewerage by Mr. Sutherland, and some information in reply to that minute from the Medical Adviser to the Government, which I now hand in to the Committee. [*Vide Appendix* A 1.]
14. *Mr. Garrard.*] Is there any report from the Health Officer in regard to the health of the city and suburbs? Yes, and I now hand it in, but the Health Officer will appear himself. We propose to call Dr. MacLaurin and Dr. Thompson.
15. *Mr. Copeland.*] I understood you to say that the death rate was greater in the suburbs than in the city? Yes.
16. But the diagram you have produced shows the reverse? If so there must be some mistake. Mr. Coghlan will explain that matter himself. It is his diagram, not mine.
17. *Mr. Garrard.*] Have you received from any municipality—the Balmain Municipality for example—a report antagonistic to the scheme? I do not think so.
18. Is it a fact that to each of the suburbs interested the Department has sent out plans and also a letter inviting their opinion upon the scheme? Yes, in January last.
19. Can you say how may direct replies have been sent—you have mentioned those who have given favourable replies? I think I am right in saying that there has not been one unfavourable reply.
20. Will you let the Committee know whether you have received a report from the Balmain Municipality? Yes; I will inquire and make certain.

William Christopher Bennett, Esq., M.I.C.E., Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers, sworn, and examined:—

W. C. Bennett, Esq. 7 Dec., 1888.

21. *Chairman.*] You have superintended the preparation of the plans of the proposed drainage works for the western suburbs of Sydney? Yes.
22. You have devoted considerable attention to the project? Yes.
23. Has it been done under your special surveillance by some officer of the Department? It has been done by Mr. Stayton under my particular surveillance.
24. The proposed scheme is intended to provide sewerage works for the municipalities enumerated in the estimate? Yes; that is, Alexandria, Ashfield, Balmain, Burwood, Camperdown, Darlington, Glebe, Macdonaldtown, Marrickville, Newtown, Petersham, Redfern, and Waterloo, with the municipal districts of Canterbury, Concord, Five Dock, Leichhardt, St. Peters, and Strathfield.
25. What is the difference in the provision made in the case of the last mentioned municipalities—Canterbury, &c.;—is there a different system for them? No; the difference is only in the mode of description.
26. Which of these drainage works is it proposed to connect with the general sewer emptying at Bondi? Balmain, and part of Leichhardt, and the Glebe. The drainage of Macdonaldtown, Glebe, and Balmain goes to Shea's Creek, and empties into Botany.
27. Where will the other municipalities drain into? They will all be drained into a point near the Warren. The three sewers will converge there, and will be carried by a main sewer under Unwin's Hill and the railway across to the other end of Webb's Grant.
28. That is where you are now utilising the sewage from Shea's Creek? Yes.
29. And you propose emptying the sewage of these suburbs on to the same land? Yes.
30. Will you have sufficient space for that purpose? It is proposed to add to the land there.
31. What area have you now? 300 acres.
32. That is what is called Webb's Grant? Yes.
33. What area do you propose adding to it? 254 acres.
34. How do you propose to acquire the land;—is it Government land, or will it have to be purchased? Part of it is Government land and part of it will have to be purchased.
35. And do you propose to use the sewage in the same way as you are now using the sewage from Shea's Creek? Exactly in the same way.
36. That is by working it into the soil and using it for purposes of cultivation? Yes; it is a combination of ordinary sewerage irrigation and deep filtration.
37. Do you separate the solids from the liquids? Yes; they are slightly separated by passing through screens.
38. As far as your experience goes with reference to the treatment of the sewage at Webb's Grant, do you find it successful? Most successful.

39.

39. The nuisance is reduced to a minimum? Yes, and the soil or sand is particularly suited to the purification of the sewage; it absorbs a greater quantity than ordinary land will absorb.
40. It is an important feature in the work that the soil should be of a sandy porous nature—the same successful result will not attend the working in a clay soil? The results as far as crops are concerned would be a little more successful, but not with respect to absorption of sewage. The ground is much better suited for the absorption of sewage, though perhaps so large a profit may not be obtained from it at first as might be obtained from the clay soil.
41. Have there been any complaints from the people in the neighbourhood since you have been working at Webb's Grant? None that I have heard.
42. There is not much population—the place is somewhat isolated? It is.
43. It is not an island? It is very nearly an island—it is a peninsula.
44. Will the additional land proposed to be acquired join on to the land you already have? Yes, at the other end.
45. What crops do you grow there? Sorghum, and all sorts of vegetables, such as turnips, cabbages, and cauliflowers; also lucerne.
46. *Mr. Watson.*] Do the Government sell the vegetables? We have not grown them commercially, but experimentally.
47. *Chairman.*] Though you have not grown a considerable quantity you find the experiment a success? Yes.
48. And you utilize what otherwise would be a source of great danger to the whole community? Yes.
49. Have you sold any of the vegetables? I think some of them were sold to the men on the farm. The sorghum has been bought with great avidity by the dairyme , and so has the lucerne.
50. You grow lucerne too? Very favourably.
51. Then you think the same success which has attended your operations so far can be continued upon the additional land? Yes.
52. It is recognized, I believe, that in large populations this is one of the principal means of disposing of sewage? Yes; it is the great means where the local body can afford to purchase the land. Sending it to sea, and getting rid of it, is the best.
53. But it is not permitted in any populous part of the world that the sewage should be discharged into rivers, or creeks, or estuaries—it must be carried out to sea, or utilized? Yes.
54. In fact modern science points to these as to two means of disposing of sewage? Yes—either putting it into the sea or into the land.
55. You have not used any manure except the sewage? None.
56. That is quite sufficient for all purposes? Yes.
57. Then you regard the operation as a success? Yes, a great success.
58. How far are the works from Sydney? Six or seven miles.
59. Are they easy of access—could the Committee get to them easily? Yes, very easily. You have nothing to do after getting out of the tram at Botany except to walk about a quarter of a mile; the other end, of course, would be easier of access from the other side.
60. What quantity of land have you cultivated? Only a very small quantity.
61. An acre? Five or six acres.
62. I suppose sorghum would be the largest crop? Sorghum and lucerne. There is one fact, however, which tells against us, and that is that the great sewage crop at home—the Italian rye grass—we have been unable to cultivate so well as other things.
63. Have you tried perennial rye grass? I do not know. Mr. Oxley, who is down there, is much better acquainted with these matters than I am. At any rate we do not find the rye grass a success, although it is the great crop on sewage farms at home.
64. A successful crop here is perennial rye grass, but that is not, as far as I am aware, Italian rye grass;—have you tried the red clover? Not to any extent.
65. *Mr. Suttor.*] Rye grass requires a cool climate? We have tried it at all times. I was persistent about it with Mr. Oxley, because it is the great crop at home.
66. I suppose the work is carried on under the supervision of a gentleman who has had some experience in agriculture? Yes, the best man I could get—Mr. John Oxley; he is a man of high character, and can be thoroughly relied upon. He has spent all his life in farming. He is one of the best practical farmers I know. He is a little fond of theory and experiment; but that is the sort of man we wanted.
67. Have you kept any record of the produce per acre of the different crops? Returns have been prepared, and I can supply them to the Committee. [*Vide Appendix* B.]
68. It would be interesting to know what the production per acre has been under the combined influence of irrigation and sewage, for that is really what the system amounts to? I will have the information supplied.
69. What is the system of drainage that you propose;—are the drains of brick, or of iron? All the main ducts will be bricked oviformed sewers.
70. What will be the diameter of the main ducts? They vary. In the lower part they will be 5 feet by 4 feet.
71. What do you call the lower part—near the mouth? Near the mouth.
72. The larger ducts are there, I suppose? Yes. The outfall sewer will be 6 feet in diameter—that is, below the junction of the three main branches.
73. What will be about the length of the large duct of 6 feet diameter? 11,700 feet.
74. What will be about the diameter of the branches before they join the main sewer? They vary from 6 feet 10 inches by 5 feet 10 inches to 4 feet by 2 feet 8 inches.
75. About what depth will they be in the ground? Varying depths, according to the configuration of the country.
76. There will be means of access to the drains by means of manholes at different points? Yes, at every suitable point.
77. About what depth will they be? About 30 feet, or thereabouts.
78. I suppose every provision is made for purposes of sanitation—I mean that the ventilation will be sufficient to prevent danger to health? The necessary provision has been made for ventilation and for checking

W. C. Bennett, Esq. 7 Dec., 1888.

the flow of sewer gas into the sewer. There will have to be additional legislation to provide for proper ventilation. The provision for ventilation in the present sewers is only through the manhole grating at the surface of the street. When the proposed enactment is passed we intend to have elevated pipes attached to houses and trees and every possible place, and if necessary to have shafts in prominent places. This plan has been a great success in Adelaide.

79. In the construction of works of this sort ventilators are regarded as essential? Yes; if the sewers are not ventilated into the streets they will ventilate themselves through the connections into the houses.

80. And, therefore, are a source of danger? Very great danger.

81. Of course an approximate estimate has been prepared in your Department of the probable cost of the work? An estimate has been prepared by Mr. Stayton, assisted by some of the trained hands in the Department. So that we had both Mr. Stayton's experience and such experience as has been gained on the works here as to cost, &c.

82. *Mr. Copeland.*] With reference to the green crops grown on the farm—has there been any attempt to trace the results from feeding on those green crops in the shape of typhoid fever? There has been no attempt of the kind here, but at Home there have never been any injurious effects traced to such a source; there have been assertions, but the majority of the evidence goes to prove that the plants are perfectly innoxious.

83. What have you done with the crops? Mr. Oxley has sold them to the dairy-people about.

84. You are not aware whether there have been any symptoms of typhoid at the dairy-farms, or amongst the people who have used the milk? I am certain there have been none, or I should have heard of them.

85. There has been no special effort made to ascertain whether the fact is as I have suggested? There has not.

86. You have not heard any complaint either that cattle, or that individuals who have used the milk, have suffered from typhoid? No.

87. Have you grown any lettuce? Water-cress has been grown, but I am not aware whether lettuce has been grown or not.

88. Has the water-cress been sold? I do not think so.

89. *Mr. Street.*] Have you any experience to show whether the continuous use of this sewage matter will not, after a term of years, destroy all that absorbent character of the native soil, supposing it to be sand, that is now so very necessary for the destruction of the noxious matters in it? It will not; the more sewage that is put on to the land the more crops are grown; and if you keep continually cropping it you remove, in an innoxious way, the elements of the sewage matter which are absorbed by the plants.

90. Then you may continue using the same soil for an indefinite number of years? Yes.

91. *Mr. Suttor.*] I suppose the sewage matter is not poured on the living plants? No; it is poured into little drains running near them, and is absorbed by the roots.

92. Of course there can be danger in that way? No; the lucerne is sometimes flooded, but that is when a large quantity of rain comes down, so that the sewage is very much diluted. We have the lucerne beds made flat so as to turn flood-water on to them, and so that it will not have to be turned into the river; it is a sort of safety-valve, as it were.

93. What is about the height of the lucerne crops? I think about a foot.

George Henry Stayton, Esq., M.I.C.E., Engineer, Sewerage Branch, Department of Roads and Bridges, sworn, and examined:—

G. H. Stayton, Esq. 7 Dec., 1888.

94. *Chairman.*] You have been charged with the preparation of the drainage scheme for the western suburbs? I have.

95. Will you formally produce the information which has been placed upon the table;—I think you are the authority of most of it? I am. I now lay before the Committee a copy of the report [*vide Appendix* C] with plans [*vide Plan* No. 3] and sections of the proposed works.

96. You have made a survey of the whole area? I have made a close inspection of the entire district.

97. Both superficial and underground;—I mean that you have taken the bearings of the different sewers and branches of sewers? Yes, so far as was necessary.

98. In fact there is a drawing on the table showing the depth of the sewers at different points? Yes; that has been prepared in connection with the report.

99. Under your superintendence? Yes.

100. You have been engaged on this work for some time? Yes; it has taken very nearly two years to complete.

101. I think you told us before that you had had considerable experience of sewerage works at Home before you came to this country? Yes; in London, Portsmouth, Coventry, Ryde, and other places.

102. And you consider the project submitted to us a very desirable one for the country to adopt? I do.

103. It will provide for the complete drainage of the districts enumerated? Yes; it provides for the main sewerage of the nineteen boroughs mentioned in the report.

104. During the time that you have been carrying out these works I suppose you had to make many personal visits to the different parts? Yes; I had to make myself intimately acquainted with the whole of the area, both as to its physical conditions and requirements. When we first commenced to investigate the question there was no plan showing how the greater part of the suburbs were laid out, and the whole information which appears on the map accompanying the report had to be specially obtained for the purpose.

105. Did you communicate with any municipal officials during the time you were carrying on your investigations? Yes. But the chief communications I had with them had reference to obtaining certain information as to what sewers and what length of streets they had, the number of houses, the ratable value, and population, &c., of each municipality.

106. From your observation, did you come to the conclusion that they were, as a rule, favourable to the carrying out of the project? They are so undoubtedly. On several occasions, by deputation to various Ministers, municipal representatives have asked that the work should be carried out; and since the scheme has been prepared and has been considered by them, a majority of the Councils interested have signified their approval of it. None have informed the Department that they are opposed to it.

107. The gross estimate for carrying out the works amounts to £830,304, does it not? That is the gross estimate so far as the present scheme is concerned; but I have prepared certain information for the use of the Committee which will be found to have an important bearing on the general question. I therefore lay before the Committee an approximate statement showing what the ultimate outlay and annual cost will be in connection with the sewerage of the whole area of the western suburbs. [*Vide Appendix* C 1.]

108. Does that include a larger area than is provided for in the present scheme? It is for the same area; but the present scheme, as explained in the report, is for main sewerage and outfall works only. The figures now submitted relate to the completion of the entire scheme; everything necessary to bring it into operation.

109. That is to say that as the other portions of the area get populated, provision will be made for connecting them with the main sewerage system? Yes, but it also provides for present conditions. Here is a paper which I think will be very serviceable to the Committee on account of the information it contains. I do not know whether it should be read now or be regarded as an appendix. There are several supplementary papers which it is desirable should be considered.

110. You propose to hand those papers in as appendices to your evidence? Yes.

111. You had better hand them in formally, and they will be available at any time to refer to for information? The first supplementary paper is with reference to the ultimate estimated cost of completing the system of sewerage throughout the western suburbs. [*Vide Appendix* C 1.] It shows that the works already completed, in addition to the proposed works, which are divided into three sections, would result in an ultimate outlay of £1,817,896. The next statement shows the annual ratable value of the boroughs and districts comprising the western suburbs. [*Vide Appendix* C 2.] This has a very important bearing on the question. It shows that the ratable value, which in 1884 was £1,116,000, is now £1,700,000; and that on the completion of the first three sections, according to the present rate of increase, it would be at least £2,200,000; in which case a penny rate would produce £8,900 net. At the final completion of the entire scheme in (say) from 15 to 20 years time, when the population will be double or nearly treble what it was in 1887, the ratable value may be fairly estimated at £3,300,000, in which case a penny rate would produce £13,400 net. Then a statement follows as to the rate of interest, and it shows that money may be now borrowed at 3½ per cent. instead of 4 per cent., and it also shows what amount of rate would be charged. [*Vide Appendix* C 3.] Although the total sum looks enormous on paper, yet owing to the increase in the ratable value, the actual rate to be charged to the ratepayers throughout the whole district in 1894, after the first three sections of the work, involving an outlay of £1,445,000, have been completed, would only be 10½d. in the £ under the existing Act, and 8d. in the £ under the proposed amending Act. The Minister for Works informed a conference yesterday that the Government had practically decided to extend the term for repayment from 28 years to 60 years, so that instead of a 10½d. rate an 8d. rate would be sufficient to pay for the whole. Then when the entire scheme is carried out in from fifteen to twenty years' time the rate under the existing Act would be 9¼d.; whereas under the proposed amending Act it would be only 7d. If the interest were taken at 3½ per cent., which seems now to be the current rate for loans, the 8d. rate would be reduced to 7¼d., and the 7d. rate to 6½d. That would provide interest, repayment, and working expenses upon an outlay of £1,817,000.

112. That would be the gross expenditure to make the whole system complete? Yes.

113. That would be about a million sterling in addition to what is proposed at present? Yes. I have not enumerated the works because the Committee apparently wish to save time, but the particulars are set forth in the schedule. They are the works necessary to make the scheme complete. Against the items I have read there is an important set-off, that is to say, the cost of the disposal of the night-soil throughout the western suburbs at the present time. [*Vide Appendix* C 4.] I may say that in 1887 the number of occupied houses was about 34,000; in 1894, at the present rate of increase, that number will have increased to 44,000; and taking the small sum of 15s. per annum as the expense for each house—and I may say that the cost now varies from 13s. to 26s. and upwards—but taking 15s. annually, that would represent the equivalent of a rate of 3·70d. in the £ throughout the suburbs, or, in other words, the proposed works would create an extra rate of about 4½d. in the £ only beyond the present expense. A house rated at £50, at 8d. in the £, would have to pay £1 13s. 4d., and if the present charge of 15s. is deducted, it would simply mean 18s. 4d. extra per annum. So that although the outlay seems very large, still, when the circumstances demand such a large expenditure, the ratable value will have so increased that the rate will, in consequence, be very much smaller. The next paper to hand in is a reply to Mr. Henson's criticism on the scheme. [*Vide Appendix* C 5.] Mr. Henson is connected with the Water and Sewerage Board. He read a paper before the Engineering Association in September last, which raised various points, and it was thought sufficiently important, that Mr. Bennett referred the matter to me to prepare an official reply, in order that the Committee might have every information on the question. It is a complete refutation of all that has been asserted in opposition to the scheme.

114. By Mr. Henson only, or generally? It deals with Mr. Henson's objections and with the discussion that took place thereon. The next paper has reference to the reports and correspondence in connection with a proposed system of sewerage for Burwood. A counter scheme was prepared by Mr. Charles Cowdery and handed in to the Council, who forwarded it to the Minister for his consideration. [*Vide Appendix* C 6.] A report upon the scheme was prepared and considered by the Burwood Council, who disagreed entirely with the counter scheme, and approved of the present scheme.

115. Is the Mr. Cowdery you speak of the Engineer-in-Chief for Existing Lines of Railway? No, he is his brother. I may add that in each of these cases the type has been kept standing in order that if the Committee deemed it desirable the matter could be presented as an appendix to their report. The information which is given in the reply to the criticisms of Mr. Henson has a strong bearing upon the general question, and the paper contains even later information than the report which was prepared nearly a year ago.

116. You hand that in also? Yes, and there are sufficient copies struck off to supply all the members of the Committee at the present time.

117. Are there any other papers you would like to hand in, or any figures that would furnish the Committee with information that might help them? This plan of the low-level areas has been prepared [*vide* Plan No. 4.]; it is in addition to the plan attached to the report. The latter shows the present scheme. This one deals entirely with the low-level areas which are described on page 17 in the report. Out of the 13,628 acres, which comprise the western suburbs, 29 per cent. of that area is below what is termed the gravitation area, and will have to be provided for by pumping or other power. The portion coloured yellow on the lithographed plan shows the low-level area at Marrickville, where it is proposed to have a pumping station, and to raise the sewage by pumps to a height of 34 feet. The frontages round the harbour and along Cook's River are the places where the levels are too low to admit of gravitation, and where it is proposed to raise the sewage by means of the "Shone" automatic system. That is a system extensively adopted in England and on the Continent, and is making considerable headway. Under such circumstances as these it is cheaper than direct pumping.

G. H. Stayton, Esq. 7 Dec., 1888.

118. What is the nature of it? It is called the "pneumatic-ejector" system, and is worked by means of compressed air. The particulars are given on page 20 of the report. The estimated cost of the low-level system, which is included in the total of £1,817,000, is £119,650. Some sections would be required immediately the present scheme could be brought into operation, but the other portions might not actually be required for fifteen or twenty years to come. The supplemental estimate is believed to be ample to provide for every contingency that may arise, as far as can be foreseen, to make the sewerage of the whole area complete and effective.

THURSDAY, 13 *DECEMBER*, 1888.

Present:—

The Honorable JOHN LACKEY (CHAIRMAN).

The Hon. GEORGE CAMPBELL.	JACOB GARRARD, Esq.
The Hon. WILLIAM HENRY SUTTOR.	ALEXANDER KETHEL, Esq.
The Hon. JAMES WATSON.	SYDNEY SMITH, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	THOMAS MICHAEL SLATTERY, Esq.
JOSEPH PALMER ABBOTT, Esq.	JOHN RENDELL STREET, Esq.
HENRY COPELAND, Esq.	DANIEL O'CONNOR, Esq.

The Committee further considered the proposed Drainage Works for the Western Suburbs.

The Hon. Henry Norman MacLaurin, M.D., M.L.C., Medical Adviser to the Government and President of the Board of Health, sworn, and examined :—

Hon. H. N. MacLaurin, M.D., M.L.C. 13 Dec., 1888.

119. *Chairman.*] You have held your present position for a considerable time? For a little over three years.

120. During that time you have had brought under your notice the necessity for sanitary improvements in the city and suburbs? Yes; especially in connection with the western suburbs.

121. Have you been much impressed with the necessity for sanitary improvements? Yes; we have had a good deal of trouble in connection with it, and it has shown me the absolute necessity for something of the kind.

122. Has your attention been called to one portion of the suburbs more than another? The western suburbs chiefly. A great deal of trouble and inconvenience has arisen in the western suburbs from the want of proper means of disposing of night-soil.

123. Is it the case that certain infectious and contagious diseases have been found more prevalent in those localities than others? It is not very easy to make an exact comparison, but there is no doubt, as far as we can judge from the statistics, that there has been more sickness in the suburbs than in the city. I have been preparing a list for several years of the deaths from various causes in the Colony of New South Wales. As yet only that for 1884 is ready, but it can be taken as a specimen. Taking the deaths from these causes, in the city we find they are 1,845 per 100,000, while in the suburbs they are 2,208 per 100,000.

124. Do you find that these diseases are traceable to drainage more than to other causes? We have every reason to believe that bad drainage has a great deal to do with it, because first of all we find it is so very much shown in the case of diseases of childhood—children under five years of age, who are particularly liable to diseases arising from filth and improper disposition of night-soil. Take atrophy and debility, a disease of childhood,—in Sydney the death rate for this year was 157 per 100,000, and in the suburbs 239. So also with diarrhœa and dysentery—in Sydney, 126, and in the suburbs, 213. So also with enteritis, distinctly a disease of early childhood,—almost all the deaths occur under five years of age; in Sydney the rate is 56 per 100,000, and in the suburbs, 134 per 100,000.

125. What is the nature of this disease? It is a disease of the bowels in childhood.

126. Approaching the character of typhoid? Something like diarrhœa or dysentery; it is inflammation of the bowels.

127. Then, as to typhoid? There is a difficulty about typhoid for this particular year, which is the only year I have yet received from the printer, owing to the fact that Prince Alfred Hospital was not open that year, and a great number of people came in from the suburbs to the Sydney Hospital and died there, and so the rate of Sydney was increased. Here is a return for the first six months of the present year of the patients brought into the metropolitan hospitals for treatment. It must be understood that we have no means of knowing how many people are actually suffering from typhoid fever at any time; the only things we can find out are how many people are taken into the hospital and where they come from, and secondly, how many people die of typhoid fever; but from this we may form an estimate of the relative prevalence of the fever in different portions of the town. Taking the persons admitted into the hospitals, we find that from the city the rate was 8·9 per 10,000, from the north-western suburbs—Balmain, Leichhardt, and the Glebe —11·44, and from the western suburbs—such as Newtown, St. Peters, Camperdown, and Macdonaldtown—the rate ran up to 23·64, while from Redfern, Darlington, Alexandria, Waterloo, and Botany, it was 14·22. That shows a very considerable excess of this disease in those suburbs over the rate in Sydney, and that is in all likelihood to be attributed to the want of proper means of disposing of night-soil.

128. Then, from your experience you have come to the conclusion that there should be proper drainage in the different suburbs in the interests of the health of the community? There can be no doubt of it. It is a matter that has been frequently brought under the notice of the Board of Health.

129. Have you made recommendations officially? Yes; I made a recommendation some time ago to the Colonial Secretary. During the latter part of 1886 public attention was drawn to this question by numerous complaints caused by the burying of night-soil. A number of companies at that time communicated with the Board, and I prepared a minute for the Colonial Secretary, in which I recommended that the Manchester plan should be adopted.

130. *Mr. Garrard.*] Is that Sir James Farmer's process? It is Mantone, Alyott, and Fryer's process. I recommended that at the time, because I thought it could be introduced with the greatest ease and most quickly; and the Colonial Secretary accordingly summoned a meeting of the mayors of the different municipalities, and put the matter before them. However they did not care for this plan, and it was given up.

131. *Chairman.*] Has that plan been adopted by any municipality? No.

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132. We had it reported that the Municipality of Parramatta had adopted it? I do not think so; I do not know.
133. Have you seen the machinery in the Colony at all? There was machinery of the same kind, but not fully worked out. It was not effectual; it was not complete.
134. Sir James Farmer himself has been in the Colony, has he not? I do not know. The man I dealt with was Mr. Petherick, the engineer. When Mr. Stayton introduced his plan I withdrew the other, because on the whole there is no doubt that a system of water sewerage has certain advantages, although it does not get rid as the other plan does of household refuse, street sweepings, and the like.
135. Some professional men recommended the adoption of the duplicate system—a system of drainage for the sewage, and separate drainage for the rainwater? It is a very important thing to keep the storm-water separate from the sewage if you can.
136. However, I suppose that belongs to a different profession? Yes; that has more to do with the Engineering Department.
137. As far as the interests of health are concerned you have no hesitation in recommending the immediate adoption of some system of sewage? It is absolutely necessary that there should be some means of getting rid of the night-soil from the suburbs. As long as we go on as we are the death rate will increase. At present it is higher than it ought to be, and steps should be taken to reduce it; and the first step to be taken is to adopt some method of getting rid of the night-soil.
138. Even the present system in Sydney is not fully carried out? Not yet.
139. So the results you have in your returns would be based on the old system? Yes. Still it has been very much better in Sydney for many years past than in any of these suburbs, because there are no cess-pits nor huge accumulations of buried night-soil.
140. Do you know how they have been getting rid of their night-soil in the suburbs? Some have buried it; some have taken it into Cattanach's steamer, or into punts lying behind Pyrmont.
141. What are the regulations of the municipalities now with reference to night-soil? They make such by-laws as they think proper under the Nuisances Prevention Act which gives them authority to make by-laws or to combine to make joint by-laws. They generally contract with certain persons to remove the night soil, and they have several ways of doing it. Many of them have it taken either to Cattanach's steamer or the punt that is there, which is towed out to sea; or they can get Executive authority to set apart a place which is Gazetted as a depôt for night-soil, and they can bury the night-soil in that place till it is filled up.
142. Then there are certain regulations as to depth, I suppose, and as to covering with dry earth? It ought to be covered with dry earth, but it is exceedingly difficult to see that it is done. These regulations are entirely under the control of the municipalities themselves. In the case of one municipality, for example, they had a depôt for night-soil which they were believed to conduct in such a way as to be a nuisance to the people in the neighbourhood. When they were prosecuted they pleaded that it had been Gazetted, but it was found that they had Gazetted it themselves without any Executive authority at all. That shows that the matter is not very well understood.
143. Have you given your attention to the dry earth system? I have seen it in some places.
144. Is it your opinion that it has been carried out successfully? It can be carried out successfully in small places with a great deal of care and trouble. Then you have the difficulty of getting rid of all the urine and water of that sort.
145. That is to deodorise the fluid you require a much larger quantity of dry earth? Yes.
146. And I take it that the objection to dry-earth systems generally is that they do not use sufficient for the purpose? Yes, and it requires great trouble and care on the part of the persons using it, and, generally speaking, unless it is very well managed it is apt to cause a nuisance, especially where the population is large.
147. Then you think on the whole there is no better system than a complete system of sewage? I think it is the best system where it can be carried out, and where there is an abundant supply of water.
148. Have you given any attention to the use of sewage for purposes of fertilising? I have to a certain extent; it is a matter on which I hardly like to speak with authority.
149. Do you think, from your professional knowledge, that it would be quite safe to use sewage for the purpose of growing vegetables? Perfectly safe. There is a good deal of it being done on the sewage farm on the other side of the river.
150. And it is being largely resorted to in different parts of the world? Yes. We find that there is a considerable improvement in the water. The effluent water is very considerably deprived of its organic constituents, showing that a great deal of it has been absorbed.
151. Do you think the soil about Sydney being sandy is particularly adapted for disposing of sewage of that description,—say Webb's Grant? It seems to do very well.
152. You have inspected it? Yes; I have gone over it, and gone into every part of it, and had the water collected and analysed, and it seemed to me to answer remarkably well.
153. Is there any great nuisance about? There is practically no nuisance there at all. Of course, you can tell on examining the effluent water that it is the result of sewage, but there is no apparent nuisance about it. It would never do to let it go into water that is to be drunk, but going into a tidal stream where it is carried out to sea there is no nuisance. There is a certain amount of smell if you go alongside the large open carrier for the sewage, but not very much.
154. Is the tide at all active where the water is emptied into the bay? It percolates through the sand. There is a pretty good tide.
155. Sufficient to remove any nuisance? Yes.
156. You do not think there would be any nuisance or danger? I am sure there is no nuisance at present, and I do not see any reason to suppose that there will be at any future time, because the water, as far as I could see, is absolutely free from any smell; though when you come to analyse it you can see that it has been sewage water.
157. You are aware that under the proposed plan for disposing of the sewage of the western suburbs it is intended to deposit the bulk of it in the neighbourhood of some land adjoining the land now being used? That is the plan.
158. You do not think there would be any danger from that? No.
159. Have you seen any large sewage farms in other parts of the world? I have seen them, but it is a long time ago. It is a long time since I was in the neighbourhood of London or Edinburgh. 160.

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160. Have you seen them on the Continent at all? Not for a very long time.
161. I believe sewage is now being very largely used in the reproduction of vegetable food? Yes; there is not the slightest possible objection to it, because when it is turned into vegetable matter any noxious quality it may have had before must be gone.
162. Would that apply to all descriptions of vegetation,—of course cabbages or turnips, or anything of that description, would be cooked and their objectionable character would be limited;—but would it apply equally to salads or cress? The only objection to salads and cress is that you might possibly by accident have a direct application of sewage water to those things. That is perfectly irrespective of the fact that they had obtained growth from sewage; it would be an accidental contamination.
163. *Mr. Garrard.*] It could be removed by washing? Yes; I suppose so. Still, I think people would rather not take salads of that kind; cooking is more efficacious.
164. *Chairman.*] So far as you have given your attention to the subject, which do you think is the more desirable plan—to convey sewage to sea, or to utilize it in farms such as this? I think it is better to utilise it; it is a pity to see it lost.
165. In all largely populated places it is utilised? Wherever land is valuable, if sewage is to be got, it will be turned to account in that way. But it comes to be a question of expense. If sewage is properly treated in a sewage farm at a suitable place, it can be done without any nuisance or injury to the public health; and then it resolves itself mainly into the question what is the most profitable and convenient way of dealing with it. It does seem a pity to see valuable fertilising material thrown into the sea.
166. Have you given any attention to the large outlay proposed for this system? I see the calculations of Mr. Stayton in his report. It seems a pretty large sum—£830,000; I should hardly like to say anything about that.
167. I would like to have your opinion as a medical man—the head of your profession and the medical adviser to the Government—as to whether you think it would be desirable to undertake an expenditure of this sort in view of the advantages which in point of health would be gained by it? There can be no doubt that there would be a decided reduction in the mortality, especially in the infant mortality, which is very high in the suburbs; and I think it would be money well laid out.
168. *Mr. Copeland.*] Do you not think that a good deal of the sickness that you have spoken of in the suburbs is owing to the inefficiency of the water supply, quite as much as to the bad drainage? A water supply may be inefficient in two ways; first of all it may be defective, and secondly it may have been contaminated by night-soil in the neighbourhood. The very first benefit of removing the night-soil in this way is that it diminishes the risk of the water being contaminated at all. I have no doubt whatever that a great deal of this sickness arises from contamination of the water owing to the night-soil not being removed.
169. Therefore, giving the suburbs a better supply of water would, in all probability, remove a great proportion of the sickness? When you make perfectly certain that the water is quite pure you diminish the sickness, but where you have large stores of night-soil in the immediate neighbourhood it is exceedingly difficult to say how it gets into the water.
170. Speaking of the effluent water at the sewage farm, would there not be danger of the sand where the water percolates through becoming charged with noxious matter? I do not think so; there is no evidence of it just now and I do not think there will be any particular danger, because the water that comes through just now seems to have been so very much acted upon by the vegetation, that really one can hardly fancy there will be very much harm at all. There is a large space of ground which is as yet untouched.
171. Have you any knowledge of the areas that are generally attached to these sewage farms in other countries; do you think the area proposed here would be sufficient to absorb the large amount of sewage that would be available in the course of a few years? That is a matter I have not gone into; it is one that would require calculation. Judging from my recollection and speaking at hazard I think it would be quite sufficient for a very long time.
172. *Mr. Street.*] Do you think that a continuous deposit of sewage on the same piece of land for a number of years would destroy the absorbent and purifying qualities of the soil? I do not think it would, because the object of depositing the sewage there is to get it turned to account by vegetation.
173. You think then that the growth of crops from it in time would, as it were, recoup the qualities that are taken out of the native soil? I believe so. I believe that every year the vegetation would consume the greater part of the manure deposited there. The more manure deposited the more vegetation you would get.
174. We have it in evidence that a sandy soil is particularly adapted for a sewage farm of this nature as its absorbent character is peculiarly calculated to absorb all the excrement placed on it? A light soil of that sort seems to be the best; it enables the sewage matter to be most thoroughly taken up by the vegetation.
175. Do you not think the soil itself would become so charged with this sewage matter that it would cease to purify the sewage put upon it? I do not think the sand purifies the sewage itself; it is the vegetation which assimilates the organic matter. The advantage of the sandy soil is that, being so very porous it allows the sewage to be so thoroughly distributed throughout the whole of the soil, and so every little radicle of the plants is able more readily to absorb it.
176. *Mr. Campbell.*] I think you said you did not think any mischief would accrue by the use of vegetables grown on sewage farms? I do not think so.
177. You are aware that there is a strong objection to vegetables grown by Chinese gardeners by reason of the fertilising agents they are said to employ? I do not think there is any reason for that objection.
178. We know these fertilising agents are composed very largely of sewage? Quite so. I fancy that if people have a reasonable objection to vegetables grown by Chinamen it is because of the hands through which the vegetables pass; the Chinamen may not be very clean.
179. You do not think the fertilising agents they employ would make the vegetables objectionable? Not in the slightest degree.
180. *Mr. Garrard.*] You exclude from that assertion food such as salad? Where sewage is frequently distributed you must always bear in mind the possibility of accidental contamination. The mere fact that the salad is grown from a basis manured with sewage will not make it objectionable.
181. *Mr. Kethel.*] But does not the fact that the Chinese are reputed to be in the habit of watering their plants with a substance called "soup," of a very objectionable character, affect the Chinese vegetables? I do not think there can be any objection to liquid manure.

182.

182. Not when poured on the growing plant? Not if you get it down to the soil and the roots take it up. Of course one would not like to take lettuce after it.
183. *Mr. Garrard.*] Would you eat lettuce grown under such conditions? No; I do not think so.
184. *Mr. Suttor.*] You made some reference to a duplicate system to carry off rain water and sewage separately;—what objection is there to having a uniform system for carrying away both? I suppose you would require to have your drains considerably larger.
185. But from a sanitary point of view? I do not think there is any very great objection from a sanitary point of view, except that it is not a good thing to have your pipes larger than you require; there is a liability to stagnation, the evolution of gas, the difficulty of ventilation, &c. I think the objection is chiefly an engineering one.
186. Would it not be desirable occasionally to let the sewers be flushed by the heavy rainfalls? I think the objection is chiefly from an engineering point of view; except that it is always recommended that you should not have your drains too large for the daily work they have to perform.
187. Is there any danger of gases forming in these drains if they are too large? They say you are apt to get stagnation of the flow, and there is more room for the gases to develop; but I think the difficulty is chiefly from the point of view of the engineers. It is their business to arrange a system of drains so that they should be perfectly tight against the gas. We could tell what would be the evil result of any foul air escaping into the house, and it is the business of the engineer to tell us exactly the best way to prevent it.
188. I suppose you have studied the plans and seen how the escape of gas is provided for by ventilating shafts? It seems to me, from what I can tell, though it is of course a question for the engineers, that I would rather support the plan of Mr. Stayton, as adopted here, providing for the sewage by his drains and by the stormwater in another way.
189. *Mr. Copeland.*] Is it not a fact that some of these cases of typhoid have been traced to milk There is no doubt whatever that there was a very considerable outbreak of typhoid at Leichhardt which was traced to a dairy. That was the first case inquired into carefully in this country, and there can be no doubt of it.
190. I suppose on these sewage farms there would be a considerable amount of lucerne and other green forage grown? Yes.
191. Do you think there is any danger of dairy cows becoming affected with typhoid through consuming green stuff grown with such a large proportion of sewage? I do not think so. In places where typhoid is propagated from milk it is not on account of the cow becoming affected with typhoid, but from the contamination of the milk after it is taken from the cow. It seems to be very liable to a great number of animal poisons of that kind, and the way it generally happens is this: that impure water is either used for washing the vessels, or is absolutely added to the milk by an unprincipled dairyman. That was actually the case at Leichhardt, as far as we could see; the well used by the dairyman was supplied with water which came from a cemetery; it appeared to drain from the cemetery in the direction of this well. In all probability it was the origin of the infection of the milk in that particular case. It is not like other diseases which seem to come from the cows themselves. In the case of typhoid, so far as we know at present, the infection is acquired by the milk after it has left the cow's body.
192. The cow itself does not become infected? The cow may be perfectly well, but after the milk is removed from the cow and placed in vessels it is liable to infection of this kind, which is generally got by the addition of impure water.
193. You would anticipate no bad results from the green stuff grown on sewage farms? None whatever.
194. *Chairman.*] Is not milk considered a very active agent in absorbing disease, flavours, or smells? Yes, an exceedingly active agent, and it absorbs even the poisonous matters of certain herbs.
195. *Mr. Copeland.*] You know that when cows have been fed with lucerne or Swedish turnips, the milk retains the flavour of the turnips or the lucerne? Yes, and the butter too. There can be no doubt that the milk gets flavoured to a certain extent by the food the cattle eat, but what I mean is that the kind of manure that is used for producing the food, so far as I know, does not produce any difference in the influence of the food upon the cow itself.
196. *Mr. Sydney Smith.*] How long is it since that case occurred at Leichhardt? I think it was in 1885; it was before the Dairies' Act was passed.
197. Are you aware that a good deal of the typhoid in many of the suburbs was owing to the water supply not being laid on to the suburbs? I believe that had a great deal to do with it. In administering the Dairies' Act, we have always, if possible, insisted on the water used by the dairymen being city water.
198. And that has, to a large extent, removed that cause of typhoid? I think the dairies are in a better state.
199. *Mr. Campbell.*] Would not the drinking of infected water by the cows affect the milk? I do not know; it would depend very much upon the nature of the infection. I do not suppose the cows would be allowed on the sewage farm, and so they would not have an opportunity of drinking the effluent water. The feed would be cut on the farm, and carried away.
200. The cows' milk is affected a good deal by what the cow eats or drinks? No doubt to a certain extent. Of course diarrhœa is a thing commonly caused by milk, and that milk has been affected by the kind of food the cow has been eating; that is perfectly well known, but I do not believe there is anything to show that a cow drinking water contaminated with typhoid fever germs, without suffering herself, would communicate the quality of typhoid fever to her own milk. I would not absolutely say that she would do nothing of the kind, but I do not think it has been proved that she would. Certainly by far the most common way in which milk gets contaminated is by the addition of water to it, either by washing the cans, &c., or by directly adding it to the milk.
201. *Mr. Street.*] It has been said that it may very likely be desirable at a future time to let out some portion of the sewage farm to fatten cattle for market;—do you think the consumption of the feed on the farm by the cattle would be injurious to the meat? I should not think so; as long as they did not get actual disease, I do not think the meat would be affected at all.
202. *Mr. Garrard.*] The only danger would be the possibility of their getting at the effluent water? Well, it would be very difficult to say; the water might upset them, but it would depend very much upon the condition in which it was. It would be very difficult for them to get the water because it really percolates through the sand.

Hon. H. N. MacLaurin, M.D., M.L.C. 13 Dec., 1888.

203. *Mr. Street.*] You do not see any danger in their consuming the feed on the ground? I do not think it would injure them at all providing they were healthy cattle not affected with disease, but it would not be wise, I think, to feed milking cows on the place.
204. *Mr. Sydney Smith.*] Have you inspected many dairies in the suburbs since the new Act came into force? I have inspected some myself, and the officers of the Board have inspected all the dairies in the neighbourhood over and over again.
205. Do you find any improvement in them now? Yes; there has been a very great improvement under better supervision, and the municipalities have taken immense pains in the matter. I do not think there are any cases now like the one I mentioned.

George Henry Stayton, Esq., M.I.C.E., Engineer, Sewerage Branch, Department of Roads and Bridges, sworn and further examined:—

G. H. Stayton, Esq. 13 Dec., 1888.

206. *Chairman.*] You wish to put in some documents? Yes. The Committee asked for any supplementary information which it might be useful for them to consider before the examination came on. I omitted then to put in a statement which was prepared in accordance with Mr. Sutherland's request, some three or four months since, with regard to the Liernur system of sewerage. There was an article in connection with Mr. Backhouse's letters, and as he will probably be examined, I think the information in this paper may be useful to the Committee.
207. What is the paper? It is a paper prepared by me dealing with the merits of the Liernur system. [*Vide Appendix* C 7.] The only other matter is a paper written some months since, criticising the Government scheme of sewerage. The Minister for Works sent it on, and Mr. Bennett sent it to me to prepare a memorandum. That memorandum was prepared, and submitted, and a minute was put on it, "The remarks herewith must be sent to the Public Works Committee for their information." That gives a great deal of information with respect to sewage farms and points likely to arise in connection with this inquiry. [*Vide Appendix* C 8.]
208. What was the original paper? It was an article in the *Herald.*
209. You put these in as additions to your evidence? Yes.

THURSDAY, 20 *DECEMBER,* 1888.

Present:—

The Honorable JOHN LACKEY (CHAIRMAN).

The Hon. GEORGE CAMPBELL,	ALEXANDER KETHEL, Esq.
The Hon. WILLIAM HENRY SUTTOR.	SYDNEY SMITH, Esq.
The Hon. JAMES WATSON.	THOMAS MICHAEL SLATTERY, Esq.
HENRY COPELAND, Esq.	JOHN RENDELL STREET, Esq.
JACOB GARRARD, Esq.	DANIEL O'CONNOR, Esq.

The Committee further considered the proposed Drainage Works for the Western Suburbs.

John Norton Oxley, Esq., Superintendent, Sewage Farm, Webb's Grant, sworn, and examined:—

J. N. Oxley, Esq. 20 Dec., 1888.

210. *Chairman.*] You are at present in charge of the sewage farm at Webb's Grant? Yes.
211. How long have you been in charge there? I was in charge four or five years ago; but latterly I have only been twelve months in charge—since the sewage works commenced.
212. How long is it since the sewage works were completed there? A little more than twelve months. I think it was in September, 1887.
213. The farming operations have been under your control since that period? Everything has been started since twelve months ago.
214. You are an old colonist, I think? Yes.
215. You have had a good deal to do with agricultural and pastoral pursuits in the Colony in your time? Pretty well.
216. Did you ever grow crops under a system of sewage before? Never with sewage.
217. You have with manure, of course? I have tried all kinds of manure.
218. You formerly lived at Kirkham, Camden;—your estate was there? Yes.
219. When you cultivated there, the principle of irrigation, I take it, was very little considered? I attempted a little irrigation scheme, but I found it was not wanted. It was all lucerne, and the lucerne roots went down to the very bottom and found their own nourishment.
220. To what depth do you suppose the lucerne roots would go down? Fourteen feet.
221. At Camden? Yes.
222. How far were you from the river? The Narellan Creek meandered through the alluvial land, so that no portion of the cultivated land was more than 20 or 30 chains from the water.
223. You think that the lucerne plants and others that were sown got nourishment from that source? Just so.
224. Did you ever grow other crops, such as those you are now growing at Webb's Grant? I used to grow cereals, maize, and sorghum.
225. With fairly good results? The result at Kirkham for sorghum was much better than I am getting now. I have grown as much as 80 tons to the acre.
226. That is without the sewage? Without sewage at all.
227. It was a rich river deposit? Rich black alluvial soil.
228. And with water percolating underneath? Yes.
229. You could not cultivate under those conditions where you are now, at Webb's Grant, without the advantage of sewage or manure? We could not cultivate at all. It is scarcely right to call it cultivation. It is pure sea-sand where we are now.
230. The soil in its natural state? It is pure sand, and these crops are merely growing upon 3 or 4 inches of soil deposited from the sewage.

231. Do you find that the sewage mixes well with the sand? No; it does not amalgamate with it at all. It is there; but a shower of rain will produce white sand again.
232. The nourishment will get into the soil? No doubt the nourishment is there; but the sand is pure silica, so sharp that the manure will not mix it.
233. But is not that the case also with the general run of the vegetable gardens about Botany? Yes; but they make an artificial top dressing with horse-manure and other things, which, in the course of a number of years, has decayed and become more or less alluvial. They would not venture to go where we are now. Where they are there is generally a flat bottom.
234. Peat, or something of that kind? Yes.
235. Do you not think that in course of time, with a continual accession of fluid and solid deposited by the sewage, this land will eventually become of the same character as the other? It will be a very long time first.
236. In the interim, you can produce fairly good crops? What you saw.
237. You do not require to do much better than that? I have cut those crops since you were there.
238. Which? The sorghum and the lucerne. The lucerne produced 55 cwt. for half an acre.
239. Since we were there? Since you were there—that crop that you saw growing.
240. And you got 55 cwt. from the last cutting? Yes; that was a month ago. We got 51 cwt. in November, and 55 cwt. in December.
241. That would be at the rate of 5 tons to the acre per month? Just so.
242. That would be about 60 tons per acre per annum? Yes; but you must not take it all the year round, because the winter crops are small.
243. Do you suffer from frosts there? No; but nevertheless the sand is so cold that vegetation does not go on during the winter.
244. That is the case everywhere; the cooler the season and the frosts, the less actual growth you get? Yes.
245. I should have thought that you would have very little frost there, and that you would get an even temperature? The atmosphere appears to be sufficiently warm; but the sand has not the ground-warmth that mould has.
246. But is not that warmth supplied in some degree by the sewage? I rather think it is just the opposite way. I think that possibly the application of so much sewage chills the ground.
247. What do you call those partitions you have in the building? Silt-pits.
248. Do you occasionally catch solid manure there? The only manure that we get out of them is manure that is too heavy, or supposed to be too heavy, to go through the syphon.
249. What would be the character of that manure? It consists principally of sand and rubbish; it would not be manure.
250. Night-soil? No. It is all kinds of heavy stuff—old rags, tin cans, and various things that come down the sewer that we would be afraid to let into the inlet well. It would go down and through the syphon, but it would not come up again by the outlet well, so it is better to intercept it and be on the safe side.
251. And how do you put that on to the ground? Cart it on like ordinary farmyard dung. It is simply taken there for convenience sake, and the farm cart distributes it and pitches it on as you would ordinary farmyard manure.
252. You were getting at the rate of 5 tons per acre per month in November and December? These last two months we have, of lucerne.
253. Can you form any approximate calculation of what you would get for the year? Well, we have only had two crops. I can scarcely tell.
254. You have not had experience enough to enable you to form an opinion? No; this is really the first crop that we have had.
255. What did you get from the sorghum? Twenty tons an acre.
256. But it was hardly ripe; the sorghum would have grown higher? It was as ripe as the cow-keepers will take it. It becomes too woody if it is any riper.
257. You were speaking of having cut very large crops at your place at Kirkham;—when you cut that crop of 80 tons to the acre I suppose it was much older? It was like sugar-cane—perfectly sweet, and past the flowering stage.
258. It had seeded? It was forming.
259. Was it sorghum saccharatum? No; the ordinary green sorghum.
260. It had not seeded? It was seeding. When I found that it had become sweet enough I put it in bundles, and stood them up on end in the stack yard for winter fodder.
261. Did you find that the animals ate it in that state? Yes. It was put through the machine and mixed with chaff.
262. Was it under cover? No.
263. Have you ever grown the English clovers—the large red or the white clover? I used to grow it many years ago, but it ran out.
264. Red clover is very profitable? Very profitable; but it seemed to exhaust the surface soil, and ran out. It simply disappeared.
265. Do you think that it is a plant that could be grown successfully under the influence of manure at Botany? I am sure clover could not.
266. It is too sandy? It is too sandy. I do not think the roots go deep enough.
267. Have you sufficient sewage to manure or fertilise a larger extent of land than you have under cultivation now? We are using the utmost quantity of land we can. We could not use another yard.
268. With your present supply of sewage? With the present supply.
269. Is it likely to increase? Of course. There are now nearly 1,600 houses. The district engineer estimates that I have the sewage of between 8,000 and 10,000 people running on to that farm, and the flow is between 250,000 and 300,000 gallons a day.
270. How many water-closets did you say? I do not know; there are more than 1,500 houses.
271. You have got the sewage of the water-closets attached to them? Whatever number of water-closets there may be; but we have gauged the flow in the city and upon my flumes, and I make it 250,000 gallons of liquid sewage a day running on to the farm at least.
272. That would consist in a large measure of ordinary water, the emptying of baths, and so forth? It is everything; every description of water. Sometimes it is full of vegetable matter and fat from the kitchens.

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273. You estimate that in the course of years you will have a much larger supply of sewage than you have now? It is increasing every week.
274. Do you know how far the water-sheds reach which drain into Shea's Creek? We start from the Victoria Barracks, and I suppose that there are 800 or 900 acres altogether to come in. Part of Marrickville will come in by and by.
275. That is very sparsely built upon at the present time? I don't know the locality.
276. When it is more thickly populated the sewage will become greater? Immensely so.
277. Do you think it desirable to augment your power of utilising that in growing crops? The men are now employed in adding from day to day to the cultivation area as required. We cannot do it all at once, because it blows away. The farm was finished four years ago, and whilst waiting for the sewage to come it all blew away, and had to be remade this year.
278. I suppose you have studied the system of sewage farming and irrigation and all that since you have had charge of the farm? I made it almost a profession when in Europe to thoroughly understand the system of irrigation.
279. You gave considerable attention to it in Europe? I went through every irrigation scheme I could find.
280. In what places did you find that irrigation was most successfully carried on? In Lombardy.
281. That is watered by the snow from the mountains? Yes, off the Alps. There are two or three systems; but this was the system that I thought the best.
282. That is the adaptation of the sewage of the nearest town? No; the laying out of the scheme—a perfectly level system. I believe that this is the system in use in India, though I have not seen it there. All the rice paddocks in Lombardy were like these, perfectly level.
283. How were they fertilised? With water.
284. Did they receive stimulants in the shape of manure of any sort? They may have manured them when they cultivated them.
285. I suppose that the irrigation system of eastern and western California had not grown up in your time? No; I do not know how they are managed. I saw only the European systems, and it struck me that all irrigation systems must be either contour-irrigation or perfectly level. In this case the flow is constant, and must be got rid of whether the crops require it or not, so every bed is impounded by a small bank, some 1 foot and some 2 feet high.
286. Did you visit any other places where irrigation was carried on? The south of France.
287. What was grown there—cereals? No, vegetables. That system was a perfectly level one, in rills. Everything was grown upon a little bank.
288. With small drains at the side? No; one drain running along the top of the paddock, and the water running from that between the rows of crop. The supply of water was not sufficient where I was to irrigate the whole paddock at once, and so they used to run one drain full and then stop it, and then run another full, instead of, as I do, covering the whole field with water.
289. Were they successful in growing crops? Immensely successful.
290. Were they grown for market purposes? Yes, and sent into the market every morning.
291. Did you study the nature of the manure? It was the ordinary town manure brought out and taken into the garden.
292. And watered by irrigation? Yes; the water was pumped into a large tank by a donkey.
293. Then you think you have all appliances to utilise the sewage as it increases? Quite so. I do not think it is possible that I will live to see that place swamped with sewage.
294. Have you heard of the intention of the Government to convey the sewage from the western suburbs to a point on the same neck of land further west? I have.
295. Do you think that the absorption there would be sufficient for the sewage that would be conveyed from the western suburbs? I should think quite. It is all the same kind of ground.
296. Do you think that in course of time it might be made profitable—made to give some return for the outlay? I can scarcely tell. If the quantity of sewage I receive were applied to good agricultural land it would fertilize 50 acres, and be profitable now, whereas I only use two.
297. The difficulty arises from the character of the soil? I am not prepared to say that it is any difficulty. It is a question for the city to say whether they are satisfied with a few acres of filtering beds *versus* a farm. It is simply a filter bed now, and it will be a filter bed to all time. It will never be a farm. The whole tongue of land will have to be reduced into proper level beds, and each one will be a filter bed. When it becomes foul it will be more profitable to put a crop on it and cut the crop off, and sell it, than to take the manure off and throw it away. It may pay its way so.
298. Have you tried any other crops there besides sorghum and lucerne? We have grown various kinds of vegetables.
299. Cabbages? Immense quantities of cabbages. They grow very well. Turnips, peas, and all the vegetable crops seem to grow very well.
300. Under the agency of liquid manure, could you not produce them at all times of the year? They are a winter crop. We cannot grow them in the summer; we have tried. The little miserable lot you saw was an experiment. They will not grow at all in the summer, but when the winter sets in they will grow almost without irrigation. The land being flooded all this time leaves a good deposit, and if you dig it up and put in cabbages they will grow on it.
301. *Mr. Copeland.*] Can you say what proportion of solid matter is contained in the sewage? I have not the least idea. It all comes down, with the exception of a very small quantity of solids, in solution. Crude sewage flows right on to the ground.
302. Do you know that the effluent water becomes clear, becomes filtered by passing through this coarse sand that you speak of? It becomes perfectly bright.
303. I suppose that is evidence that whatever solid matter is contained in the sewage must be absorbed and retained in the sandy soil? Not in it. It does not appear to go into it. It remains on top as a thin skin.
304. The sand forms a sieve, as it were? It is. If you let the thickest sewage matter we can get on to a sand-bed there, in twenty-four hours you could take it all up and leave the sand-bed clean.
305. Do you not think that in course of time the finer particles will sink in and become absorbed in the sub-soil?

sub-soil? I am not prepared to say. It has not been found so. The oldest sewage farm is at Edinburgh, and that is not more than 3 inches deep.
306. Is that sand also? It is the same as this, I am told. I have never seen it.
307. I suppose that when this land is surcharged with sewage it becomes the same as undrained land? We do not allow it to be surcharged. It must not be allowed. I can stop any one of the filtering beds by overdoing it.
308. I understood you to say that there was too much sewage and that it made the land cold? Yes; but the moment the sewage is off, it is dry land. It goes down to a certain stratum and passes away in the shape of effluent into the sea.
309. There is no sub-soil? Not that we know. If we do not keep the ground wet it will not grow anything; if we do, it is too cold to do more than keep the vegetation growing.
310. That is the reason why you think it will not be more than a filter bed? I do not think it ever will.
311. Therefore you do not anticipate making anything like a colossal fortune out of this land? No. In the first place all the effluent is lost. We have no means of saving it. It passes away at the rate of 300,000 gallons a day, simply wasted. It goes into the river.
312. The object is to get rid of the water, is it not? Of course, but it ought not to be. If that 300,000 gallons a day were applied to a farm it would make it a proper irrigation farm.
313. You do not think that this water, after it passes away from the filter-beds, contains any organic matter in the shape of manure? No; but good lands properly manured only require water. All I do is to take the manure out, and the water immediately goes away. In twenty-four hours I lose it.
314. According to your present anticipations, you do not expect to realize anything like an asset? I do not. I think that if it pays its expenses it will do exceedingly well.
315. Can you say what the current expenses of the farm are? 15s. a day. Two men will look after the sewage of 1,600 houses.
316. Does that include the expenses in connection with the sewers themselves? I know nothing about that. I have got a piece of ground where they have to dispose of all their night-soil and all their kitchen stuff and dirty water. Everything connected with the household arrangements is deposited on 2 acres of land, and two men look after it.
317. Then the expense of working this farm amounts to 15s. per house? Per day, not per house.
318. *Mr. Garrard.*] The wages of the two men? Yes.
319. *Mr. Copeland.*] What is the total expense? If the system were complete?
320. Yes; I mean including your salaries? It is not finished. You want to know what are the actual expenses now?
321. Yes? We are making now. We are expending capital. We are spending £11 a week; but that is not wholly for——
322. What I want to get at is the expenditure by way of salaries and wages? The wages are now about £11 or £12 a week.
323. All told? All told.
324. *Mr. Watson.*] How many acres have you under cultivation now? Two.
325. Do you purpose putting any more under cultivation? Every day, as the sewage comes down, we keep putting in a fresh bed.
326. Where do you sell your produce? By auction to the cow-keepers. That crop you saw was sold by auction.
327. What did it realise? The lucerne £1 a ton, and the sorghum 12s. a ton.
328. That is at the rate of £5 an acre per month? Yes, for lucerne.
329. What does the sorghum realise? Twelve shillings a ton.
330. And they take it away? From the office—from the weigh-bridge. We take it over, of course.
331. What is the weekly expense of carrying on that? The weekly wage sheet is at £11 odd; but that does not include the actual working of the farm. I can only arrive at that. I anticipated some inquiry would be made, and when I began to cultivate this year I put two men on to do it alone, and they have done it.
332. Do you keep any more than two men on the farm? I have four men at the farm; but they have made it as well as cultivated it. They have made the whole of that you saw. That has been all reduced from sandhills. It has all been cut down by the cubic yard.
333. *Mr. Garrard.*] What is the estimated amount of sewage that will come down when the western suburbs are connected? I have no idea.
334. You consequently do not know how much land you will then have under cultivation? I have not the slightest idea.
335. You know the area they propose to add to the farm? Two hundred and fifty or 300 acres, I think.
336. Is the quality of the soil similar to that where you are now operating? The whole of that tongue of land is simply drift sand from the bay.
337. The proposed addition is included in the tongue of land? I do not know what addition of area is proposed. I have nothing to do with anything but the piece of ground I am cultivating and levelling.
338. And you do not purpose levelling anything more than you need from time to time? That is all.
339. Your experience ——? Our experience is that 10 acres levelled before the sewage was applied put themselves into sand hills again in three years, so that it is much better to go on from day to day.
340. Have you charge of the whole of the works there? Everything.
341. The receiving house as well? Everything.
342. Is there no solid manure in the stuff kept back by the grating? Very little, unless mixed with sand. There is no solid manure really.
343. And the manure that lies on the top when the water has filtered away—do you collect that and use it in any way? Plough it straight in. We get it as thick as we can. When we have got three or four layers on it it will take no more sewage. We plough that in, and then there is another layer, and so on.
344. How long before you sow your crops? When we think it is rich enough. We have tried several times before, and lost many crops. This is the first crop we have been able to get.
345. Is there no complaint about the smell from the neighbours? There are no neighbours around to complain. You had the benefit of it when you were out, and are the best judges of the smell.

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346. Is it true that in the neighbourhood of Botany there are boiling-down establishments? Very many, and very disagreeable ones.

347. Have you smelt any noxious smells on the farm from them? Well, we are not supposed to smell anything.

348. If statements are made that unsavoury smells come from there it is quite possible that they come from the boiling-down establishments, and not from the farm? I do not think they are from the farm. We are visited at all times by all sorts of people, and have never had any complaint. I may say that there were no preparations for your coming. You found it exactly in its ordinary condition.

349. *Mr. Suttor.*] You said you could not grow crops in the winter. I suppose the temperature is much lower then? The only crops we are able to grow are cabbages and turnips.

350. Lucerne and sorghum require a higher temperature? The lucerne was cut, but it only produced about a ton during the winter.

351. As a matter of fact lucerne and sorghum do not grow as well then? There will be a second cutting of sorghum, and it grows all through the winter; but it does not grow high, and it will not cut.

352. Then there are times in the year when you cannot get crops? We can get vegetables.

353. But as far as sorghum is concerned? No; it does not grow well in the winter.

354. What is the return of sorghum? 20 tons an acre. The crop you saw was a good one, and weighed 20 tons to the acre.

355. At 12s. a ton? Yes.

356. That is a much more productive crop than the lucerne? Oh, dear no. The lucerne comes once a month; but this is a yearly crop; at any rate there are only two crops a year.

357. You say that all the solid particles of the sewage remain on the surface;—how do you treat that? Plough it in.

358. Do you find they become at all offensive? There is not the slightest odour after it once goes on to the soil. No matter how filthy the stuff is, the moment it goes on to the soil the smell goes away.

359. It is not likely to make a nuisance in the neighbourhood? It never can. It was tried by the Government chemist. 150,000 gallons of sewage were kept back until it became black filthy mud, that you could almost walk over, and it was put upon half an acre, a foot deep. The next morning I sent him the dry manure in a paper, and he put it into his pocket. The effluent was analysed, and was quite good drinking water.

360. Did he give any report as to the state of the solid matter? He simply analysed it as farm manure. He gives its constituent portions, but I forget what they are.

361. With reference to the expenditure, you spoke of it being about £11 a week;—is not some of that expenditure spread over some other part of the work? All the levelling and everything is paid for out of that. That is the capital. The actual running expenditure is only 15s. a day.

362. Is not some of that used for the carrying on of the machinery? The inlet-house you mean. I am not including that at all; I am only including the farm; the expenses of the inlet-house must be tacked on to the expenses of the syphon.

363. The making of that syphon has saddled the general system with a heavy expenditure? You cannot help that. There was a necessity to make it, and it has to be cleaned. The western suburbs scheme will come right on to the farm, so that there will be no expenditure beyond the receiving and ploughing in of the sewage.

364. Could not the sewage be carried on to the farm without the syphon? No; because they would not allow the river to be blocked. The syphon is under the river.

365. It had to be used to prevent the navigation being blocked? That was the reason.

366. Is there much navigation carried on there? No; but there may be. It is one of those navigable parts of the harbour that might be used at any time, and it would not be safe to put a pipe across it.

367. Do you know how much extra the effect of the syphon being there makes upon the cost of the whole scheme? I do not know anything about the original cost; the running expenses are about £10 per week.

368. *Chairman.*] Have you tried any description of trees or vines there? I have got a row of vines planted now; but they are not looking well.

369. How old are they? Only put in this year.

370. Are they cuttings or rooted plants? Cuttings.

371. Would it not have been better to try rooted plants? I find that the cuttings come very nearly as soon as the others.

372. What description of vine have you planted? Table grapes. I am afraid it is too windy for them. I have also got a lot of orange and lemon trees.

373. You have not tried any other description of fruit trees? Yes; we have a few stone fruits, but the wind blows them all away. As soon as the young leaves come a sand-drift sets in and cuts all the leaves off. I am afraid they will not be able to make headway against the sand-drifts.

374. You say that you have tried turnips;—were they Swedes or the common white turnip? Swedes.

375. Do you find them answer well? Splendidly.

376. Have you ever tried pumpkins? No; we do not plant them, but they come up everywhere from the sewage. The fruit is not any good.

377. Have you ever grown onions there? No; I have not tried any of those crops, because I know I cannot deal with them. I could grow them, but obviously I could not sell them at a profit; the manual labour necessary to put such crops in must result in a loss to the Government.

378. But it would be developing the uses to which the sewage farm could be put? There would be no difficulty, but it must be done by somebody who could do the work himself. We cannot afford to keep a market garden.

379. It would be a matter of great interest to show what crops could be produced under the system? They have been tried; everything has been tried except onions.

380. How do the tomatoes do;—I suppose they grow like weeds? They come up almost everywhere.

381. *Mr. Copeland.*] Would there be any chance of letting this land out, say to some other vegetable gardeners, letting them use the manure and the water to properly irrigate the land? I think it is very likely that when there is a sufficient area that will be the proper way to dispose of it. If we had 10

acres

acres any enterprising gardener ought to take it and work it himself, under the inspection of the Government, of course, because all of these beds require attention. They cannot be used continuously, any of them. They are intermittent; the whole system is intermittent. The filtering power of any one of those beds can be destroyed if it is not carefully irrigated.

382. I suppose you would hardly consider a piece of land of that character an advisable place to try an experimental farm to see what vegetables or fruits or other things would grow in the Colony? It is entirely experimental.

383. But as an experimental farm would you not prefer to have soil of a better character? You could not have an experimental farm there. What you grow is simply growing upon the few inches of manure put on to the sand; it is not growing in the sand.

384. Do you think the sale of the produce of the 2 acres has paid the expenses of the men employed in cultivating the land? Well, scarcely.

385. What wages do you pay those men? Seven shillings a day.

386. Two men at 7s. each? Yes.

387. Anyone else besides yourself? No.

388. What salary do you get? £300.

389. So that the total expenditure on that farm by way of wages is this; £300, and 7s. a day each for two men? It is hardly fair to put that down, because there are only 2 acres at present under cultivation. I could superintend 500 acres; but it is not finished. It is in process of being made. I am designing and carrying it out every day, and therefore I have got more men. As I thought the Committee might wish to know the difference of cost between the earth-closet system which they have inquired into and the system of simple filtration, I might say that the system of simple filtration costs about 15s. a day for 8,000 people.

390. As you increase the area under cultivation do you think it would pay the Government to employ a larger number of men to cultivate the land, or simply to leave it as a sewage filter? It must be cultivated. The whole of the system would break down if the ground were not cultivated. Every one of those filter-beds there would cease to be filter-beds in two months if they were not cultivated, and then the question is whether you will collect the manure and sell it in bags or whether you will grow something on it.

391. What is your opinion—do you think it would pay better to employ men to grow vegetables and fodder on it, or to sell the manure off the surface? At present you could not sell the manure at all. I do not think it is saleable. We do not get enough, neither do we cultivate enough, to make it pay. I should not say positively which was the best. I would like a little more experience. I have really produced only one crop, and we can hardly tell whether it will pay better sold as manure or cut as a crop. It will only go somewhat toward maintenance either way.

392. Then, as a farm at the present time it is a mere experiment? It is not an experimental farm at all, and never can be a farm.

393. It is termed a sewage farm? You can call it what you like; but it is not a farm. We have no soil there; we have nothing but sand. It is simply a filtering arrangement. The system of irrigation there may be adopted on any land.

394. You are perfectly satisfied with the results as a filter-bed? Yes; I believe everyone is.

395. It is perfectly satisfactory? It is perfectly satisfactory.

396. The effluent water passes away in a clear state, free from smell? Yes; the water is nearly as good as it might be. I would not like to drink it, and the chemist says that it ought not to be drunk, but the men have drunk it.

397. Does it pass out as a stream? At present it passes away a little above high-water mark in the form of a damp line. Eventually it is intended to have an intercepting pipe all round the farm to carry off this water.

398. Do you notice any effluvia from the saturated sand? None whatever. There is no smell. It is perfectly clear water. Cattle and everything drink it.

399. *Mr. Suttor.*] Are you employed by the Government? Yes.

400. These filter-beds are not under the control of the Water and Sewerage Board? Not at present; they are under the Works Department.

401. *Chairman.*] I think you said it cannot be regarded as a farm? I do not think so.

402. Do you not think the results you have given us—5 tons to the acre in a month—is a good result? Well, there may be different opinions about a farm; I do not call it a farm. Whatever is grown there is simply forced out of pure sand by means of excessive manuring and watering. You put 300,000 gallons of water a day on 2 acres of land; it is enormous. If we had it on a sheep run we could get the whole place under cultivation.

403. Have you ever followed the roots of the lucerne? Yes; they are about 3 feet down.

404. Do they reach moisture at that depth? They get the moisture passing from one paddock to the other. The lucerne is not generally sewaged at all, but there is a sewage paddock on each side, and the effluent passes under it to get away to the beach, and the lucerne seems to pick it up.

405. Is that the case with sorghum as well? No; it dies in two days if it is not watered; two hot days will kill it. It has to be watered every two or three days at the very least.

406. Then you think there is a great deal more experience required before you can ascertain the real producing property of the soil under the agency of sewage? I think so; it is entirely experimental.

407. Do you know the extent of the suburbs proposed to be drained? Not exactly; I believe 800 or 900 acres.

408. With a tolerably large population? I have never inquired into the matter. I only made the preliminary levelling there for 50,000 people.

409. You have no data to enable you to form an estimate of the probable capacity of the soil to receive sewage? Yes, as far as we can go we have.

410. With what result? We can filter 300,000 gallons a day on an acre intermittent; that would be 2 acres—1 acre in operation and 1 off.

411. Have you had any estimate made of the number of gallons that would probably be received from this large area? No. I commenced with the understanding that there would be at least 50,000 people on it shortly, and the filter-beds are designed to receive the sewage of 50,000 people in conjunction with whatever cultivation we may carry on besides.

J. N. Oxley, Esq. 20 Dec., 1888.

412. Has it ever occurred to you, supposing that a system of farming were carried on at the places where the sewage is to be deposited, that the working might be profitably added to by the addition of soil of any sort? No doubt, but we would destroy another thing. It requires clay to keep the particles of sand together, and if we put that on we cease to have a filter-bed that will satisfy the sanitary authorities.
413. Is clay the property most required to make the sand reproductive? I should think so.
414. No other description of soil? I do not think so. If we take a handful of that ground saturated with manure and dry, we can rub the whole of the manure out, and have the bright silica left. It never seems to mix. If there is a little clay in it it becomes soil at once; and if it were saturated to the extent we saturated it, it would very likely be disagreeable.

John Ashburton Thompson, Esq., M.D., Deputy Medical Adviser to the Government, sworn, and examined:—

J. Ashburton Thompson, Esq., M.D. 20 Dec., 1888.

415. *Chairman.*] You have held your present position for some time? Three or four years.
416. And of course in performing the duties of the office you have had a good deal to do with the health of the citizens? Yes. Perhaps I may mention for this purpose that I am specially qualified in sanitary science by the University of Cambridge. It is my business to know something about the matters you are inquiring into.
417. That is a branch of the profession to which you have given considerable attention? Quite so.
418. Have you had to do with town sewage and country sewage as well? I have not had practically to do with either the one or the other.
419. But in the course of your professional observations you have formed opinions as to the influence of the different descriptions of drainage upon the health of communities? Certainly.
420. You understand the nature of the proposed sewage works for the western suburbs? Yes; I have studied Mr. Stayton's proposals.
421. Of course you recognise that it consists of an elaborate and expensive plan? I do.
422. It is proposed to cost something over £800,000? Yes.
423. And when this shall have been done a greater outlay will take place before the scheme is a complete one? Yes; very considerable.
424. Have you ever visited the sewage farm at Botany? Very often.
425. Have you noticed the absorption of the solid and liquid manure from the drains, and the uses to which it is put? Yes, I have; and I think it is eminently satisfactory.
426. Have you given any attention to the way in which it is utilised in producing vegetables and green crops? Yes.
427. Have you ever had to do with analyses of soils at all? Yes.
428. Do you know anything of the ingredients which compose the soil of what is called Webb's Grant—that neck of land that the sewage is now deposited on? I believe it is pure sand; I think it contains really nothing but silica on the whole.
429. As far as you know, would solid or liquid manure be the best for the reproduction of crops on silica? Undoubtedly a liquid manure, I think.
430. In the market gardens about Botany and in those swamps in the neighbourhood, they have something other than pure sand? Yes; there is a large quantity of alluvial soil there.
431. And peaty soil? Yes.
432. Which works in well with ordinary manures? Yes.
433. And that is not the case with Webb's Grant? Not at all. On the other hand, of course, the areas you mention are for the most part water-logged, and not at all suitable for sewage farming in their present state.
434. You have seen the crops produced on Webb's Grant? Yes.
435. They are very satisfactory crops I think? Very satisfactory indeed.
436. Both in quantity and quality? Yes. I think the place is most favourable for sewage farming, and the climate also. There is great trouble very often in other climates caused by the excessive volume of sewage as compared with the area available for utilizing it; but here where there is so much evaporation, I think we shall not be troubled in that way at all events.
437. From a sanitary point of view you think it is a success—the deposit of the sewage at this point? Yes, I do, undoubtedly.
438. And there is no probability of danger to the health of the inhabitants round about? I think there would be no danger at all, even if the inhabitants were very much closer than they are. There is actually no evidence whatever that sewage farms are hurtful to the health of neighbouring populations even in places very much less fitted for sewage farms than is Webb's grant.
439. It is the case I think that whatever may be the experience as to farming there, as a filter it has been found very perfect? Yes; the effluent is a very good effluent. Of course, it must be remembered that at present only a very small area of the sand is being used. If necessary the sewage could be spread over a larger area, and then you would get probably a still better effluent; but it is good enough.
440. You have seen sewage farms in other parts of the world? Yes; in England only, but I have seen a great many there. Perhaps the farm at Croydon is the one with which I am most familiar, or rather the farms connected with the district of Croydon, because there are three of them.
441. What is the description of the soil there? On two it is gravel. One of the farms is entirely on clay, and it is therefore under-drained very carefully.
442. With subsoil drains? Yes.
443. And ultimately where is the water conveyed to? It runs into a stream. As it leaves the farm it is perfectly bright and clear and tasteless, and as a matter of fact, although it is not desirable, people occasionally drink that water. Also I know from my own observation that except from some occasional fault—as the temporary stoppage of a carrier—those farms are perfectly free from nuisance and offence. At Norwood there is a footpath crossing one of them, and that is a very favourite walk for people on Sunday afternoon. They do not know they are walking on a sewage farm—they think they are simply crossing a cultivation paddock.
444. Do you recollect the nature of the crops they mostly produce there? Roots, and some grass, market produce, and Italian rye-grass.

445. Do you recollect the proportion of solids as against liquids, or is it all in the shape of liquid? It is all liquid.
446. They have no means of intercepting the solids in any way, as far as you recollect? The sewage is mechanically strained through Latham's extractors, by which a small proportion of fœcal matter, garbage, and the larger solid objects are separated.
447. Then I suppose the solid portion of the manure would be ploughed into the surface? Yes.
448. It is spread just as they do here on a smaller scale at Botany? Quite so; but at Botany of course there is all the advantage of a loose soil, devoid almost of any organic matter. There they are turning crude sewage on in a vastly larger proportion than is possible on a clay soil; and the sand will be all the better for it, no doubt.
449. I think you told us in evidence some time ago, that the system of sewerage was preferable to the dry earth system? Yes, I daresay I did; I am quite of that opinion. The dry earth system is a delusion as applied to large populations. It is all very well for an individual who will look after it, or for an institution where some officer can be told off to inspect the arrangements daily; but applied to a large population it is entirely a delusion, the earth that is taken to the house not being supplied to the closet as it is required; people will not do that. Of course there is also the expense and labour of supplying the earth to the households. In point of fact, we are supposed to have earth closets here in many districts, but you do not find them—they do not exist—the earth is not supplied. And that is a very expensive way and a very imperfect way, because the slop-water has still to be disposed of, and, after all, the contents of closets are not a conspicuous constituent of the sewage of a town. The sewage of an entirely water-closeted town differs very little indeed from the sewage of a town which has earth closets or middens. There is very little difference between the sewage of those two towns. The main difference is a little one of some 56 grains per gallon of solid matter in suspension. In offensiveness and harmfulness the sewage of a middened town is as bad as that of a water-closeted town.
450. I suppose you keep records of the state of the health of the inhabitants of the city generally? No, we do not do that, because we have not the means of doing it. Of course I examine from time to time the monthly returns of the Registrar-General; but as for watching the public health week by week, I must say it is not done, because at present the means do not exist.
451. You have not the appliances? The organization and so forth is wanting.
452. Then the only record you have of health is from the Registrar-General's returns? From the returns which the Registrar-General makes in conjunction with the Government Statist. The Registrar-General's officers abstract the register of deaths and forward a return to the Statist, who then arranges it and remarks on it. All that is done quite apart from the Health Department, who in point of fact ought to have charge of it. It is impossible for a layman to deal fully with vital statistics. Mr. Coghlan is of course as competent as any man; but a layman does not know what are the points which should attract attention, and, I should suppose, would be glad to be relieved of the duty.
453. As a medical man, are you not of opinion that records should be carefully kept? I am of opinion that they should be kept with the greatest care, and that that is the most important thing for every nation to do, because that really is their book-keeping; it is the nation's account. You cannot stop waste if you do not know the health of your population—the death rate, and the causes of death in particular districts. But if I were to go into that I am afraid I should detain you a very long time, because there are so many things that, as far as I am able to learn, seem to want adjusting. I have already said—to give you one single example—that it is not possible to make comparisons between different districts. Comparisons are constantly proposed between the city and suburbs, and it is not possible to make those, for this reason alone if for no other: that no less than 15·7 per cent. of the deaths in 1887 took place in the public institutions; they are credited to the district in which those public institutions happen to stand; they are not referred back to the districts to which they really belong. Of course the Statist makes an attempt to minimise the error. In his summaries he puts in a separate line all the deaths in public institutions, and then strikes his rate upon the remainder; this causes a good deal of unprofitable trouble and labour. The 15 per cent. of deaths in the hospitals ought to be distributed, but the means of doing it do not exist. And then there are other reasons. However, of course I do study the tables, and I have brought with me, as I thought it might possibly be of some service to you, a copy of a table which I have constructed. [*Vide Appendix* D.] It does not exist in the statistical returns; I made it for my own information. It shows the deaths from various causes, and the birth rate, and the natural increase, and so forth, and other particulars; and especially the deaths from zymotic or preventable diseases, for the ten years 1875 to 1884; and then strikes an average upon those ten years, and gives the figures of 1885 for comparison. It is so far behind as 1885 only, because the returns for 1886 and 1887 are not yet published.
454. Can you let us have that paper? Yes.
455. *Mr. Garrard.*] Is that based on the figures supplied by the Registrar-General and the Statist, which you say are defective? Of course the figures are from the Registrar-General's returns; there is no other source; but this is an abstract for the whole metropolitan district, and is therefore not subject to any very great error on account of deaths in public institutions, because many of the institutions stand within the metropolitan district. The remark I made just now applied to a comparison between the several districts—as between the city and suburbs—and then again, between one district and another. For instance, Darlington has a population of 142 persons to the acre, and the city has a population of only forty-six persons to the acre. Now it would be very interesting and very important to ascertain what the effect of that difference of density is upon the health of the two populations. I should be very glad to do that, but I cannot. So with other districts.
456. *Chairman.*] There would be other elements to be taken into consideration besides the mere density of population in a return such as that; for instance, the nature of the drainage? There are other considerations of course; but nevertheless it has been ascertained by Dr. Farr, who may be said to have founded the science of vital statistics, that death-rates do bear a constant proportion to density; they increase as the twelfth root of the density; so that given these two districts, which in many respects are similar, one would expect to find that although Darlington has for about a year been sewered, and supplied with pure water, it would have a slightly higher death-rate than a similar district having in addition the advantage of low density. It is not very easy offhand to make clear the advantage of being able to make those comparisons; one wants a specific example and then it is clear enough; and that I am not prepared to give at this moment.

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457. Has your Department at any time made application for means to have these compilations made? I am not aware.
458. You think it would be very valuable, of course, to have it? Just as valuable to a nation as a merchant's books are to the merchant. Without them he does not know what he is doing; nor do we.
459. Has anything occurred to lead you to form any fixed opinions as to the influences of the recent sewerage works on the citizens of Sydney? No, because although the outfall sewers have been constructed the connections are going on but slowly. There are only connected with the northern outfall about 150 houses, and with the southern outfall about 1,500 houses, and that within the last year.
460. Have you been led to form any opinions as to the influence of sewage in the various bays where it is deposited; as for instance Darling Harbour, Woolloomooloo Bay, and Elizabeth Bay? No, not specifically with regard to the populations in those neighbourhoods, for statistical reasons already mentioned.
461. Do you happen to know how far the sewage extends out into the water at those places? No; I do not know anything about that.
462. Have you formed any opinion about the death-rate from time to time, from defective sewerage in Sydney? It is so very difficult, for the reason I have just given, to estimate the death-rate in different districts of Sydney. Defective sewerage fosters typhoid fever. Now, many of the persons who are attacked with typhoid fever are the newcomers, at ages between 15 and 35, or thereabouts for the most part; they are immigrants of one sort or another who have not much money and who go to the hospitals. It is precisely those people whose deaths are not recorded in the districts to which they are due.
463. Then the town would be credited with the disease with which they were affected? Yes; if they happen to die in Sydney Hospital, then the city will be credited; if they happen to die at Prince Alfred or the Coast hospital, then Camperdown or Waterloo will be credited. Of course, I know that our death-rate from typhoid for the *whole* of the metropolitan district is very much too high; that is, it is 6·4 per 10,000 living, upon the average of those ten years 1875 to 1884, whereas in London, during the ten years 1877-86, it was never above 2·9, and in 1885 and 1886 was only 1·8.
464. *Mr. Copeland.*] Are you personally acquainted with Webb's Grant? Yes; I have often been there to watch the works.
465. Can you say what quantity of solids they conserve during the year? I do not think they conserve any; perhaps I do not understand the question.
466. Have they not settling pits—some method of retaining the solid sewage before it goes on the farm itself? No; that is not the object of those pits. The object of those pits is to separate extraneous matters—tins, for instance, and stones, and things of that sort which get into the sewers. They are not in order to allow the sewage to precipitate, but to strain it.
467. Can you form any idea as to the percentage of solid matter contained in the sewage that goes on the farm;—I want to get some idea as to how long it will take for this clean sand to become charged with sewage matter? It is a very variable quantity. I do not think it is possible to state any general figure for that. The sewage contains variable quantities of water from rain and so forth.
468. Do you know what population this system of sewerage serves at the present time? About 1,650 houses, and you can reckon roughly five persons to a house.
469. That would be roughly 8,000 persons;—what quantity of excrement could we reckon per head? Four ounces of solid; but you cannot get at it in that way, there are so many other solids. They are now turning on 2 acres, I understand, the sewage of 7,500 people. The general canon is laid down by Professor Robinson, who is one of the first authorities on such matters, that you may turn the sewage of 500 people on to an acre as long as you like, and it will be properly purified, and the soil will not get over-worked.
470. Is that where the land is under constant cultivation? The statement is general, and refers to filter-beds—to under-drained land, which may or may not be cultivated. But as soon as you approach 1,000 persons to the acre the cleansing becomes uncertain. Then you must first of all precipitate your sewage, or allow it to settle at least.
471. In this case we have approximately 8,000 persons to 2 acres—an average of 4,000 persons per acre? Quite so; but one must remember the circumstances under which Robinson writes. He is speaking of England, and that is a very different place from this—a very different climate. This is a place where there is an immense evaporation. We have soil which is very porous, and which contains scarcely any organic matter at all, and therefore it will for a considerable period no doubt destroy a much greater quantity of sewage than that estimate of Robinson's.
472. It appears already to be four times the average—4,000 persons per acre instead of 1,000? Four times the average of England, under the circumstances of England, which are not the same as these. Of course, you may ask why I should give that illustration which I imply is scarcely applicable here, but you know conditions never correspond exactly, and one has to try the practical experiment by testing the conditions on the spot.
473. At least you have no anticipation whatever that the whole of that land will become surcharged with organic matter? I have not the least expectation of it. The only thing is that when you have the total expected outfall, then I believe it is intended, and I am quite sure it will be necessary, to allow for some settling before turning it on the land. I do not think you will be then able to run it straight on out of the sewer as at present. You will have to allow it to deposit, and I believe use some chemical precipitant. When that is done there is no limit to the time during which that area will continue to cleanse; there is no chance of its getting overloaded and clogged. As for the sludge, that will simply raise the surface farther above the tide level. It will always be good; it will itself at last contribute to this filter-bed.
474. *Mr. Street.*] In speaking of the comparative advantages of liquid and solid manures, of course a good deal depends upon the character of the solid? Yes.
475. You said just now you were in favour of liquid in preference to solid manure on soils for a sewage farm? I am not an agriculturalist, and all that I am thinking of is the getting rid of the sewage from the city. Your question, from that point of view, seems to resolve itself into one whether I think the water carriage the best system. I do think so.
476. You have no particular preference for the deposit of liquid manure on a sewage farm over solid manure? In this climate, yes; I believe the liquid form is preferable.
477. I suppose the success of the cultivation would depend a great deal on the original soil in either system? Well, yes, I suppose it would, only you are putting an agricultural complexion on your question.
478. You only gave your opinion with reference to getting rid of the sewage matter? Quite so.
479. *Mr. Suttor.*] You are perfectly satisfied that a good sanitary condition is brought about by the use of

of this farm? Yes; perfectly satisfied. I have not the shadow of a doubt about that, judging by experience in other countries. J. Ashburton Thompson, Esq., M.D.

480. The use of the sewage farm is not at all likely to affect the health of the inhabitants of the neighbourhood? Not at all. I repeat that there is literally not a particle of evidence to show that any properly managed sewage farm ever did affect the health of the neighbouring residents. 20 Dec., 1888.

481. You think pouring out the sewage on the surface of the soil is a proper thing to do? Entirely proper. If there is anything settled as to the disposal of sewage at the present day it is just this, that filtration is the only practical way of dealing with it. You may precipitate, but you must conjoin with that filtration, and your filtration may be done on filter beds or it may be done by what is called irrigation, that is to say on a sewage farm. Perhaps when you were at the farm you observed that the sewage which is fresh, which comes down rapidly, really has not very much smell of its own; it is only with putrefaction that it begins to smell. If it is run on to the sand within 24 hours of its production, it will go into the soil practically odourless; then it is attacked by chemical processes and begins to be oxydised. It has not time to putrify, that is to give off offensive gases, before it is altered into odourless compounds. There is not the least chance of offence from that farm, I am quite satisfied.

482. *Mr. Campbell.*] With regard to vegetables or fodder grown on sewage farms,—is there any objection to the use of them by men or cattle on the score of health? I explained to the Committee once before that the things which are grown on a sewage farm and are intended for human use should be those which require cooking before they can be eaten; and as a matter of fact, I myself never do eat salad in Sydney, because it does not require cooking, and it may not be sufficiently cleaned. As for cattle, fodder thus grown is excellent, and quite devoid of harmful properties; and if I add that the managers of the Croydon farm have now 200 milch-cows, feeding and milking them, I give a very full answer to this part of your question, since the farm is familiar to every sanitarian in London, and is carried on under the immediate eye of that distinguished man, Dr. Alfred Carpenter.

483. Do you apply that to gardens generally? Yes. The danger to man is not from the constitution of the vegetable, but from the mechanical adherence to it of particles of sewage; just a mechanical danger.

484. *Mr. Garrard.*] By the actual contact of the sewage matter with the plant itself? Quite so.

485. *Mr. Suttor.*] With reference to earth-closets, I suppose that the earth-closet system is a good system where it can be carried out? That depends upon what you have in mind. If it were carried out it would be good as far as it went under all conditions; the objection to it is that when you try to get a large number of people to use the earth-closets, they neglect them, and then they become a very serious nuisance.

486. *Chairman.*] And probably a source of danger? Yes; undoubtedly.

487. *Mr. Suttor.*] But in country places where people can use earth-closets under their own inspection? There they are excellent; there is nothing better.

FRIDAY, 21 *DECEMBER*, 1888.

Present:—

The Honorable JOHN LACKEY (CHAIRMAN).

The Hon. GEORGE CAMPBELL.	HENRY COPELAND, Esq.
The Hon. WILLIAM HENRY SUTTOR.	JACOB GARRARD, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	ALEXANDER KETHEL, Esq.
JOSEPH PALMER ABBOTT, Esq.	THOMAS MICHAEL SLATTERY, Esq.

JOHN RENDELL STREET, Esq.

The Committee further considered the proposed Drainage Works for the Western Suburbs.

T. A. Coghlan, Esq., Government Statistician, sworn, and examined:—

488. *Chairman.*] You are at present holding the position of Government Statistician for the Colony of New South Wales? Yes. T. A. Coghlan, Esq.

489. How long have you held that position? For nearly two years and a half. 21 Dec., 1888.

490. Had you been engaged in statistical work before you commenced the duties of your present office? I was an assistant engineer in the Harbours and Rivers Department before that.

491. Had you paid much attention to statistical matters before you came into your present position A good deal.

492. And since you have held the office of Government Statist you have constantly observed the statistics of births and deaths—all particulars relating to health? Yes; I have given them special attention.

493. Was a correct return of births and deaths kept before you assumed your present position? Yes; just as exact as at present.

494. For how many years have the statistics been kept accurately? Since about 1856, under the present system of registration.

495. From your knowledge of the method of collecting the statistics do you suppose they are collected accurately? I think so; the percentage would be so small as not to affect the details.

496. Do you keep account of the different diseases—zymotic and others? Yes, full particulars of all diseases.

497. And how do you estimate the deaths or the proportion of people dying in the different districts—in the suburbs and other places—the city as distinct from the suburbs, for instance? I report monthly on Sydney and the suburbs surrounding Sydney, giving the number of deaths from specific causes and the percentages.

498. How would these be collected—are there returns from medical men? Each death must be registered, and before that can be done a certificate has to be given, not necessarily by a medical man, but by a competent person. It depends on the Registrar-General.

499. Suppose a disease were to break out at Marrickville, and a great number of people were sent from there to the hospitals, would the death rate be credited to Marrickville or to Sydney? To the hospitals.

500. There would be nothing to show where the disease was contracted? Not unless I made special inquiries, as I did at the first half of this year. Usually, if a person contracts a disease at one place and dies at another the death is debited to the place where he dies.

501.

T. A. Coghlan, Esq.
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501. In your statistical returns have you any record of the number of deaths in the suburbs or towns? Yes; I group the suburbs for statistical purposes according to their geographical distribution, and according to the similarity of the circumstances obtaining in each suburb.
502. Then could you at any time show the death-rate of any suburb? Yes.
503. The death-rate of Petersham, for instance, or any other suburb? Yes.
504. And those that extend through the country? No, only for Sydney. The country is treated in districts. I make returns on districts separately; treating the country as a district separate from the metropolis.
505. Do you report upon the country as a whole? As a whole. The record of deaths would be kept for districts in the country, but the percentages would be given for the whole.
506. Well, during the course of the collection of these statistics, have you been impressed by the unhealthiness of one portion of the suburbs as compared with another? They are very much alike. I, at one time, thought certain districts showed unhealthy signs as compared with others, but there is very little difference, except that the North Shore is apparently very much healthier than any other part of Sydney.
507. The North Shore shows that in its results? Yes; invariably the North Shore comes out better than the other suburbs.
508. I suppose that would be from the better natural drainage? I can hardly say, but it is evident this is the case.
509. Have you given any attention to the subject of drainage? I was working with Mr. Bennett and Mr. Moriarty on the original scheme for Sydney.
510. But you have not been called upon to give particular attention to one scheme of drainage more than to another, or in connection with one suburb as compared with another? No.
511. You know that North Shore is much more healthy than other suburbs; that would be, perhaps, because the natural drainage is better—the deposit of matter would not be so stagnant as in other places? Probably so; and I think the population is very scattered.
512. Is it not the case that some of the Western Suburbs are very flat, and the drainage from them very sluggish? Yes.
513. Marrickville for instance? Yes.
514. The Western Suburbs? Yes, it is so.
515. Are your means for collecting the health statistics satisfactory? As regards births and deaths, and kindred statistics the means are perfectly satisfactory. But, of course, I have no means of telling the general health of the community, judged by the number of diseases; the Board of Health would tell that.
516. Does the Board of Health supply their report annually to the Government? I think so.
517. Is it not submitted to you? No.
518. Do you not think it desirable to have it submitted to you to enable you to record your statistics satisfactorily? I do not think it needful. I can at any time refer to the report after it has been laid before Parliament.
519. Have you made any recommendations for improvement in the system of keeping statistics? I have no need to make recommendations, for I carry out my own ideas.
520. Then you have the power to carry out such alterations and improvements as you think necessary? Such as will not be affected by Act of Parliament.
521. I do not quite see how you get your returns from the Medical Board? You are referring to the case of deaths.
522. And diseases? The deaths are registered with the Registrar-General, and each month I get them from him. I see the original returns, or my officers see them.
523. You have no reason to complain of the way in which they are furnished,—you think they are accurately kept? Yes.
524. Then you consider your work purely of a statistical character; you do not go outside to matters of drainage, or anything of that sort? No.
525. *Mr. Copeland.*] Did you furnish Mr. Barling with a diagram showing the death-rate in figurative form? Yes.
526. Have you a copy of the diagram with you? No.
527. I was under the impression at the time that the diagram was in error, but afterwards on looking at it I found that it was I who had made the mistake in reading it. I just wished to correct this, because questions put to Mr. Barling at the time indicated that the diagram was wrong, whereas the error was mine not yours? I think the diagram was all right.
528. *Mr. Garrard.*] Are you aware that the Western Suburbs are included in this proposed drainage scheme? Yes.
529. Have you anything to show the death-rate of those suburbs as compared, for instance, with the city? Yes. I have not particularly distinguished the Western Suburbs, because there is very little difference between the death-rate of the Western Suburbs and others.
530. Then your information would include the Western and Eastern Suburbs? Yes.
531. Can you not give us the death-rate of the Western Suburbs? Yes; for the eleven months that have elapsed this year.
532. Take Balmain, for instance;—what is the death-rate per thousand, according to your last returns? I include Leichhardt with Balmain.
533. You include Leichhardt, I suppose, because it is a Registrar-General's district, and the returns refer to it? No; but because I consider that geographically the two suburbs are one district.
534. Have you to go upon the mere geographical knowledge of the district? No; because I consider that the circumstances which obtain in Balmain obtain also in Leichhardt.
535. And also in Petersham? No; I include Petersham in another district.
536. Why? Because I think the circumstances of Petersham, Ashfield, and Burwood, and all the western suburbs are alike.
537. In what respect? In the sort of people who live there and the character of the houses.
538. In the natural facilities of getting rid of drainage, or anything of that kind? There is a common want of facilities.

539. But they are well off? Well, the water gets off the ground. It all goes in the same direction.
540. There are some eight or ten suburbs included in this Western Suburb scheme,—into how many districts would you group them. You said just now that you included Balmain and Leichhardt as one. Would you give us the death-rate of Balmain and Leichhardt up to the last completed record? Balmain, Leichhardt, and the Glebe ———
541. You said that the geographical features of those three districts are so similar that you can very well group them together so far as statistical purposes are concerned? That is my main reason; but I have another reason for grouping contiguous districts together, and that is because I want to eliminate the chance of error as much as possible. Persons living on the boundaries of districts are apt to register at the nearest place. A person living just near Balmain, on the borders of Leichhardt, may think that he is living in Balmain.
542. But when that person goes to the suburban registrar's office to register the death or birth, as the case may be, must he not state in what street he resides, and consequently is not the registrar in a position to say whether he is registering rightly? In most cases that will be so; but in other cases where the streets run right through two municipalities it happens that persons in one municipality will register in another, at the nearest registrar's office. It does happen; so, in order to avoid any chance of error, and because I can calculate the population better, I group these municipalities. It spreads the chance of error over a large number of persons.
543. As a matter of fact each of the three suburbs you have mentioned,—Balmain, Leichhardt, and the Glebe—has a separate district? Yes.
544. And you get three separate returns for those districts? Yes.
545. But for your purpose you group them together as one? Yes. In the average. I show the number of deaths in each place separately.
546. You say that you group these three districts together because of their geographical features; but do you not also group them together because your previous returns show that the death-rate is very near akin in these districts;—is not that another reason? I cannot say that I was influenced by the death-rates.
547. Do you not think that is rather a misleading way to deal with statistics of that sort? I candidly think it is not misleading.
548. Do you not think, supposing one of these districts had a perfect system of sewerage, and another had not, that you would be charging against the district which had the good system the effects of the bad system of the other district? If I knew of a district which had a good system I would endeavour to show it.
549. Are you not aware that the Glebe is the best drained of these districts, inasmuch as it has a great deal of underground drainage? I am not aware what system the Glebe has.
550. Can you give us the death-rate of these three districts which you have grouped together because you think their geographical features are similar? I can give you them for eleven months of this year.
551. Perhaps we had better keep to one complete year,—last year will do? I am excluding deaths in public institutions.
552. Deaths in public institutions you put altogether? Yes.
553. Because, I presume, they come from all quarters, and are not fairly chargeable against one particular district? Yes; Balmain, Leichhardt, and the Glebe have a low average, 14·44.
554. The city for the same year? 12·22.
555. In Waterloo and its contiguous suburbs, which I suppose are included? We include Redfern, Waterloo, Alexandria, and Darlington, in one district. The death-rate of that district was 16·63.
556. You group all these in the same district? Yes, and Botany.
557. Are you aware what proportion of Redfern, Waterloo, and Darlington is connected with the Sydney sewerage works? I know that part of Redfern is connected.
558. Which part of Redfern? I fancy there is not a very large part of Redfern reticulated.
559. What is your group immediately contiguous to Balmain, Leichhardt, and the Glebe? Westward?
560. Yes? The Canterbury electorate practically.
561. The whole of it? Yes; Ashfield, Burwood, Five Dock, Petersham, Marrickville, and West Botany.
562. What is the death-rate for that district? 14·34.
563. Is not that rather a large group? I cannot get the population unless I take a census year by year. It is all very well to ask for small districts, but I cannot get the population. I can tell the population of the electorate, but not of the individual districts unless a census is taken.
564. Do you take any cognizance of the age of persons dying? Yes.
565. What was the mortality amongst children under 6 years of age, or whatever age you take as a figure? Five years.
566. What were the deaths under 5 years of age in the two districts just referred to—viz., Balmain, Leichhardt, and Glebe, against Waterloo, Darlington, Alexandria, and Botany? I cannot give a percentage of ages without reference to my papers.
567. Do you recollect whether the mortality in the former districts was larger amongst the infantile community than that in Waterloo and Redfern? I do not think that Waterloo and Redfern stand high in comparison with other districts. I may say that all the suburbs are fairly on the one line, except North Shore; their death rate is much worse than that of the city.
568. I think you answered the Chairman that you were perfectly satisfied with the way in which the returns of vital statistics were brought in through the machinery of the Registrar-General and his officers? I am quite satisfied of the accuracy of the record.
569. You cannot suggest any improved way of collecting these records? No.
570. Who furnishes you with a record of the deaths at public institutions,—the Medical Board? No; they are all registered at the registrar's office in the district in which the public institution or hospital is situated.
571. Do you tabulate or make up the numbers of cases of various kinds of sicknesses as well as the deaths themselves? No; I have no means of knowing that.
572. So that altogether the Medical Board may have returns of a number of cases in public institutions of different kinds which would not go to you? Certainly.
573. You deal merely with life and death? Yes.
574. You are a civil engineer by profession? Yes.

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575. As an engineer, and also having had considerable knowledge of these vital statistics, do you think that a system of sewerage has a very marked effect upon the death-rate of any locality? I think it has a very marked effect. A good system of sewerage undoubtedly improves the rates.
576. Do you attribute it simply to the system of sewerage that the city has a lower death-rate than Redfern, Leichhardt, and the Glebe? I do.
577. Do you think that is the sole cause? I think it is because Sydney is sewered that it has a better rate than the suburbs.
578. Do you not think that the water supply of the suburbs has a very large effect on the death-rate? It certainly has a large effect; but the suburbs you mention are supplied with water.
579. So that that consideration would not affect them? No. Of course there is a point to be considered with respect to a water supply which is this,—the more water you supply to a district which is not sewered the more would infection be liable to spread. When you give a copious supply of water to such a district that water after having been used for household purposes would have to be taken away in the open drains or the streets, and might give rise to conditions that would tend to propagate disease. Matter that would be perfectly innocuous in a dry state, when it is in a moist state becomes full of life.
580. Can you give us the death-rate of last year for the North Shore suburbs? The North Shore death-rate was 10·16.
581. That is near the death-rate of the city? Below that of the city.
582. That embraces the whole of North Shore? Yes, including Manly. It includes a very large district containing very few people, and stretching away towards Pitt Water. Although it is a large district there are not very many people in it.
583. Have you the returns for any of those separate suburbs contained in North Shore? No; I group them, for the reason that I have explained before.
584. I suppose the return of the Registrar-General is given in for each of those boroughs? No; there are two districts, North Shore and Manly.
585. On the Registrar-General's books? Yes.
586. What is the highest death-rate in any of these suburbs? For last year I think that of Redfern, Waterloo, and Darlington was the highest.
587. *Mr. Suttor.*] In collecting your statistics do you consider the density of population in the different districts? Yes; by the density I get the number per thousand.
588. I mean as to how many people there are per acre. We were told yesterday that in Sydney it is about forty-two, and in the suburbs about one hundred and forty, per acre? I think you have been misinformed. I could get it, of course, but from memory I could not tell you the density of population in any particular district.
589. Of course the density would have some effect upon the death-rate? It would have.
590. I suppose you are not much up in these matters? I do not profess to be an expert.
591. Could you furnish the Committee with a statement of the density of the population in the suburbs and the city? Yes, I will do so.
592. *Chairman.*] Is there any information you would like to volunteer? I have got some information which would perhaps interest the Committee about the increase in the mortality of the suburbs compared with that of the city. I have got some figures here to show that the city has improved very greatly, while the suburbs have deteriorated. As I have explained to you I have taken the suburbs as one district, because I can see very little difference in the mortality of one suburb as compared with that of another. This year one suburb may appear bad, but next year it may right itself, and taking the death-rate over a series of years there is not much difference, excepting in the case of North Shore. North Shore invariably stands out well in the returns.
593. *Mr. Garrard.*] You make North Shore bear the sins of Waterloo? No; that is a mistake.
594. *Mr. Humphery.*] You group them? The figures correct themselves in this way: Waterloo has an apparently high death-rate, because a number of children are born there, and I distinguish the deaths of persons under 5 years from those of persons over 5, and that enables the relative death-rates to be seen. I find that, taking the children under 5 years, from 1872 to 1879, 64 children, speaking in round numbers, out of every 1,000 died within the year in the suburbs, and that in Sydney the average death-rate for those nine years was 77 to every 1,000. During the last nine years 75 children in every 1,000 died per annum in the suburbs, whereas in Sydney only 68 died in that number, and that increase has been pretty general during the last eighteen years, showing that Sydney has become fairly healthy. Although 68 is still actually a high rate, being more than it ought to be, it is much better than that of the suburbs. Taking children under 1 year of age of course Sydney shows out very badly, because the Benevolent Asylum is in Sydney, and it is a lying-in hospital.
595. *Mr. Garrard.*] I thought you excluded the public institutions from these calculations and took them altogether? I do in the districts, but in taking the suburbs as a whole the hospitals must be included. Taking persons over 5 years of age I find that the suburbs have advanced from 9 per thousand to 14 per thousand, and that the city has sunk from 16¾ to 14 per thousand, showing an improvement in the death-rate of persons over 5 years of age. There has been an improvement in Sydney, but a deterioration in the suburbs.
596. *Chairman.*] Have you in your own mind found any reason why the death-rate of Sydney should be less than that of the suburbs? I think it is entirely a question of sewerage.
597. That is they have fairly got sewerage in Sydney, but none in the suburbs? The circumstances of Sydney are not different from the circumstances of some suburbs. Redfern is just as thickly populated as some portions of the city are. There is very little spare ground about those places.
598. Is there a sewerage system at Redfern? No. I am mentioning this to show that there are just as many people in some of the suburbs as in Sydney.
599. But you have a fairly perfect system of drainage in Sydney that they have not in the suburbs? Yes.
600. Should you attribute to that the higher death-rate? Yes; in one place they have sewers, and in the other they have not.
601. How does the death-rate of Sydney compare with the death-rate of other large towns? Very favourably indeed. When I speak of Sydney being bad, I mean bad compared with what it might be; but compared with the cities of the old world it is very good. Sydney has an average death-rate of 20·5; whereas London, which is reckoned to be an extremely healthy city, has a death-rate of 22·8; Manchester, 29·9; Dublin, 29·6; Liverpool, 29·1; Birmingham, 24·4. Among the continental cities St. Petersburg has a death-rate of 35·2, Berlin 26·4, and Paris 26·3.

602.

602. Under those circumstances Sydney comes out very well as compared with other large cities? Very well indeed. There are very few cities with the population of Sydney with so low a death-rate. T. A. Coghlan, Esq. 21 Dec., 1888.
603. Have you any record of the death-rate of the other large Australian towns? Adelaide has a death-rate of 19·2; that is somewhat better than Sydney; Melbourne 20·6, which is practically the same as that of Sydney; Brisbane has a rate of only 19·8; Wellington 15·8. New Zealand is one of the healthiest countries in the world.
604. *Mr. Suttor.*] The density of the population in the suburbs has very much increased? In the last eighteen years I speak of?
605. Yes? It has increased very much.
606. Of course the population in Sydney would not increase so much? Nothing like so rapidly.
607. The buildings put up in the city are very much improved as well? Yes; the buildings are better.
608. Both of these considerations would tend to establish the fact of a high death-rate in the suburbs and a low one in the city? There may be a dense population and fairly good health. The suburbs are not overcrowded. When they become overcrowded then another element of death comes in; but you cannot speak of any of the suburbs as being overcrowded.
609. *Mr. Garrard.*] How do you arrive at the population of the city. Do you put down everyone. For instance, a large warehouse employs 100 men;—do you class all those men as belonging to the city, or only the caretaker who lives on the premises? No; only the caretaker.
610. Only the person who actually lives there, sleeping there,—is that the definition? Yes.
611. *Mr. Copeland.*] I think you said that in estimating the deaths in the city and suburbs you keep the deaths occurring in hospitals separate? Yes.
612. You do not debit Sydney, for instance, with any deaths occurring in hospitals? I keep them separate, and show them both ways. I give all the deaths in the city, and I then show the number, deducting the public institutions.
613. In these general estimates, making a comparison between the death-rate of Sydney and that of Melbourne, do you include the deaths in the hospitals? Yes; they would be included in both estimates.
614. Are they included in Melbourne? Yes; the year I gave you was a healthy year.
615. In that case a great deal will depend upon the locality of the hospitals in different places? When I use the term "Melbourne" I mean Melbourne and its suburbs, so that you see the objection would not count.
616. It would be Sydney and its suburbs as against Melbourne and its suburbs? Yes.
617. *Mr. Garrard.*] Can you give us the death-rate for Melbourne proper as against Sydney proper? I have the record, but I could not give it you at this minute.
618. *Chairman.*] But that would not include the death-rate of the hospitals in the suburbs? It would not.
619. Do you include the deaths of persons who go to the hospitals? Yes.
620. *Mr. Garrard.*] And you base your calculations practically on the same grounds as those of other cities? Practically on the same ground.

George Henry Stayton, Esq., M.I.C.E., Engineer, Sewerage Branch, Department of Roads and Bridges, sworn, and further examined:—

621. *Chairman.*] You are still connected with the Roads and Bridges Department? Yes; in the Sewerage Branch. G. H. Stayton, Esq. 21 Dec., 1888.
622. You have been actively occupied in connection with the survey and the designing of the sewerage system of the Western Suburbs? I have.
623. And you know the point where it is intended to drain those suburbs? Yes.
624. What point did you describe the other day as that at which these main sewers are to discharge? The main outfall sewer will cross Cook's River, and pass through a part of Arncliffe, on the south side of Cook's River. The total distance is 11,700 feet from Marrickville to Webb's Grant, the point of discharge.
625. And that forms a portion of the neck of land which we inspected the other day at Botany? That forms the western portion.
626. It is a sort of promontory coming down from Cook's River? Yes.
627. You have given some attention to the purification of sewage in the old country? Yes; I had some years of experience there.
628. Have you always regarded the absorption of sewage on farms for the growth of vegetation an effectual means of disposing of it? Yes, but it depends entirely upon the conditions. There are certain localities where irrigation is the best system to adopt, and there are others where it would not be desirable. Everything depends on the local conditions. The conditions at Webb's Grant are most favourable to filtration.
629. And thus absorbing the sewage generally? Yes.
630. From your experience at home have you formed any opinion as to the character of the soils on which the sewage has been deposited? Yes, and it has generally been considered that a light porous soil is the most suitable for irrigation.
631. Have you had any experience of soil similar to that at Webb's Grant, where it was almost pure silica? No; except at Edinburgh. That is the only case with which I am familiar.
632. Is the ground very sandy there? It is somewhat similar to the soil at Webb's Grant.
633. Do you recollect the result of the use of the sewage; I mean in producing crops? I know generally that it has been successful.
634. I mean especially with regard to Edinburgh, where the character of the soil is similar to that at Botany? I have no special knowledge of what has been done at Edinburgh; but I have some information with regard to other sewage farms. The Croydon sewage farm is one of the largest sewage farms in England; I lived in the locality and used to see it daily.
635. That is clay soil? It is partly clay and partly gravel.
636. The water goes through a system of underground drainage? Yes.
637. That is tile drainage? No; it passes through pipes.
638. Have you had any opportunity of knowing what depth the drains have been made? No; but they were not laid at any very great depth—3 or 4 feet probably.
639. They empty into main drains? Yes.

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640. Into open drains or larger pipe-drains? Into larger covered drains, and the effluent is carried to the nearest river and discharged there.
641. Is that a tidal river? No.
642. Is it the Thames? No, the Wandle.
643. Did you say the Wandle? Yes; it flows into the Thames at Wandsworth. I noticed in a report of the sewage farm committee of Croydon some short time since the following particulars:—
"1. That the monthly analyses of the several effluents from the sewage farm were of excellent quality.
"2. That the mortality tables for the parishes in which the sewage farm is situated were equal to an annual death-rate of 6·78 per 1,000 of the population.
"3. That the bullocks and other grazing cattle were all healthy and well.
"4. That the milk from the cows was satisfactorily sold, and that additional cows were to be purchased
"5. That the Chairman stated that the farm was in a satisfactory condition all round. The manager had grown and sold nearly £2,000 worth of grass; had made a quantity of hay, and had grown some exceptionally fine specimens of mangold-wurzels, some weighing from 13 lb. to 16 lb. each. The financial return for the year would altogether be about £3,000 better than that of last year."
This shows that it is a very large undertaking, and that after many years of labour the Committee have seen their way to make it a remunerative business.
644. And they have a mixed system of farming, grazing, and agriculture together? Yes; that is being done generally in England now. Apart from the question of sewerage irrigation, farmers have found it necessary to turn their attention to it. I am also acquainted with the sewage farms at Coventry, Rugby, Warwick, Leamington, Wimbledon, Epsom, and Bedford. The Croydon farm is the most efficient of all.
645. Is that all covered drains? Yes; the Croydon farm is entirely sub-drained, I believe.
646. Do you recollect the diameter of the drain pipes? Some are 3 inches, some 4, and others are larger.
647. The intercepting drains would be greater than the branches? Yes. They vary from 9 inches to 12 inches and upwards.
648. I suppose the water clarifies as it percolates through the ground into the drains? Yes, it is so purified.
649. Have you noticed any smell from it? I have not; it was generally very satisfactory. No exception whatever is now taken to the farm by the residents in the neighbourhood. Some years ago there were very loud complaints, but the Corporation at that time had not sufficient land. They have since bought an additional 500 acres, and the system is carried out satisfactorily.
650. In viewing the irrigation systems which you saw at the places you have mentioned, were you impressed by the superiority of one system over another, or were they all carried on under similar conditions? They were all carried on in a similar way, but some were better managed than others.
651. Could you discover any difference in the character of the soil, whether it was clay, marl, loam, sand, or gravel? The soil varied between clay, marl, gravel, and chalk.
652. And you think the drainage was equally perfect under the different conditions? I am not prepared to say precisely what the results were.
653. You heard no complaints? No; but in some instances the authorities produced much heavier crops than in others.
654. Have you any record of any of the returns of the crops at those sewage farms? Nothing very recent.
655. You saw the crops at Webb's Grant the other day? Yes.
656. Did you see anything more luxuriant than that in the Old Country? No; I cannot recall anything better. I have seen very large root crops in England, mangolds and turnips.
657. They are used largely for feeding stock, I believe? Yes.
658. What is your impression of the ultimate result of the adoption of sewage for the cultivation of the soil at Webb's Grant;—do you think it will come ultimately to be made the means of using up the sewage? My impression is that such ought to be the case. Under good management and careful supervision I believe that in the course of time there will be a revenue from the operations there, and that the sewage will be perfectly purified and rendered innocuous.
659. When visiting the farm have you noticed any offensive effluvia from the water on its escape after percolating through the sands? No, none whatever.
660. Have you observed any where it emptied itself? No. I scarcely think it possible to notice where it escapes, except perhaps at low water.
661. I thought we had evidence of its having been seen percolating into the bay? I am not aware of it.
662. Before the drainage works now before us have been completed, considerable work will have to be done; that is before the system is perfect? Yes.
663. Could you explain the nature of the work which will have to be done if the present design is carried out? The Committee will probably recollect that a supplementary statement [*Vide Appendix* C 1.] was submitted to them at the previous meeting, and that it showed that in addition to the scheme now under consideration, which is estimated to cost £830,304 other works would be necessary. There would be what is termed the subsidiary sewers to be laid in 400 miles of streets. In the first instance it might only be necessary to lay 300 miles.
664. Is that comprised in the present project? It is not. The present project comprises the trunk sewers as marked by the red and blue lines on the map. [*Vide Plan No.* 3.] The next thing to be taken into consideration is the first part of the Canterbury and Enfield main sewer, which is indicated on the map by a red dotted line, and referred to at length on page 16-17 of the report.
665. *Mr. Garrard.*] What is the estimated cost of those subsidiary sewers? £1,000 a mile is the average. I have taken it at that rate, which makes a total of £300,000 for the first section.
666. The sewer will have to be duplicated on this extension? Yes; that work is described in the report as being very necessary, and on page 21 it is shown that it is estimated to cost £20,741. Then there is the question of the Marrickville storm-water drainage, described on pages 22 and 23 of the report, the cost of which is estimated at £20,000. That work is not only for the removal of storm-waters but also includes the raising of the low parts which are now flooded.
667. For actually raising the surface of the land where it is below high-water mark? Yes. That brings up the cost of the first section of the additional work to £340,741. It will subsequently be necessary to consider the works included in the fourth section, and to complete the subsidiary sewers, viz., the remaining 100 miles, at a cost of £100,000.

668.

668. You have said that 400 miles of street sewers will be required, 300 of which you estimate going on with at once;—how much of those subsidiary sewers have to go into the dotted line? Probably from 20 to 25 miles out of the 100. The completion of the Canterbury and Enfield main sewer is estimated to cost £65,410. It is shown by the red dotted line. The low-level systems were foreshadowed and described in the report (*vide* p. 17), but were not included in the present scheme, because it was scarcely possible to tell which portion would be first required. In four or five years time the main-sewer works will have been so far constructed as to be ready for the low-level systems. I might, perhaps, describe the low-level systems. The supplementary map [*vide* Plan No. 4] showing the present low-level area west of the Glebe, and the suggested mode of dealing with the sewage thereof, was recently laid before the Committee. The area is divided into three parts. The northern part includes Leichhardt, Balmain, and a portion of the Glebe, and is estimated to cost £52,925. The western part, including the low-lying portion only, of Burwood, Five Dock, Ashfield, Concord, and Strathfield, is estimated to cost £48,625. The southern portion, comprising Canterbury and Enfield, is estimated to cost £18,100; making altogether £119,650 as the total cost of the low-level system. This is the cost of the complete system, but the whole of that may not be required for very many years. The annual cost for wages, fuel, repairs, &c., is estimated at £5,627. Practically this provides for the whole area of the western suburbs, and it may not be wholly required; but in order to make the estimate complete, the scheme is inclusive of everything as far as can be seen. G. H. Stayton, Esq. 21 Dec., 1888.

669. The total cost would be £119,650? Yes.

670. *Chairman.*] That is of the low-level system? Certainly. It is all mentioned in the report on page 17.

671. What was the extreme limit of this system;—does it go beyond Cook's River? No.

672. Except where the main sewer conveys the sewage to Webb's Grant? That is so; the area is between Parramatta and Cook's Rivers, and does not go further westward than Homebush Station. I have also to explain the item for the completion of the western outfall sewer. The report distinctly foreshadowed that owing to the adoption of a 6 feet sewer in triplicate, a considerable sum would be saved by providing two sewers only until there was a necessity for the third sewer. It is included in the supplementary estimate; and to make the triplicate sewer complete would cost £48,374 more. The next item is the completion of the Marrickville pumping station, which was also foreshadowed in the report, which stated in the first instance that only a 40 horse-power engine would be required, which would be supplemented from time to time until the 120 horse-power became necessary, increasing the cost by £6,817. There is also the completion of the sewage farm and the laying out of an additional 250 acres. The land proposed to be resumed is coloured green on the plan, and the cost is estimated at £32,600. These works bring up the total for the fourth section of the work to £372,851, making a grand total, including the works already executed, of £1,817,896. That is, as far as can be seen, the ultimate cost of the entire scheme.

673. What mode of treatment would be adopted for dealing with the whole volume of sewage in ten or fifteen years' time? I should like to call the attention of the Committee to the remarks on pages 19–20 of the report. It is there shown what the effect of the whole volume of sewage would be on this area of land, and what the limit would be; but I think that the figures, from what Mr. Oxley has told the Committee, are very much understated, and that the sand would absorb a great deal more liquid sewage than we have any idea of; but as far as I can tell there is more than sufficient land than would be necessary for a population of half a million persons. The prospective population is 351,545, so that we have a large margin. In the first instance it would only be necessary to gradually clear and prepare a portion of the land, and month by month and year by year, as additional sewage was brought in by the new sewers, the area would be increased; but as far as we can see there is not the slightest doubt that the area, including the additional part, will be more than ample for many years to come; and then, if it should so happen that there is any difficulty in the question of disposal, it will be a simple matter to resort to some other mode of treating the additional volume of sewage—either by electricity, by a chemical process, or by continuing the outfall across George's River to the Pacific Ocean.

674. Then have you given any consideration to the new system of purification by electricity? Yes, and I have certain information thereon. In fact, I might read to the Committee a few notes I made on the question some two or three months ago. The system of sewage purification by electrolysis is now being carried out at Crossness main sewerage outfall in London, where it is intended to treat 1,000,000 gallons of sewage per day, or $\frac{1}{12\frac{1}{2}}$ part only of the entire daily flow. The Metropolitan Board of Works have allowed Mr. Webster to construct tanks and provide engines, dynamos, electric light, and all plant at his own cost, estimated at £5,000 to £6,000. The time required to treat 100 gallons takes ten minutes at the outside, and the engine-power provided consists of two 25 nominal h.p. engines, which indicate to 43 h.p. each. Mr. Webster says that electrolysis is nothing more than a chemical action produced by an electric current. The *Engineer*, a leading professional paper, states that the question to be determined is, whether an effluent, inoffensive to sight and smell, free from all secondary fermentation, exercising no precipitating action on the water of a river, and having no matters in suspension, can be produced at a reasonable cost. Very little data is given or known as to the cost of treatment; but I have endeavoured to arrive at an idea from the figures supplied by Mr. Webster. The estimated cost can only be considered as very approximate. It will probably be several years before any definite results can be safely established; and it may be, as in nearly all other cases of the application of electricity, that practical experience will greatly cheapen, if not transpose, the present ideas. I estimate the approximate cost of the process, according to Mr. Webster's figures and at Sydney current rates, at £7 13s. 9d. for 1,000,000 gallons treated per day, or if 20,000,000 were treated per day, at £4 7s. 5d. per 1,000,000 gallons. These calculations include interest and repayment of outlay, and depreciation, fuel, labour, iron, &c. Compared with the cost of irrigation or filtration at Webb's grant, as proposed by the western suburbs sewerage scheme, it is much greater, the latter being under £1 per 1,000,000 gallons disposed of. I have great hopes that the system will prove both a scientific and successful commercial undertaking; but I think that this will not be realised for several years to come. At the meeting of the British Association at Bath in September, 1888, the president of the mechanical section—Mr. W. H. Preece, M. Inst., C.E., F.R.S.—said of electricity: "Our sewers are likely to find in its active chemical agency a power to purify poisonous and dangerous fluids." It is a remarkable coincidence that Mr. Webster, of London, and Mr. Roberts, of the Sewerage Department, Sydney, should have been so close together in their investigations. Mr. Roberts submitted his idea to the Government of New South Wales in November, 1887, and patented his process in Sydney on the 19th November, 1887. Mr. Webster made experiments in July, 1887, and had provisional protection in England on November 17th, 1887, and in New South Wales a patent was granted

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to him on 10th February, 1888. I distinctly recollect, however, reading an account of somewhat similar experiments at some place on the continent of Europe about two years ago, and that the process was found too costly. The system may hereafter be found of much service in this colony; but its present aspect would not justify any application of it to the system of sewerage under consideration. I believe that Mr. Roberts is still experimenting at the southern outfall works at Botany.

675. Is it not found that electricity is expensive at first? Yes; but the cost of its application has generally been considerably reduced afterwards.

676. *Mr. Street.*] What is the effect of the system of electrolysis—does it purify the liquid? Yes.

677. And then leaves the solids to be dealt with? Yes, but the quantity is very small. It purifies the liquid, and the effluent is clear, and the amount of sewage sludge is smaller than under the chemical process.

678. *Chairman.*] Are the ingredients used in any way afterwards? No. As a matter of fact the question has not yet taken any definite position so far as I know. It is only in London and Sydney that experiments are being tried.

679. It would be a small arrangement I suppose? At present, of course. It may prove a most valuable invention and be of great use in this country, especially in up-country towns; but so far as one can see there is no likelihood of its being required at Webb's Grant for many years to come.

680. How do you propose dealing with the low-level areas shown on the plan? The plan and report show that 29 per cent. of the whole area is too low to be drained by gravitation. A pumping station would have to be erected at Marrickville, and central compressing stations under the "Shone" system would be required at Leichhardt, Burwood, and Canterbury.

681. How will you deal with it at Marrickville? By the direct pumping system. The sewage would flow to the station through the brick and pipe sewers, and would be pumped into a high-level sewer gravitating to Webb's Grant.

682. *Mr. Street.*] Sewage is raised by the pneumatic system instead of pumping in some cases? Yes, under the "Shone" system; and it is more economical.

683. *Chairman.*] Is it working satisfactorily? Yes; it has been in use in various towns in England for a number of years, and has been the means of rendering a part of Eastbourne habitable where formerly land was flooded. There is another matter which, perhaps, should be mentioned, and it is this: I have examined the various points of the scheme now under consideration to ascertain whether any modification could be made by which any portion could be made more effective or convenient. I venture to think that the Committee might very properly consider a modification of the arrangements shown on the plan for the sewerage of the eastern part of Leichhardt and for Balmain. Such proposal consists in the substitution of an aqueduct for the 42-in. syphon at Johnstone's Creek, as shown on the supplemental plan which I now lay on the table [*vide* Plan No. 5]; and in lieu of the 40-in. syphon at White's Creek, and the gravitation and low-level sewers for the remainder of the district, as coloured red on such plan, to provide an entirely low-level system of main sewers and submains for an area of 1,200 acres, with a pumping station in the vicinity of White's Creek. The extra outlay on the present scheme which this modification would involve would amount to £44,667, making a total of £874,971; but in consequence of the saving on subsequent works which such alteration would effect, the estimated ultimate outlay [*vide Appendix* C1] would only be increased by £8,742, making £1,826,638 in all. The effect of such modification upon the annual drainage rate would be to temporarily increase the 8d. rate mentioned in the appendix to 8·36d. in the first instance, but such rate would gradually be reduced to 7·07d. instead of 7d., as shown in the general statement dated December 3rd, 1888. [*Vide Appendix* C3.] On the whole I am of opinion that the greater efficiency which would thus be ensured, together with the fact that some 600 or 700 acres comprised in the thirteen low-level areas in question (some of which are becoming thickly populated) would thus be provided with main sewers, without having to wait for the supplemental "Shone" system, is a sufficient justification for the slightly increased annual charge. Under the present scheme the borough of Balmain is proposed to be drained by gravitation sewers, supplemented by the "Shone" system. Balmain, however, is more complicated than any other part of the suburbs, and I think if the Committee consider the figures they will probably deem it desirable to approve of this alternative scheme. In short, if the low-level system only is to be adopted for Balmain, instead of the two, the extra cost would only amount to £8,000, and would practically make no difference to the rating.

684. Would that be the pneumatic system? No; that would involve direct pumping.

685. *Mr. Street.*] Where would be your nearest gravitation main? Close to; within a few hundred feet at the most.

686. You are in favour of a low-level system for Balmain? Yes, the extra cost would be small; it would not average one-fifth of a penny in the £ on the rate. Instead of being 7d. the rate would be 7·07d.—a very small addition.

687. Is it not a large area to pump? Yes. It is 1,200 acres, and the population thereon will eventually be 50,000; but the extra cost of pumping as compared with the "Shone" system would not be more than about £1,760 per annum.

THURSDAY,

THURSDAY, 20 *JUNE*, 1889.

Present:—

JOSEPH PALMER ABBOTT, Esq. (CHAIRMAN).

The Hon. JOHN LACKEY.	JACOB GARRARD, Esq.
The Hon. ANDREW GARRAN.	JAMES EBENEZER TONKIN, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	WILLIAM SPRINGTHORPE DOWEL, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	JOHN SUTHERLAND, Esq.
The Hon. JAMES WATSON.	EDWARD WILLIAM O'SULLIVAN, Esq.

JOHN HURLEY, Esq.

The Committee further considered the proposed Drainage works for the Western Suburbs.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and further examined:—

688. *Chairman.*] You are the Under Secretary for Public Works? Yes.

689. And you were formerly, I think, examined in connection with the proposed drainage works for the Western Suburbs, before the Public Works Committee? Yes. J. Barling Esq. 20 June, 1889.

690. It has been stated that since your examination on that occasion experiments have been made upon sewage matter by electricity, and that by the use of that system a great deal of the proposed expenditure in connection with these drainage works may be saved? That is the case.

691. Will you tell us what this system is? I may mention that since the Committee last met experiments have been made both here and on a very large scale in England, in connection with the purification of sewage matter by electricity. The matter has assumed such importance that Mr. Bennett has thought it desirable to write a minute to the Minister upon the subject, a copy of which I hold in my hand. It is as follows:—

Roads, Sewerage Branch, Sydney, 17 June, 1889.

MINUTE PAPER.

Subject:—Drainage of Western Suburbs.

IN further reference to the proposed purification of sewage by electrolysis, now that it begins to assume a practical form, and from experiments at home and in the Colony promises to be successful, it is my duty to bring under the notice of the Minister for Works the propriety of delaying action with regard to a great part of the scheme for the sewerage of the Western Suburbs.

Before that project is again brought under the notice of the Public Works Committee inquiry might be made to determine if by the aid of electrolysis a more economical system could not be adopted.

I do not concur with the view put forward by extreme advocates of the system of electrolysis, that each premises could be dealt with separately by a wire, but I think the most we can expect is that each catchment could be dealt with separately at its outlet as proposed by Mr. Cowdery, by chemical means, thereby avoiding the expensive long conduit and large sewers.

The electrolysis system seems to effect such a complete purification that the objections made to the imperfect chemical processes might not hold good. However, I think this matter should be inquired into in the light of the further information being obtained previous to going again before the Committee.

This will not apply to some portions. The Balmain drainage, which it was proposed to provide for by gravitation to Bondi, requires objectionable syphons and other adjuncts. It might, I think, be drained towards Long Nose Point, and the effluent there run into Port Jackson when the electrolytic purification is quite proved.

The remainder of the Western Suburbs scheme gravitating to the city sewers, that is, the Glebe, Camperdown, southern branch from Macdonaldtown and Newtown, might be dealt with by the Committee and carried out if approved of by them, also the Marrickville and Newtown low-level system. The estimated cost as per report will be shown on attached paper, £260,786. I send on this hurried memo. just to raise the question in the light of the latest information before the Minister pays his promised visit to some of these localities.

WILLIAM C. BENNETT.

Under Secretary for Public Works.

ORIGINAL scheme of Balmain, up to Johnstone's Creek:—

Balmain and Leichhardt.—Inclusive of 46 shafts—9 man-holes and ventilators—17 automatic flushing chambers.

	£
Main sewer, 2 miles 1,670 yards	48,401
Sub-mains, 3 ,, 136⅔ ,,	43,195
6 miles 46⅓ yards.	91,596

NOTE.—This scheme to be altered so as to come under the electrical treatment.

THE GLEBE from Johnstone's Creek to Newtown Road:—

The Glebe.—Inclusive of 20 shafts—4 man-holes and ventilators—5 automatic flushing chambers.

	£
Main sewer, 1 mile 610 yards	27,117
Sub-mains, 2 ,, 376⅔ ,,	27,181
3 miles 986⅔ yards.	54,298

Camperdown Branch.—Inclusive of 5 shafts—6 man-holes and ventilators—1 automatic flushing chamber.

Main sewer, 1 mile 140 yards £12,454

Southern Branch.—to Main Botany Sewer.

Inclusive of 16 ventilating shafts and man-holes—2 automatic flushing chambers.

	£
Main sewer, 1 mile 780 yards	10,289
Sub-mains, 1,230 ,,	2,856
2 miles 250 yards.	13,145

MARRICKVILLE AND ST. PETERS' low-level system.

Marrickville and St. Peters.—Inclusive of 71 shafts and man-holes—6 automatic flushing chambers.

	£
Main sewers, 3 miles 450 yards	62,076
Sub-mains, 1 ,, 1,074 ,,	16,217
Pumping station, including boilers, engines, &c.	11,000
	89,293

J. Barling, Esq. 20 June, 1889.

Six months ago, when Professor Threlfall was about to visit Europe, he was asked to inquire into this matter, and to make a report thereon to the Government on his return. Experiments on a very large scale have been carried on there in connection with a system patented by Mr. Webster, I think. Professor Threlfall has been to England, and is now engaged in preparing his report, which, I think will be ready in a few days. I would therefore suggest that Mr. Bennett be examined again first, and that Professor Threlfall be also called before the Committee. I have had a conversation with the Minister on the subject, but it has not been finally dealt with by him.

692. *Mr. Lackey.*] But I take it that it is the wish of the Department that this evidence should be given to the Committee? Quite so.

693. *Chairman.*] And you think that until Professor Threlfall has reported, it is no use obtaining further evidence? I think that Professor Threlfall will be able to give his evidence at once.

694. As to the dredge for Sydney Harbour;—are you ready to go on with that matter? No, we are not. I am not sure whether we shall not be able to do without it.

695. You have bought one? No. We are getting out some sand-pump dredges, and it is just possible—I am speaking now subject to correction on further inquiry—that they may be used in places where bucket-ladder dredges are now being employed, and thus release these dredges from work on which the proposed new dredge would have been employed. Three of these sand-pump dredges have been ordered.

696. The Richmond and Clarence River matters;—are they ready? Yes; they can be gone on with as soon as the Committee wish.

William Christopher Bennett, Esq., M.I.C.E., Commissioner, and Engineer-in-Chief for Roads and Bridges and Sewers, sworn, and further examined:—

W. C. Bennett, Esq. 20 June, 1889.

697. *Chairman.*] You are the Chief Commissioner for Roads? Yes, and Engineer in charge of the sewerage works.

698. Mr. Barling, the Secretary for Public Works, has produced a minute written by you to the Minister on the treatment of sewage matter with electricity. Can you give us any information upon that subject? When I was last before the Committee, I referred to this process of electrolysis for clarifying sewage matter, and I mentioned that it was being investigated by the Department, having been discovered by one of the draftsmen. I directed this gentleman, Mr. Roberts, as the discovery was a valuable one, to secure his interest by patenting it; and this he did. I then represented the matter to the Minister, and had his authority to incur some small expense to make experiments on a larger scale at Botany than could be done by Mr. Roberts. During this time we received in the professional papers from England information that a similar discovery had been made in London, and although the discovery here was made simultaneously with that made at home, I have no doubt that Mr. Roberts' discovery was certainly his own, and that he had not had information of the other discovery. At my instance that matter was then referred by the Minister, Mr. Sutherland, to Mr. Threlfall; but he, because of the incomplete state of his laboratory, was unable to make any experiments until he went to England. There he visited Crossness, where experiments were being made on a large scale for the London Commission, and reported most favourably on the system. I therefore represented to the Minister that before the very large expense necessary to carry out the drainage proposals for the railway suburbs was incurred, this matter ought to be investigated. Balmain was connected with the Bondi sewer by a system of syphons; but I pointed out that if the results obtained by electrolysis on a small scale could be obtained on a large one, a large proportion of the expense of these works could be saved, and that the effluent water from the sewage of that borough, purified by electricity, could be drained into Port Jackson without creating an offence. I thought that the portion of the scheme which has reference to the suburbs gravitating to Botany, such as Macdonaldtown and parts of Newtown, the low-lying portions which it was proposed by Mr. Stayton should be pumped, and which must be pumped, might be considered by the Committee, and if they were prepared to recommend the execution of those works, the scheme would be so much in advance. In the meantime a further investigation could be made into the application of this system to the more expensive parts of the project, so as to ascertain whether the sewers proposed by myself and Mr. Stayton should be carried out, or whether a number of smaller works, draining into Port Jackson and the Parramatta River, as proposed by Mr. Charles Cowdery, should be constructed, with a system of electrical purification at their mouths. I simply drew the Minister's attention to the propriety of considering the matter in that respect; the time was too short to give any detailed estimates or comparisons.

699. You have not Professor Threlfall's report upon what he witnessed at home? We have not. What he will have to say will be very interesting.

700. *Mr. Watson.*] Is it your opinion that the Committee should proceed any further with the consideration of this general sewerage scheme until we get Professor Threlfall's report? I think it would be very important to get Professor Threlfall's report at once, before going any further.

701. *Mr. Lackey.*] You have not made tests of this system yourself at all? Yes, at Botany. When we found that Professor Threlfall was not able to make any tests, and that the matter was so important, with the approval of the Minister I borrowed dynamos and steam-engines, and went to an expense of between £50 and £60 in making experiments. We found that the results on a larger scale corroborated Mr. Roberts' results on a smaller.

702. The experiments were successful? Yes.

703. Does this process separate the liquid from the solid, or does it only purify the liquid? It purified it so much that I had no hesitation in tasting the water.

704. Under those circumstances there could be no objection to its being drained into a harbour, creek, or river? No objection, provided that decomposition did not occur afterwards. Frequently, after effluent waters which have been chemically treated have been flowing down a river for two or three days, they become bad again, though I do not think they will do so when treated under this process. But it is a very important point, and Professor Threlfall's evidence upon it—secondary decomposition I think they call it—will be very desirable.

705. Does this electric system lessen the quantity of solid as well? It precipitates it. It is simply oxidising the matter more rapidly than it would be oxidised by nature if deposited in a flowing stream. No matter how bad sewage is, if you put it into a flowing stream, after 10 or 12 miles it becomes purified. As far as I can see, electrolysis simply compresses the process into a shorter time.

706.

W. C.
20 June, 1889.

706. *Chairman.*] The water could be allowed to flow away, but the solid matter would still have to be removed? Yes, but it would be small in quantity and comparatively easily dealt with. That is a point which needs further elucidation.
707. Are the reports from the Board of Works in London, which is using this system, favourable;—do you regard them as favourable? So far as we have seen they are favourable. There was an article in the *Engineer* the other day about the matter; but Professor Threlfall, who has just visited the works, can give you more information than I can about them.
708. *Dr. Garran.*] You deal with this matter at the outflow? Yes.
709. If this system is carried out you will have certain collecting stations at which you will deal with the sewage? Yes.
710. On the road? Yes; instead of bringing it all down to Webb's Grant we would have collecting stations at more frequent intervals.
711. You will deal with it in sections? Yes, if practicable. I am not proposing this scheme; I only offer it for consideration.
712. Then the less diluted the sewage is the better the system of electrolysis will deal with it? I should think so. There would be less difficulty in dealing with a small quantity of fluid than with a large. I fancy that you would have to expose the larger quantity longer to the process.
713. If that were the case it would be important to keep storm-water out of the sewers? Yes; but we do that as much as possible now.
714. But you admit a large proportion of it? We admit some; I think it is impossible to keep it all out.
715. If you are lessening the size of the pipes it is strictly important to keep the storm waters out? Yes.
716. You consider it necessary to take in water from back yards? Yes. There is a paper by Mr. Stayton on that subject before the Committee, which I think is very valuable. It combats the complete separation of each.
717. Do you think that the dirtiness of the washings from back yards is worse than that from the washings of horse-droppings on the roads? I rather think it is.
718. Still it would be important to keep the quantity of water down as much as possible? Yes; but there is always a minimum size for the pipes beyond which it is not well to reduce them, so as to prevent stoppages. As a rule we never put down less than a 9-inch pipe.
719. I understand you to say that you think the Committee may go on at once considering the Camperdown, Glebe, and Marrickville portions of the sewerage scheme without waiting for further evidence on the subject of electrolysis? Yes.
720. But if that system is going to be a success would you not be able to use smaller pipes, or earthenware pipes, in those districts? Yes; we could substitute earthenware pipes for the sewers. The possibility of reducing the size of the sewers was the point to which I wished to draw the attention of the Minister.
721. Would it not be possible under this new system to drain the Camperdown area, which goes into the Prince Alfred Hospital Branch and the Glebe, with earthenware pipes? It might be possible, but then you would have to have a place where this system of electrolysis could be carried on, and if you waited for that system you might have to adopt an entirely different scheme. I suggested that as we have the gravitation sewer to Bondi, the system of gravitation should be adopted.
722. Your object is to throw into Bondi all that can be thrown into it by gravitation? Yes, and into Botany.
723. With the exception of the sewerage of Balmain, which matter you now propose to reconsider? Yes.
724. With regard to Camperdown and the Glebe, if you carried out the scheme which is proposed by Mr. Stayton there, and afterwards found that electrolysis was a very great success, you would have gone into a larger expense than was necessary? The sewers there are not large.
725. They are brick sewers? Yes.
726. And they are at some considerable depth? You will have to go to that depth whether you have pipes or sewers, and if there was any tunnelling you would have to have the sewer the minimum size in which a man could work.
727. If the other portions of the scheme are to be reconsidered, ought we not also to leave Camperdown until we find out more about this matter? If you will allow me I shall answer that question when I am able to answer it categorically. I shall have the matter investigated.
728. With electrolysis could we not introduce the earthenware pipe system very much more than Mr. Stayton has introduced it, and with more economy? It was with that view that I recommended that those portions of the scheme where there was a large population should be reconsidered. The portions where there was a smaller population did not seem to me so well worthy of consideration; but I shall have the matter further investigated.
729. With a view to that? Yes.
730. Suppose the Glebe is treated by electrolysis, do you think it probable that the collecting place will be near the syphon in George-street, or near the head of the bay? A great deal depends upon the character of the effluent water. It might be desirable having it going into the syphon.
731. For the sake of the scour? Not so much for that as to prevent injury to Blackwattle Bay.
732. I am not proposing to turn anything into Blackwattle Bay; but if you had electrolysis the quantity of sewage to go through the syphon would be less than that under the existing system? A good deal less.

WEDNESDAY,

WEDNESDAY, 3 *JULY*, 1889.

Present:—

JOSEPH PALMER ABBOTT, Esq. (CHAIRMAN).

The Hon. JOHN LACKEY.	HENRY COPELAND, Esq.
The Hon. ANDREW GARRAN.	JAMES EBENEZER TONKIN, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	WILLIAM SPRINGTHORPE DOWEL, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	EDWARD WILLIAM O'SULLIVAN, Esq.
JACOB GARRARD, Esq.	JOHN HURLEY, Esq.

The Committee further considered the proposed Drainage Works for the Western Suburbs.

Richard Threlfall, Esq., Professor of Physics, University of Sydney, sworn, and examined :—

R. Threlfall, Esq. 3 July, 1889.

733. *Mr Lackey.*] You have been some time in England, I think ? Yes.
734. And have given some attention to this new system of treating sewage by electrolysis? Yes. I spent some days over it.
735. Electricity is a science in which you have taken considerable interest, and a subject to which you give your attention at the University? Yes. Of course this system of treating sewage is partially a chemical problem ; but I am as much a chemist as an electrician.
736. The Committee are engaged in the consideration of a scheme to treat the whole of the sewage of the western suburbs, and we think it desirable to have your evidence as to the effect of electricity upon the solids and fluids contained in the sewage. You have no doubt given considerable attention to this matter? I have.
737. From what you saw in England while you were there, were you led to believe that the system of electrolysis could be applied to ordinary sewage generally? I have no doubt that all sewage could be purified by this means—it is merely a question of cost. The process is a purely chemical one, and the chemicals employed are produced by electric agency in the sewage, and have not therefore to be added to it.
738. Then it is quite practicable if sufficient money is available? Perfectly. I think there is no question as to the perfect success of the process, setting financial considerations on one side. We have only Mr. Webster's figures as to the cost to go upon.
739. Have you made any experiment yourself? I made some small experiments of electrolysis on dilute solutions of salt, but, with that exception, I have made no experiments.
740. I take it that it would be very difficult to carry out experiments of this kind in consequence of the expense which would have to be incurred ? I have given an estimate as near as I could of the cost of a plant which would purify 1,000,000 gallons of sewage. I think that estimate is an outside one, because I have put the money on whenever I could ; but of course it is not necessary to make experiments on such a large scale.
741. What is your estimate? £5,214 for one year. At the end of that time you would have as an asset about £300 worth of iron, together with the engine and dynamo, which would come altogether to about £1,800.
742. I see from a statement of Mr. Webster that the precipitate is not likely to be used as a fertilizing substance? No ; he does not say that it will.
743. Would that be generally the case or would it be so only in exceptional cases ; in other words, would all the objectionable and fertilizing properties be extracted from the precipitate during the operation of electricity? The mineral principles are chiefly carried down with the sludge, but they are contaminated with iron, and although it is possible that the sludge might have some manurial value, still Mr. Webster does not claim that it would have a marketable value. There are many hundreds, if not thousands, of patents for treating sewage by chemical processes, and it has been usual for the inventor to claim that, not only could he get rid of the sewage, but that the sale of the manure manufactured would pay a large dividend upon the expense of the work. Now, the experience in all countries on this matter has led to the conclusion that if you make a precipitate which is marketable as a manure, you spend more on it on the whole than you get for it, while if, on the other hand, you make a cheap precipitate, you cannot sell it. Mr. Webster, bearing this in mind, does not claim any marketable value for his sludge. That being the case, of course we want the sludge to be as small in quantity as possible, so that it may be more easily removed, and I think I may safely say that the sludge produced by this process is the smallest possible. It is mixed with oxide of iron.
744. Is it the case then that the effluent, in proportion to the purity of the sludge, contains a greater quantity of objectionable matter—oxide of iron, or whatever it may be. Does it vary according to the manurial value of the sludge? The effluent has always to be brought up to a certain standard by getting rid of the sludge.
745. We are regarding the matter from a practical point of view. Our object is to see how far we can separate the objectionable properties of the sewage from the effluent we take away from it? The effluent is the sewage from which all objectionable matter has been removed.
746. According to the manurial value of the sludge, is the effluent more or less pure. For instance, I see by the report that Mr. Webster drank half a glass of the effluent. I take it that that was an evidence of the pureness of the water and of its freeness from any property that would communicate disease? Yes.
747. In that case would it be safe to convey the effluent to the nearest stream, river or harbour? Certainly ; that is the object of the process.
748. Then you think, if the process succeeded, the fluid may be taken into any stream, estuary, or creek, near to which the operation was carried out? Most decidedly.
749. What is proposed to be done with the sludge at home? The amount of sludge which has been produced from the sewage treated by Mr. Webster is not a very serious matter. He happens to have large contracting works going on in the neighbourhood, and my impression is that it was just dug into the ground. That is what would have to be done with the sludge obtained from the process here. It is a nuisance and has to be got rid of.
750. In that case it would not always be a fertilizer? I think that we may take it for granted that it will have a certain manurial value, but whether it will have such a value as would make it worth while to sell

sell I cannot say. Mr. Webster thinks it will not. If you are willing to pay for the removal of the sludge you would probably find that its fertilizing power is a small asset, but it is not to be calculated upon.
751. Supposing the sewage of a large town were treated in that way, has any calculation been made to show that the system would warrant the expense which would be incurred by digging the sludge into the ground? It is a thing which we must look at from a different point of view. The assumption is that you would have to get rid of it. If you are bound to get rid of it, if the protection of health requires that you should do so, I think the experience of all countries shows that you must be prepared to pay for getting rid of it, and not expect to get a profit. Out of no chemical process for treating sewage can you, as far as I know, expect to make a profit.
752. Do you know the method by which sewage is treated in England at the present time? I know that a good many ways have been tried.
753. By depositing it upon sewage farms? That has been, I think, a failure. Experience has shown that when sewage is successfully treated by that system, the farm, as a farm, is not a success, because the land has to take the sewage at times when it does not want it. On the other hand where the sewage is dealt out to the land according to agricultural requirements, its purification is not a success. Sewage is a nuisance, and you have to pay to get rid of it. In this as in other things you cannot have your cake and eat it.
754. Have you given sufficient attention to this subject to know which treatment, from a practical point of view, would be the least expensive for a town? That of course is a question for a sewage engineer, but as far as I have been able to inform myself by reading and conversation—never having had to treat the sewage of a town—the cost of a chemical process will depend almost entirely upon local conditions. It is almost impossible to say which method would be the cheapest for a specific place without having the local conditions given. In one place for example alum may be cheap. There are many chemical processess founded on the use of alum, which, as chemical processes, appear to be very efficient. Where alum or aluminous earth is very dear, however, these processes cannot compete in cost with certain other chemical processes. The process of treating sewage with alum is, I think, one worthy of attention; because I am told that there are large deposits of that substance within a comparatively short distance of Sydney. Dr. Tidy, whom I quote in the first part of my report, thinks that one of the alum processes, generally known as the A. B. C. process, gives as good an effluent as any which he has come across, and it also gives a sludge which has a manurial value. The manurial value of the sludge, however, in England does not pay a dividend because their alum costs so much that it swallows up all the profits; but in Sydney if we could get alum cheap that would not be the case. I think if the alum deposits exist they will have to be examined and experiments made in order to test their precipitating power. After such experiments have been made an idea may be formed as to the comparative cost of the alum and the electrical process. I think it would give a good year's work to a very competent man.
755. Have you given any attention at all to the matter which has been submitted to the Committee for its consideration—the drainage of the Western Suburbs? I have not been informed on the matter at all.
756. The expense of the scheme immediately under consideration approaches £2,000,000, so we are anxious to have your evidence on the subject of electrolysis. What do you think would be the smallest expense which would have to be incurred in erecting a plant which would enable us to come to a decision as to whether the process could be made available for treating the sewage of the Western Suburbs? That is a question which I am hardly in a position to answer. In my report I have given an estimate of the cost of a plant which would treat 1,000,000 gallons a day.
757. I take it that, for experimental purposes, it would not be necessary to go to nearly that expense? That, I was going to say, is a question for a sewage engineer to decide. I should be satisfied with a smaller experiment; but I am not a sewage engineer, and I should not like to express an opinion as to the smallest possible experiment which it would be necessary to make. There may be conditions of which a sewage engineer is aware, but of which I know nothing, which would render a large experiment very necessary. We all know that it is very desirable to have an experiment upon a large scale, but it may be essential, and the fact that Mr. Webster has gone to the expense to which he has gone leads me to think that it may be important to make a large experiment.
758. Do you think, in view of the work which the Government propose to carry out, that it would be desirable to make the experiment? I think it is well worthy of attention, in so far as the expenditure of a sufficient sum would enable a reliable experiment to be made.
759. *Mr. Copeland.*] You are not aware of any corporation having adopted Mr. Webster's process? No, when I was in London it had not been adopted by any corporation, though I have an impression that several were in treaty with Mr. Webster.
760. At the present time the matter simply assumes the experimental form? It simply assumes the experimental form, but the experiment is so large that it would represent the treating of the whole of the sewage of a small town.
761. The Metropolitan Board of Works is the body which has the drainage of London under its control? Yes. Mr. Webster has contracted with them for other works, and they allow him to use a portion of their ground at Crossness.
762. I suppose the Metropolitan Board of Works are not sufficiently assured of the success of the scheme to feel that they are warranted in incurring an expenditure on their own account? Certainly not.
763. The sewage is being treated merely as an experiment? Yes.
764. Do you not think that it would be more judicious for a small community like this to wait until richer communities like London and other places had paid for experiments before we experimented ourselves? Certainly. If you can get other people to pay, it is always better to do so. I think that an experiment treating 1,000,000 gallons a day is so large that the process may be considered to be shown to be practicable and deserving of being tried by somebody. There is no reason why this town should try it, provided that some other town will step in and do so.
765. Have you taken any interest in the treatment of sewage at the sewage farm at Cook's River? I have been told about it but I have never been asked to examine it.
766. You are not aware that the people in charge of the sewage farm there emulate Mr. Webster by drinking some of the effluent water. I merely mention this to show that the effluent there is for all practical purposes rendered pure and clear, merely by passing through filter beds of sea sand? Of course you can purify sewage in a thousand ways; it is merely a question of cost.
767. The cost of an experimental plant you estimate in your report as £5,214? Yes, that is my estimate.

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768. Then there is the cost of management as well? The cost of management has to be added to that, of course. This estimate is only the cost of the plant and maintenance for one year, but a considerable portion of the plant will remain at the end of the year as an asset. You will have a large quantity of iron, the engine, and the dynamo still remaining at the end of that period.
769. So I suppose the experiment would involve a risk of £4,000, or a little more? Yes; if you decide to make the experiment on as large a scale as the one proposed by me, I do not think you could safely put the risk under £4,000. I should not be inclined, taking the cost of management into account, to go below £5,000.
770. With this system do you not require to use alum? No, that is an alternative process. I mentioned it because I thought it was one which might be looked into.
771. How long is it since you saw the process of electrolysis at work? Just after I received the first letter from Mr. Webster, dated the 14th February, this year. During the beginning of February I was engaged in examining the process.
772. Is Mr. Webster, or any other person, making similar experiments in any other place except on the Thames? I do not know, at first hand, of any other experiments being made. I am told that some experiments are being made out here by Mr. Roberts.
773. Did you inquire into any other process in England? No, I did not. I simply undertook to look into this particular matter.
774. Is it not a fact that large centres of population in England and Europe have their own special systems of treating sewage? Yes, and hardly two of them are alike.
775. And I suppose each has something to recommend it? Yes. As I said before, the particular process which can be most successfully employed depends upon the local conditions of the place. For instance, if there are manufactories sending down a very alkaline sewage you have to adopt a different process in dealing with it from that which you would adopt if you were dealing with an acid sewage.
776. Has this system more to recommend it than numbers of other systems that have been adopted and are being worked in different places at the present time? I think it has this to recommend it. First, that the amount of sludge produced is a minimum; and secondly, that it may be considered a purely chemical process in which the coal, which is used to supply the engine, is the only chemical employed. Coal is cheap here compared with the lime, alum, or animal charcoal which are used in other processes. These latter substances are most of them dear. They are dear in England, and would be still dearer here, whereas coal is a cheaper thing to get.
777. In the system adopted at present, we are using no chemicals? Yes.
778. Merely filtering the sewage? Yes, merely filtering. I think there can be no doubt that if that can be done efficiently it is the cheapest process.
779. *Mr. Garrard.*] I should like to ask you whether you were requested to report upon Mr. Roberts' discovery before going Home? To the best of my recollection I was, some eighteen months or two years ago, asked not to report upon it, but to examine it. When I came to inquire about it I found there was nothing to examine or report upon. Mr. Roberts had made a few experiments on a few gallons of sewage, but really from a commercial point of view there was nothing to be said at all.
780. Is it a fact that you were requested to make experiments at the University, but not having the necessary appliances you were forced to refuse? I am not sure whether I was requested or whether I volunteered to do so, as soon as the laboratory was in a fit condition. At the time it was not in a fit condition, and, before I left England, it was never in such a condition that I could commence experiments of the magnitude required.
781. You are not aware that since you were asked to report upon Mr. Roberts' scheme further experiments have been made by the Department at Cook's River? No.
782. Can you inform me when Mr. Webster's process was first made known in England. I presume he has patented it? Of course it is a patented process, but I do not know when his patent was filed.
783. You do not know when the process first became known to the English public? The first I heard of it was just about the time I came out here, three years ago, so that I may safely say that it has not been before the public for much more than three years.
784. And it is about two years since you were asked to report upon Mr. Roberts' process? It is two years since Mr. Roberts' experiments were mentioned to me.
785. The experimental plant you suggest would be capable of doing only the same amount of work as that done by Mr. Webster's plant, viz., 1,000,000 gallons a day? Yes; my estimate is for the treatment of 1,000,000 gallons.
786. If a plant similar to Mr. Webster's were erected here you would make several alterations in fitting up the different parts? Yes.
787. For instance, as he suggests himself, you would place the dynamo nearer the shoots containing the electrodes, so as to diminish the length of leads, and so on? Yes.
788. Do you know if Mr. Webster has patented his process in these Colonies? I am not quite sure, but I think Mr. Webster told me that he had patented his invention both in America and in the Colonies.
789. Could the Department in this Colony make experiments without his consent? Of course if he has not secured himself by patenting his discovery they can do as they please; but if he has done so I suppose he would object to their making experiments without his consent. I am not acquainted, however, with the legal aspect of the case.
790. *Chairman.*] The Crown can use any patent right? In that case I suppose the Department could make experiments.
791. *Mr. Garrard.*] You prefer this system of dealing with sewage to other chemical processes, and next to it you think the process in which alum is used is the best? As I said, the most advantageous processes depend upon the place, and there are some things about electrolysis which I think make it suitable for Sydney. The cost of chemicals to be used as precipitates would be heavy here, while I think coal and iron are nearly as cheap as they are anywhere, and they are the only materials used. I thought also, as the streets are watered with salt water, that the sewage would contain more salt, and that would be very favourable to the success of the process; but I find from Mr. Hamlet, the Government Analyst, that the sewage only contains the normal quantity of salt owing to the fact that the water with which the town is supplied has less than is usual.
792. I suppose no better site for the erection of a plant could be obtained than the outfall at Cook's River;—you have been there? No, I have not. I think the conditions to be observed in erecting a plant would be, first of all, facility for running the sewage into shoots, and secondly, easy means for conveying the sludge to a place where it would not be a nuisance.

793. If the sludge has already been used on an experimental farm, would it not be better to use that place as a site? If the other conditions are favourable, you must remember that a certain amount of coal will have to be carted to feed the furnace, so that the site must be on a road if possible.
794. I think I understood you to say that your estimate was based on very full prices. I see that you have estimated the consumption of coal per horse-power per hour at 5 lb.? Yes; that is estimated for a high-pressure steam-engine, and I do not think it is too high under the circumstances.
795. Do you know what it cost Mr. Webster to erect his experimental plant? No; I may have heard, but I do not recollect. I do not think it is likely that I should have asked him what it cost him.
796. Much of his expenditure he has found useless. As he has gone on he has found ways in which he could economise, and has discarded portions of his plant? A great deal of his older plant has been discarded.
797. So that if we had the amount which it had cost him to erect his plant at Crossness it would not be fair to take it as an estimate of the cost of erecting such a plant here? No, I think not, since he has discarded many things; and we have the advantage of his experience. Not only that, but even as things are, his electrical apparatus is not well arranged. He is not an electrical expert himself, and he did not call in Dr. Hopkinson, the electrician, until afterwards. There are many things which he might have foreseen which would have made the plant more efficient.
798. I understood you to say that several local Government bodies were negotiating with Mr. Webster for the use of this process? Mr Webster gave me to understand that he was in treaty with several corporations who wished to adopt his system.
799. The London Metropolitan Board of Works have not done so? No, not to my knowledge.
800. But I presume they have been watching his experiments? The experiments have been going on close to their pumping, station, so that I fancy they could not have failed to have noticed them. Mr. Webster told me that the Metropolitan Board of Works were going to take the matter up, but it seemed to me to be a private matter, and I was careful to confine myself strictly to the scientific aspect of the question and its commercial applicability in general.
801. What is the height up which he has to pump the sewage into the shoots? It can only be a few feet, because the ground is very low. I should think only 7 or 8 feet.
802. Of course if the sewage could be run direct into the shoots, and so save the pumping, the cost of the process would be so much less? Of course.
803. I understood you to say that the sewage you saw being treated did not go through the last process, where coke is mixed into the iron electrodes, but that it simply came into contact with the iron electrodes? Yes.
804. Are the electrodes parallel with the shoot or at right angles to it? They may be placed either way. In Mr. Webster's experiments the plates were parallel, but I think in rearranging the plant I should place them alternately, parallel and at right angles, so that the sewage would have to run in and out.
805. Was there much deposit in the shoots themselves? No; it is part of the process to so regulate the speed of the sewage through the shoots as to allow no deposit.
806. The speed at which the sewage would pass through the shoots would depend upon its density. It would have to travel quickly if it was thick. and less rapidly if it was diluted? Yes. I draw attention to that in the report in reference to the sewage coming down after a heavy rain.
807. How would the sludge be got out of the pits would it be dug out? I imagine that sludge is generally dug out Sometimes an arrangement can be made, if a pumping station is available, to have the tanks at such a height that they can be tapped at the bottom, and the sludge run off. That has, I think, been done at or near Manchester.
808. Would the small amount of iron in it very much depreciate the sludge as a manurial agency? The value of the sludge as a manure depends really upon the state in which nitrogen exists in it. If I am rightly informed, when nitrogen is almost wholly converted into ammonia the sludge has not the manurial value that it has before such conversion. I think it is part of the result of electrolysis with this process that the organic compounds become converted into ammonia. The nitrogen passes out of its organic combinations into the form of ammonia, and thereby the manurial value of the sludge is diminished. This is a thing I know that happens in many chemical processes, and since Mr. Webster did not claim for his sludge any manurial value I believe it would happen in this process.
809. In many chemical processes the bulk of the sludge is increased by the chemicals used? Certainly, by the precipitating agents, as they are called.
810. By this process the sludge is reduced to a minimum? I think an absolute minimum. The iron itself is precipitated with the rest of the sewage, and it carries down the flocculent matter in the same way as alumina will carry down the matter from logwood and make the paints known as crimson lakes. But in this case the precipitate is produced through the agency of electricity, and forms a kind of mesh-work, and by its density sinks more rapidly than the flocculent matter would by itself. It entangles the flocculent matter and carries it down.
811. The Metropolitan Board of Works have, I believe, a test which they apply to any sewage matter or effluent before it is allowed to go into the Thames? They have.
812. For the purpose of preventing the contamination of the stream, and thereby diminishing the supply of fish, I presume? In the Thames the backwater, when the tide comes in, makes a great nuisance.
813. There is a great rise and fall of the tide there? Yes. The condition of the Thames is so shocking under any circumstances that it is the very last river to consider as an example. The sewage which is now turned into it is, in all probability, cleaner than the water of the Thames itself, because of the large amount of drainage which goes into the river over which the Board has no control.
814. One of their reasons for making this test is to prevent the noxious effluvium being increased? Certainly.
815. You are clearly of opinion that it would be advisable, in view of the proposed large expenditure, to undertake these experiments? Of course it is merely a matter of opinion. I went to Mr. Webster's place with the impression that the process was rather a humbug, and I came away very strongly impressed in the opposite sense. The more I think of it the more impressed I am.
816. The system is based on sound principles? Yes; and certain people with whom I have had occasion to converse—engineers and others in London—have expressed themselves in much the same way as I do.
817. Do I understand you to say that the Metropolitan Board of Works had works at Barking? They have had some at Barking.

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818. I understood you to say that they had not been a success? No, I am informed not.
819. Do you mean a commercial success or successful from a sanitary point of view? I meant that if they were a success from a sanitary point of view they were not a commercial success, and if they were a commercial success they were not a success from a sanitary point of view. My authority for that is Dr. Meymott Tidy.
820. You are aware, of course, of the existence of a sewage farm at Cook's River, where we are now dealing with some of our sewage? I have not visited it.
821. Do you think it desirable where sewage farms are necessary to have a number of small farms rather than one large one? I do not think I am sufficiently acquainted with the practical difficulties to answer that question. I should not like to answer it without having devoted myself exclusively to the treatment of sewage.
822. *Dr. Garran.*] I understand that this process is partly chemical and partly an electrical process? It belongs to a large class of processes known as chemical processes. The peculiarity of it is that the chemicals used are produced on the spot through the electrical agency.
823. The electrical part consists in detaching minute portions of iron from the plates? In dissolving it The iron passes into solution, and, as a second operation, is reprecipitated as oxide of iron in the body of the sewage and carries down with it the fine matter, which gives such trouble in dealing with sewage, such as minute particles of paper, which will not settle unless some means are adopted to force them down, such as the use of extraneous precipitates.
824. The electrical part of the process simply consists in dissolving the iron from the plates? No; along with that go other chemical changes.
825. The chemical changes take place when the iron is separated from the plates and mixed with the sewage? No; when the current passes through the sewage a number of chemical changes take place—one of the most important of which is the solution of the iron, and another almost if not quite as important is the separation of a large quantity of oxygen and hydrogen from the water. The water, together with common salt, is decomposed by the action of the electricity, consequently we have free chlorine which partially oxydises the organic matter which causes the nuisance, then we have oxygen given off which oxydises the matter in the same way as the atmospheric oxygen does in the filter.
826. Then the electrical action is two-fold—first in dissolving the iron and putting it into the sewage, and secondly in acting upon the sewage itself? It may be put in that way, but it is not philosophical.
827. And there is a chemical as well as an electrical action? The primary substances produced by electrolysis are chiefly hydrogen, oxygen, chlorine, and sodium. The first result of this is the formation of oxide of iron precipitate, and a second is the oxidation of the sewage.
828. To deal with the sewage thoroughly by this process, the electrical force must be in proportion to the quantity of liquid passing down? If the quality of the sewage is constant the amount of electricity to be forced through each gallon is also constant.
829. And by a series of experiments upon the sewage we can form an opinion as to how far the sewage is constant? Yes. We know that with heavy rain it varies.
830. Supposing the rain goes into the sewage itself? Yes.
831. If we kept the rain out we should have more definite material to deal with? Undoubtedly.
832. I asked that question because in the report before us the separate system of sewage is disparaged. What I want to get at is, if we take this system of electrolysis, it does not altogether compel a reconsideration of the drainage system? I do not think so. Take the worst case—suppose heavy rain comes suddenly, then the quantity of sewage is increased by a large amount and its quality becomes worse—it is more charged with fœtid matter; but all you have to do is to have a margin of engine and dynamo power, and turn on a stronger current, or else have a weir by means of which you can shunt part of the extra sewage into a reservoir. I do not, however, recommend that. I have estimated for sufficient plant to allow a considerable strain to be put on the apparatus for 10 or 12 hours, and perhaps enable it to treat 20 or 30 per cent. more.
833. You do not think it would be at all requisite to keep out the flood waters? No.
834. In this country especially heavy rains would only be occasional? It would be far less expensive to deal with the sewage containing the flood water than to duplicate the sewers.
835. A large portion of the storm waters would run off on the surface, or be drawn off by a separate set of pipes? I do not know what system is being adopted now.
836. It is proposed by the system we are considering not to carry off the flood waters, but only the washings from back yards? You must remember that after a heavy rain the sewage is not only increased in quantity, but it is worse in quality.
837. But after the streets had been washed the water would be purer? Yes.
838. Then we should want some shunting apparatus to get rid of it? That is a great consideration.
839. This process of electrolysis requires the water to be a little in motion, does it not? Yes. At first Mr. Webster had his plates in motion, but subsequently he discovered that if the flow were properly managed the motion of the liquid was sufficient.
840. If he put his plates into the sewer the effect would be to precipitate the solids in the sewer itself? If the flow was small, but it would not work, because the hydrogen gas has to be separated from the precipitate.
841. Then it is necessary to take the whole of the sewage through the shoots and settling tanks? I think so.
842. The shoots through which the fluid passes have a slight incline? Yes, to give the requisite motion.
843. And the whole of the chemical process goes on in the shoots? It does.
844. The settling tank is to allow the water to remain quiet so that the sludge may settle? Exactly.
845. Is the process thorough—are all the solids taken out of the sewage? That is shown by the analyses. All the solid matter in suspension could be absolutely removed. Supposing it was not entirely removed at a cost of 14s. per 1,000,000 gallons, it could very likely be so removed for 15s. or 16s. It is merely a question of cost.
846. If the sludge were not quite removed from the effluent after it passed from the settling tanks, a second process would completely purify it? Yes.
847. You could try the process twice over? Yes. I do not think myself that the second process is necessary, unless the effluent is required to be fit for drinking.
848. But if we were putting it into a river from which water was taken for drinking, to supply a town a little

little further down, we should have to be more careful. If the process were repeated twice it would be quite safe to do this? The two processes are not identical. In the second process carbon-plates are substituted for iron-plates.

849. But if you were to treat the effluent with carbon-plates after it had been treated with iron-plates it would be perfectly harmless, and you would have a safe result? As far as chemistry goes you would. Whether the process would destroy germs of typhoid fever and other diseases, is a matter upon which in the absence of information one would not wish to decide.

850. For the success of the process I understand it is necessary or desirable that almost every portion of the sewage should touch the iron-plates? Practically.

851. Do you think the plates are sufficiently close for all the sewage to come into contact with them? You must either have them near together or you must have more of them. Mr. Webster says that there should be about a square foot of iron per gallon, but the ratio of the surface to the volume of sewage is not, I think, a matter of very great importance.

852. Would it be any advantage to pass the sewage through fine iron net-work? No; I do not think it would—the net-work would soon disappear.

853. It would be eaten away? Yes.

854. Are the tables shaken or are they fixed? The plates?

855. Yes? The plates are fixed.

856. Would it be any advantage to shake them? No. In Mr. Webster's original scheme they were shaken.

857. *Mr. Copeland.*] If the shoots were shaken the water would come more into contact with the iron? Yes. But by the time the sewage has gone through the troughs, 100 yards in length, it is found that that is sufficient.

858. *Dr. Garran.*] I understood you to say that a little salt facilitates the process? Yes.

859. If we had a little dribble of salt water going through the sewage it would be an advantage. Yes.

860. We have an advantage in being able to supply salt water from the harbour? Undoubtedly.

861. You are unable to say upon what scale the experiments can be carried out to the greatest advantage? I can safely say that this, as well as any other, process can be carried out on a large scale at a comparatively lower cost than if it were carried out on a small scale.

862. If you look at the map before the Committee, you will see that it is proposed to shoot most of the sewage into the main sewer which goes out to Bondi. Would there be any advantage in cutting that off before it goes into the main sewer, and treating it by electrolysis—or would it be better to treat it at the outfall? I think that the larger the works are the more effectual the process. Other considerations might, of course, render it advisable to treat it before it reached the outfall.

863. There is no reason, as far as the action of the electricity goes, why the sewage should be treated at large works, or at small works? None whatever.

864. It would be quite practicable for us to make a fair experiment at the Cook's River outlet? I should like to visit the place before I answered that question.

865. You could not say, unless you visited the place, whether an experiment there would be effective? No, I should require to visit it first.

866. If we were to treat the Bondi sewage, and pumped it from any part, say from Rushcutters' Bay, would that afford a fair test? I should think so, but I have no special knowledge.

867. Although the sludge is not saleable as manure it would not be bad material to distribute over low lands for the purpose of filling in? For filling in it would be very foul.

868. Does it remain foul long? When I saw it it was not foul at all, but Mr. Webster told me that during the summer it was foul, and that the foulness lasted of course until the sludge was oxidised.

869. By exposure to the air? Yes, and the rapidity of the process would of course depend upon how much the sludge was broken up. If it was placed in heaps it would not oxidise rapidly.

870. If it were spread out into thin layers it would very quickly oxidise? I think so.

871. Is there any cheaper way of making it innocuous? No, unless it is dug into the ground and treated agriculturally.

872. You think there would be an objection to banking it up in open places to reclaim ground? I should not recommend its use in that way.

873 Then that is a reason why we should have these works away from human habitations? Yes. I think you may regard the sludge as a nuisance whatever the process adopted.

874. Then the tendency of your evidence is to show that we must not break up the sewage, and treat it at intervals? Certainly.

875. We must treat it at the outfall? Certainly.

876. So that the system of drainage required would remain the same as it is proposed to construct? Exactly, unless you took the effluent into the harbour.

877. Take the case of Balmain; there the sewage could all go into the harbour, so that the engineering part of the scheme would remain unchanged whether or not we used electrolysis? I think the process of electrolysis would purify the sewage so that you could take it into the harbour.

878. A large amount of sewage collects in one pipe before going to Bondi. I want to know whether it would be an advantage to treat it before it entered the pipe? There would be a gain by saving the sewer.

879. You can see by reference to the plan that the sewage of the Glebe, Balmain, part of Darlington, and Camperdown is to go into the Bondi sewer? Yes.

880. If there is to be no alteration in the size of the sewers that part of the scheme might be carried out at once without further delay, might it not? If there is to be no alteration.

881. If the electrolysis does not cause any change in the size of the sewers that part of the plan might be carried out at once? Certainly, provided that the electrolysis takes place at Bondi or on the main Bondi sewer.

882. I ask this because Mr. Bennett was rather of opinion that your scheme might enable him to substitute smaller pipes or earthenware pipes for those he proposes to use, thus diminishing the cost. It could only be done, I suppose, by having apparatus for electrolysis at intervals along the pipes? That, of course, would diminish the size of the pipes, but if you decided to take the sewage into the Bondi sewer the pipes would have to be the same as they are now.

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883. The question is rather an engineering than a scientific one? Yes; it would depend upon the amount Mr. Bennett could save on the cost of the pipes by going to the harbour at several convenient points.
884. It is simply a question of relative cost? Yes.
885. If the process were successful we could subject the whole of the Balmain and Glebe sewage to it, close to the University, and discharge the effluent into Blackwattle Bay? I think so.
886. The only trouble would be that the sludge would be a nuisance? Unless promptly removed.
887. And that will always be a draw-back to carrying out the process in neighbourhoods in which people are living, unless you can deodorize the sludge? Yes.
888. It will be better than to carry the sewage to Bondi? The quantity of sludge is not very much, and it might be quite a simple matter to remove it. It would depend very much upon the sewage.
889. A good deal depends upon the possibility of making a saving in the cost of the pipes? Certainly, it is merely a question of money.
890. We have to make a particular recommendation, and the question is whether it is absolutely necessary to go into the intended expense or whether the adoption of electrolysis will effect a saving. On that point you do not speak positively? If Mr. Bennett will let me know how much he could save by going into the harbour at two or three points, and would give me an estimate of the quantity of sewage expected to be discharged at each of the proposed outlets, I think I could fairly estimate the cost of an installation at each of these points. It would be a mere matter of relative cost. One thing could be balanced against the other.
891. So far as you have looked into this system do you think the Committee would be justified in calling a halt before we incurred the large expenditure of £2,000,000? I think it would be worth while to estimate the saving which would be effected. It need not take more than a few days.
892. How long would it take to fairly test 1,000,000 gallons? That is a very difficult question. First of all one wants the length of time during which the experiment is being made to be sufficiently extended to allow of all the varying conditions likely to occur actually to do so.
893. You want dry weather, a heavy rainstorm, and every possible condition? Exactly. On the other hand it might happen that whoever was conducting such experiments was continually making great progress. He might from day to day effect improvements which would lower the cost and increase the efficiency of the process.
894. You think the promise of the scheme is enough to almost compel the Government to give it a fair trial before we finally decide upon the system of sewerage which we should adopt? Yes. There are also other chemical processes, and I think the alum process is almost equally worthy of consideration.
895. If you could guarantee that the effluent would not be injurious, we could have installations at the head of bays on the Parramatta River? That can be guaranteed, but the same result could be obtained from any other chemical process. It is all a matter of expense.
896. This system has been presented to us on the assumption that all the other chemical processes are failures, and that there is nothing to do but to connect the sewage and to force it down to Cook's River. We are proposing to go to great expense to take the sewers away from the natural fall of the ground, but if the electrolysis is a success, we need not go to that expense? If electrolysis can be a success at a cost less than the proposed expenditure.
897. If electrolysis were adopted we could let the sewage take the natural fall of the land and let the effluent flow into the harbour, so that it is a matter of extreme importance before deciding upon its adoption to know whether or not it is trustworthy? When you say that the other chemical processes have been failures, I imagine that they have been failures taking their cost and setting it against the extra expenditure.
898. All things considered? I think this process is at all events worthy of being considered.
899. Then your strong recommendation to the Committee is to try and make a fair experiment? I think so certainly.
900. *Mr. O'Sullivan.*] As the sewage would be discharged by the main conduit into the ocean, I presume there would be no necessity to apply the process to it at all? Unless you do not want to dirty the ocean.
901. You think it would be necessary to have an apparatus out there? If you do not mind having the ocean and beach of Bondi in a filthy state, it is not necessary, but if it is necessary that the effluent should be clean you would require to use some process.
902. You have stated that you have no doubt from what you have seen and heard in London of the success of this invention? From an electrical and chemical point of view certainly. As to the financial aspect of affairs we have only Webster's estimate to go upon. His estimate I think is a low one as compared with other chemical processes, but still it is merely his own—but at present there is no evidence before the public as to the expense of these works.
903. I find that since 1762 there have been no less than sixty processes in use in the City of London? I should have thought there would have been more.
904. I presume that is a reason why the Metropolitan Board of Works are not in a hurry to adopt this process? The Metropolitan Board of Works is of course defunct, but their successors are at present using a lime precipitate, but which process it is out of the sixty I do not know—they change nearly every month.
905. It is estimated that the cost of treating the sewage of London by this process would amount to £37,000 per annum? At the rate of 14s. per 1,000,000 gallons, I suppose. I have not estimated that cost.
906. I suppose, allowing for the extra cost of labour and materials, we could fairly assume that the cost would not exceed £8,000 or £10,000 here? You must find out first what the amount of sewage is; I have had very varying estimates. I have had one estimate of the quantity of the sewage of the western suburbs which came to considerably more than the whole sewage of London. I said, I thought that estimate was hardly correct. I daresay the Secretary has the details I received on the subject; but the position was defended. Heavy rain, I think, was given as the chief reason for this large amount of sewage.
907. I suppose by the time we have the sewage works constructed the matter will be decided one way or the other, and it will be pretty safe for us then to adopt the process? Of course the longer we wait the more information we get, and it is quite possible that some of the Municipalities which Mr. Webster mentioned to me may take the matter up and apply the process. In that way we should get a cheap experiment, but it must never be forgotten that the efficacy of any process depends largely upon the conditions

conditions of the place, so that the result of an experiment here would not necessarily be applicable in Melbourne, and *vice versa*. There are some conditions prevaling at every place which distinguish it from any other place. I thought that salt water was a peculiar condition in Sydney, but it seems that it is not.

908. *Mr. Humphery.*] In the event of the process of electrolysis being employed to deal with the sewage, would you recommend that the works should be constructed at the outfall of the sewer; and, if constructed, would you treat the whole of the sewage at the outfall? I think so; but I should like to examine the run of the sewer very carfully before I answered.

909. Could any quantity of sewage be treated at the outfall? I think so; the more the better.

910. What is the difference in cost. Assuming that the treatment of 1,000,000 gallons would cost so much, what would be the cost of treating 100,000,000 gallons? That is a matter which will need a great deal of calculation, but I think that you might safely say that there would be a saving of 25 per cent. I can see a saving of 10 per cent. in the electrical conditions.

911. Therefore it would be more economical to have large works at the outflow of the sewer instead of a series of works at different points of the system? As far as the economy of the process goes, yes; but as far as the economy of pipes goes, I cannot say.

912. I asked the question because in the appendix to your report it is stated that the cost of treating 3,000,000 gallons at Newcastle would be £10,800 per annum, while to treat 15,000,000 at North Shore, it will cost £5,400 per annum; is there not an error there? Yes; a printer's error—"3,000,000 gallons" should read 30,000,000 gallons. It is right in the manuscript.

913. In carrying out these proposed sewage works, the question is whether a saving of 25 per cent. upon the erection of the apparatus at the outfall of the sewer would amount to more than the difference between the cost of the pipes proposed and pipes of less dimensions? That is the whole question. In order to obtain the data for its solution, I think it would be necessary to make an experiment here. That is the gist of what I have been saying, that although I can form an estimate to some extent of the expenditure necessary to carry out the work in London, I cannot make a reliable estimate here without special experiment.

914. Do you think that that special experiment should be attempted before the proposed works are commenced, and how long do you think it would take to conduct it? I do not think you could get a satisfactory experiment made under a year.

915. That would mean a postponement of the commencement of our drainage system for a year? Assuming that the question is between the adoption of this system and the adoption of another, certainly.

916. Would it really be necessary to postpone the commencement of this system for a year, because I understood you to say in answer to Dr. Garran, that you would have the works at the end of a series of sewers? Yes.

917. So that portions at any rate could be constructed? If it is decided to operate on the whole of the sewage at Bondi, I take it that the scheme will stand as it is. If on the other hand it is decided to operate upon it at a number of small stations, so as to allow the effluent to pass into the harbour, the pipes could be made smaller, and the connection with the main sewer would not need to exist at all, and the other sewage works would be less expensive.

918. Would it not only lessen the size of the main sewer which collects the sewage of the other sewers? I understood the question was whether the whole of the sewage should go into the main sewer or be treated at a nearer or more convenient point.

919. Therefore would it not be more a question as to the dimensions of the main sewer? Yes, and the junctions with the main sewer.

920. So that the other pipes would remain the same? The branch pipes would possibly remain the same.

921. So that part of the scheme which includes the branch pipes could be proceeded with without interfering at all with the adoption of the system? Clearly on the assumptions.

922. So that in any event—? In any case the capillary pipes could be gone on with. The adoption of the process would only affect the main sewer.

923. So that it would not be necessary to suspend operations for a year? Not if you began with the small pipes.

924. *Mr. Hurley.*] Having in view the works being carried out in England now for the electrical purification of sewers, and from your own knowledge of the action of electricity upon iron, what kind of pipes should be used if the process were adopted here? For a general sewage scheme?

925. Yes. In the event of the process of electrolysis being adopted would it be better to use pipes other than iron? I think the same pipes might be used whatever the process was. I do not think the effluent would have any effect upon the pipes. It is not a question for me to decide whether an iron pipe is better than an earthenware pipe, as it is a matter about which I know nothing. Whatever pipes are most suitable for any process or system I think would be most suitable for this.

926. In your description of the Crossness apparatus you say: "The sludge was black and very nasty-looking, but it had not much smell at the time I visited the works. This was possibly due to the weather being very cold, for there is no reason why the sludge should not be foul under ordinary circumstances"? Quite so. The sludge is the offensive portion of the sewage concentrated and collected together, and there is no reason why it should be more offensive when it is separated than when it is collected.

927. At the time you visited Mr. Webster's works you had not discovered anything which would do away with it? He was carting it away. He was engaged in large contracting works near by; but whether the sludge was dug into the ground I cannot say. There was a heap on the ground which I went to and examined, and it was not foul at all, but still I think it would have been foul had the weather been warm.

928. From your reading and general knowledge you are somewhat averse to this being utilized for manure? No; but I am averse to anybody adopting the process with a view to making a profit by selling the sludge. I think if it were supplied for nothing a good many people would probably be very glad to have it.

929. *Mr. Tonkin.*] If we are given to understand that the expense of disposing of the sewage at the outlet of the sewer, wherever it may be, will be repaid by the manure produced by an ordinary process, do you not think it would be cheaper to treat it in that way than by electrolysis? If you can get hold of such a process adopt it by all means.

930. If we can do that—and it has been represented to us by men who knew what they were talking about that that is the case—it would be much the cheaper process? If there is a process which will treat the sewage for nothing it is clearly cheaper than the electrolysis process.

931.

R. Threlfall, Esq.
3 July, 1889.

931. We have been informed that the sewage farm at Cook's River pays for itself? [*It was explained to Mr. Tonkin that he was under a misapprehension with regard to this matter.*]

932. Have you any idea what the treatment of 1,000,000 gallons would cost besides the cost of machinery and so on—I mean the total cost? Mr. Webster's estimate was 14s., but his latest estimate is about 13s. —that is in England.

933. The wages are higher here, and that would increase the cost? That is where a saving would come in if we had a big plant. The machinery is practically automatic, and you would not require more men, except for the removal of the sludge. The engine tending would be the same, though of course more boiler men would be required. I think the difference between the English price of coal and iron and the price here, together with the difference in wages, would not be very great if the process were carried out on a large scale—that is assuming that Mr. Webster's estimate is correct, though, as I pointed out, it is absolutely unchecked. I should think that the addition of a couple of shillings for this Colony would make it right, and that would bring the expense of treating 1,000,000 gallons up to 16s. or 17s.

934. As it is absolutely necessary to cart away the sludge, would it not be better to have the works at Webb's Grant? If it is far enough away for the sludge not to be a nuisance. Private owners generally find that they have building sites near the place where it is proposed to deposit the sludge. I imagine from the way the sewage has been treated there that the Government have a considerable quantity of land. If they had not they would not be able to carry out the work, because everyone would say that it was a nuisance.

935. If we should dispose of the sewage without any special treatment it would be much cheaper than to treat it by electricity? Certainly. I think myself that if the sand filtration were enough to purify the sewage before it passes into the ocean, and if the farm itself and the filter beds do not become a public nuisance and a source of danger, it would be a folly to adopt either this or any chemical process. I do not think any chemical process could compete with the process in which the sewage is left on the sand to take its own way.

936. *Mr. Dowel.*] Do you know of any other place, except Crossness, where operations or experiments of the electrical purification of the sewages are being carried on? I am informed that some are being undertaken by the Works Department here; but otherwise I know of none, and I feel pretty sure that there are none.

937. What are the special advantages that you claim will result in the adoption of Mr. Webster's process? I do not know that I claim any particular advantages. I do hold no brief for Mr. Webster's process; but, looking at it from a purely chemical point of view, I should say that the cost of the chemicals is less than in any other chemical process which you could adopt. The process is just as efficient and requires the employment of less labour.

938. In what way would the electrical purification of sewage reduce the cost of the construction of the sewers? That depends entirely upon what part of the drainage you are referring to. It might increase it very much in one place and not alter it in another. If you were close to the harbour the process would enable you to save five or six miles of sewer. If, on the other hand, you were not situated conveniently it might not save you anything.

939. Have you any knowledge of the various modes of treatment adopted in different parts of the world? I have a large amount of information in note-books, but I have hardly any in my head. I know that there are hardly two towns trying the same system, and I believe hardly two towns are using the same systems now that they adopted five years ago.

940. Do you know anything about the systems in use at Chelsea and Tottenham? I have not the slightest knowledge of them.

941. Have you given any attention to the proposal to purify sewage by the action of fire? I happen to know that it was tried largely in Manchester, and I examined the process on the occasion, I think, of the last Inventions Exhibition in London. There it was reported to be very successful, but since then I have heard that the Manchester Corporation have discontinued the process, and given up the works.

942. *Mr Garrard.*] Was that Farmer's patent? I am not sure. On the other hand, more recently still, I believe the process of destroying sewage by fire has been successfully in operation at the town of Newcastle under Lyne, under the management of a certain Mr. Jones. Whether or not he has patented the process I cannot say. With reference to Mr. Roberts' process—at the time it came before me it was at that stage in which I have three or four things every week in my laboratory—there was nothing at all to report on. However, when I visited Mr. Webster, I intended to say something to him about Mr. Roberts' discovery, but when I got there and found he was treating 1,000,000 gallons a day, it struck me it would be ridiculous to mention experiments which had been made perhaps on 10 or 20 gallons. In the course of conversation I learnt from Mr. Webster that he had tried electrolysis with lead-plates, which is one of the peculiarities of Mr. Roberts' process. According to Mr. Webster, the lead-plates failed, as no oxide of lead could be obtained as oxide of iron could. On the other hand, a great deal of lead was rendered soluble, and passed into the sewage. Thirdly, the lead was about ten times as dear as the iron. All those remarks seemed to me very just, but on the other hand Mr. Roberts may have found some advantages in the uses of lead-plates, of which I know nothing. Mr. Hamlet told me that some of Mr. Roberts' effluent was contaminated with lead to a poisonous extent, and I am inclined to think on general grounds that the lead-plates cannot compete with iron-plates. As to who has got the patent rights to the process I neither know nor care; it is a matter for the parties to fight out themselves.

WEDNESDAY,

WEDNESDAY, 24 *JULY*, 1889.

Present:—

JOSEPH PALMER ABBOTT, Esq. (CHAIRMAN).

The Hon. ANDREW GARRAN.	HENRY COPELAND, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JAMES EBENEZER TONKIN, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	WILLIAM SPRINGTHORPE DOWEL, Esq.
JACOB GARRARD, Esq.	EDWARD WILLIAM O'SULLIVAN, Esq.

CHARLES ALFRED LEE, Esq.

The Committee further considered the proposed drainage works for the Western Suburbs.

George Henry Stayton, Esq., M.I.C.E., sworn, and further examined:—

G. H. Stayton, Esq. M.I.C.E. 24 July, 1889

943. *Dr. Garran.*] The particular point upon which I wish to ask you some questions is the relative economy of the drainage scheme as designed by you, and the possible amendment of it under the electrolysis system submitted by Professor Threlfall. We understand that that system requires a certain amount of apparatus, which, of course, will cost a certain amount of money; so that in that way the system would be dearer than if the sewage matter were simply deposited on the ground, unless there were an economy effected by having smaller sized pipes and sewers? That system would certainly be dearer, because there are several natural valleys to be taken into consideration and provided for; in other words, the machinery and appliances necessary for treating the sewage in that way would be multiplied.

944. If the electrolysis system were effective, we could treat the sewage of every valley that runs into the Parramatta River by an apparatus at its outlet? You could have it treated at the natural outlets; but the system would not be effective without the aid of pumping? The levels are such that considerable areas would have to be excluded from a system of drainage by gravitation.

945. What areas do you refer to? The low-level areas.

946. Each of the valleys that debouch into the Parramatta River discharges its drainage into the river at least by one creek? Yes.

947. And if you put a purifying apparatus at the mouth of each creek, you could deal with all the sewage of the area which it drained, supposing that the pipes were laid according to the conformation of the country? But at the same time it is perfectly true that the whole area could not be dealt with except by means of pumping. The levels would not admit of it. All these operations would have to be carried on at a considerable height above high-water mark, and considerable areas are too low to allow that to be done by a system of gravitation.

948. You mean to say that we have already alienated the land on the beds of creeks, and that people have already begun to build there? The beds and the adjacent areas.

949. And in order to deal with the sewage by a system of electrolysis, we must have the outlets a certain number of feet above high-water mark? Yes.

950. Then, however effective the system would be, there are a certain number of houses built upon low-lying ground which could not be included? A considerable number.

951. And that considerable number is dealt with under your scheme? They are all provided for.

952. Supposing we could deal with the greater part of the sewage at the mouth of each creek, we should still have all the peninsulars upon the Parramatta River to deal with? That is so.

953. All the shore line? Yes, all the margin.

954. All the water-frontage houses? Yes.

955. You do not think, then, that there would be any economy in having a number of separate systems to deal with the drainage of each bay? I think quite on the contrary, notwithstanding any additional expense that might have to be incurred by making one main sewer, as proposed, to Webb's Grant, that it would unquestionably be cheaper to treat the whole of the sewage at one spot—that is, if the necessity arose for such treatment. I go further, and say that I do not think it is at all likely that such a necessity will arise for some years to come. The area of Webb's Grant, and the natural facilities are so great that they will meet all requirements for not only the present population, but for a considerably increased population.

956. Then, after having considered both systems, you think it is a preferable plan to concentrate the whole of the sewerage at one outlet? I do, and I had stuck to that opinion all through, notwithstanding the last evidence that was given on the subject. I think that it is unquestionably better to treat the whole of the sewage at one spot, instead of dividing the operations as under the other system. There are at any rate four or five valleys on the northern boundaries that would have to be treated. A sewage farm at Webb's grant is already established, and, comparing the additional expense of taking the sewage from the northern watershed to that place, with the extra cost of having five or six installations, I think the Webb's grant system would be the more advantageous.

957. If we have one outlet, as you propose, at the sewage farm at Webb's Grant, and the process of treating the discharge there is perfectly innocuous, there would be no necessity for the adoption of the electrolysis process? I think it is a matter that really need not be taken seriously into consideration at the present time. I think I fully stated my opinions about the matter in answer to question 674, on page 25 of the evidence.

958. But if the electrolysis system is effective, and if the operations at the sewage farm hereafter prove the nuisance, we can still apply the system to disinfect the sewage at the outfall? Yes; and apply it more advantageously than you could at the natural valleys that have been referred to.

959. You think one installation would be better than a great many? I am sure of it.

960. So that, even looking to the future, there is nothing to be gained by a subdivision? I fail to see that there is at the present time.

961. Do you deliver the sewage at a sufficient height at the sewage farm to admit of the process being applied? Yes. I forget for the moment the number of feet above high-water mark; but at some thing like 10 or 12 feet, I believe, and that is ample for the whole operation.

962. When we first began to inquire into the electrolysis system it was because of an impression that Mr. Bennett seemed to have that if it could be applied we might make a saving in the size of the pipes and sewers;—do you think any such saving could be effected? It would necessitate a remodelling of the whole

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whole system. You could not reduce the capacity of the main sewers marked red on the map without very much increasing the inclination; because it naturally follows that if a large and tolerably flat sewer were reduced in size, the velocity would be very much diminished; and therefore, if you had smaller sewers, you could not have nearly so large a gravitation area, and you would have an increased pumping area, which would mean an additional annual cost.

963. You mean that to take in the whole of the area you propose to take in we must have the inclination of the sewers as low as you have put it? I think so.

964. And therefore we cannot afford to have the sewers and pipes of smaller dimensions than those proposed by you? You could not do so to get the accommodation that that system as proposed will provide.

965. Your answers then amount to this: That it is better to have one outlet than several outlets? Certainly. It has been the experience of sanitary engineers in the old country that it is more economical in administration to have only one outlet, and that the operations can be carried on much better by that plan, especially at such a place as Webb's Grant.

966. Looking at your proposal in the light of all that has been stated about the matter since you submitted it, you do not see any way in which to reduce the expenditure and make the scheme equally efficient? I have been unable to find anything, or to suggest any improvement up to the present time. I have looked into the matter time after time.

967. Taking the expense of the scheme as estimated by you, together with the margin which we always feel it necessary to allow to provide for unforeseen circumstances in works of this kind, it seems to me that a rate will have to be charged equal to nearly 1s. in the £—that the suburban residents must be prepared to pay a rate of 1s. in the £. You think there is no way of reducing the cost so as to make that rate less? I do not think that I can admit that the rate is likely to be so large, because a large expenditure has to be incurred now by each householder in connection with the removal of night-soil, which would be done away with if the scheme were carried out.

968. You make a reduction on that account? Yes; it would be a very large reduction. In one of the appendices to my evidence the whole question is treated at great length; and, taking into consideration the large expenditure at present incurred for the removal of night-soil, I think, especially if the period for repayment is extended, that the rate would be very small.

969. There is no rate levied at the present time? No; but a charge is made on each householder.

970. Equivalent to a rate? Equivalent to a rate.

971. *Mr. Garrard.*] I suppose you have read the evidence given by Professor Threlfall on the electrolysis system as he saw it in operation in London? I have read his paper; but I have not been able to digest it thoroughly, as I am leaving for London to-morrow, and during the past week it has been high pressure work with me night and day. I have simply gone through it and made certain notes.

972. Last time you were before us, you mentioned the fact of electrolysis having been tried by Mr. Webster and Mr. Roberts, and anticipated possibly good results from it so far as the purification of sewage was concerned; but you did not commit yourself as to the commercial aspect of the question? No. What I stated with regard to the cost of the system was very approximate indeed, and was only from the information which I then had.

973. Under your system many of the northern portions included in the scheme will have to be pumped in order to allow the sewage to flow into Webb's Grant? The northern parts, such as Balmain and Leichhardt, will drain into the Bondi sewer; the sewage from those localities will not go to Webb's Grant at all.

974. If it were possible to take the whole sewage of a borough like Balmain to one place, and deal with it locally by electrolysis, or by any other system which might be found to be efficient, would it not be a great deal cheaper for the inhabitants than the continual pumping of the sewage to a higher level? But it is not possible to drain Balmain, even locally, without a low-level pumping system. It is absolutely impossible to drain the whole of Balmain and treat it by the electro-chemical process, without resorting to pumping.

975. The sewage must be delivered to the electrodes at a certain height above high-water mark? Yes.

976. A considerable quantity of sewage would still have to be pumped, even if electrolysis were brought into operation? Yes. I think that the system of drainage shown on the map by red lines would be the most effectual for carrying away the sewage at Balmain. If you attempted to design a local scheme the same amount of tunnelling would have to be resorted to, owing to the natural configuration of the district; and if you wished to obviate that by treating the sewage locally in each valley, you would multiply the expense enormously.

977. But if you cut off a large borough like Balmain from the main Bondi sewer, does not that at once do away with the necessity of having the Bondi main as large as would be needed if the sewage had to go through it, and thus reduce the expense? But the Bondi sewer is already constructed to the point where the red line commences, and the syphon in Parramatta-street has been devised to take the whole of the sewage. This was determined upon ten years ago, and the scheme has never been altered.

978. I suppose large expenditure would be incurred in continuing the Bondi main to Leichhardt, where it branches away to Balmain; but with a local treatment of the sewage there would be no necessity for that work? No; but then I take it that Balmain will, without doubt, simply be merged, so far as the expense is concerned, into the whole district. That is, if the part coloured yellow should cost relatively more per head to drain than some of the other parts the residents of Balmain would not be called on to pay an additional rate on that account. The whole thing is treated financially as one work, and as if there were only one municipality. That is so all over the world, wherever there are different boroughs constituting a metropolis, or the suburbs of a metropolis, and I do not see how it could be obviated.

979. When you were examined before, you gave same evidence with reference to a rival scheme proposed by Mr. Cowdery for dealing with the lower levels of Burwood; and, if I remember rightly, you were under the impression that the nuisance created by pouring the sewage into the Parramatta River would be very great, and you therefore would not adopt the scheme? That is scarcely the ground I took. My chief objection was that Mr. Cowdery delivered the sewage at such a low level, at so few feet, or rather inches, above high-water mark, that he could not possibly purify his sewage without creating a nuisance.

980. And if a system of purifying the sewage locally were adopted there, a large area would remain that could not be treated, as in the case of Balmain? That is so.

981.

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981. A very large quantity of the sewage at Burwood would of necessity have to be pumped. Would the sewage from that place run to Bondi or to Webb's Grant? To Webb's Grant.
982. How long do you expect to be absent from the Colony? I think I shall be back in December.
983. Is it likely that your attention will be directed whilst at home to the process of dealing with sewage by electrolysis? Yes. I have instructions from the Secretary for Public Works to inquire into the electrolysis system of purification, and into one or two of the other systems which appear to be most successful.
984. But even supposing that electrolysis is all that its inventors claim for it, you think it would be desirable to have one place in which to deal with the whole of the sewage instead of dealing with it in several localities? I have no hesitation in saying I do.
985. Independently of that, you think you have sufficient ground at Webb's Grant to deal with all the sewage for a long time to come, without requiring any artificial process? Yes.
986. *Mr. Tonkin.*] In the event of electrolysis being the system adopted, would the main sewers be very much smaller than they will have to be under your scheme? As I explained just now it would necessitate the remodelling of the whole scheme. There is a certain amount of sewage and rainfall which has to be carried off, and my object in devising that scheme was to carry off as much of it as possible by gravitation. If you reduce the gravitating area, as I explained in answer to Dr. Garran, it is possible of course to have small pipes laid at a greater inclination.
987. What I want to get at is this—would it make a material difference in the cost. Supposing a sewer could be 4 feet instead of 5 in diameter, would that make a material difference? Oh dear, no; nothing like relatively the difference between 4 and 5 feet.
988. Then, if we determined to treat the sewage by electrolysis, that would not make a great difference in the absolute cost of the scheme, as far as the making of sewers was concerned? I fail to see that it would.
989. The cost of construction would not be so much reduced? What I state in answer to that is only an expression of opinion. To give a definite answer I should have to go into the matter carefully, and make a thorough examination of it. Broadly, I do not think any economy would be effected.
990. Do you not think that the electrolysis process would actually cost more than your system, considering the facilities which you have at Webb's Grant for disposing of the sewage? That is unquestionably the fact. The purification of sewage by filtration as now carried on at Webb's Grant, and as proposed for this scheme, will undoubtedly be cheaper than by an electro-chemical process. I worked the figures out some time since.
991. *Mr. Humphery.*] Mr. Garrard referred to Mr. Cowdery's paper upon the drainage of Burwood, and I think you said that you had given it some consideration;—have you given any further consideration to Mr. Henson's proposed scheme since you were last examined? No special consideration; because I submit that the replies which I have given to the Committee, and those contained in an appendix to the report, are unanswerable.
992. You have no reason to modify the views to which you give effect in that appendix? Not the slightest.
993. With regard to the cost of completing the scheme shown on the plan, I think you expressed an opinion that there should be a uniform rate to cover the interest upon the outlay? The interest and the working expenses—a uniform rate throughout the suburbs.
994. *Mr. O'Sullivan.*] Do you regard this system of electrolysis as being in its experimental stage? I do.
995. I see that there is a great discrepancy between your estimate and that of Professor Threlfall. He estimates that at the most it will not cost more than 15s. or 16s. to treat 1,000,000 gallons; but you say that it will cost £7 13s. 9d;—can you explain that difference? Yes. I would ask the Committee to notice the guarded reply which I made when submitting those figures. I said, "Very little data is given or known as to the cost of treatment; but I have endeavoured to arrive at an idea from the figures supplied by Mr. Webster. The estimated cost can only be considered as very approximate. It will probably be several years before any definite results can be safely established; and it may be, as in nearly all other cases of the application of electricity, that practical experience will greatly cheapen, if not transpose, the present ideas." I think that it is apparent from Professor Threlfall's evidence that the system has already been modified considerably—that it has been improved from time to time. With regard to the cost, my estimate included one or two items which I see Professor Threlfall has not included. For instance, I allowed £1 5s. per 1,000,000 gallons for pressing and dealing with the sludge, while he has made no provision whatever for that. Possibly my labour item is more than his is; but I do not think, from the figures which he has submitted, that he has allowed enough for the cost of machinery. He said 13s. would be the cost of treating 1,000,000 gallons in London, while Mr. Webster appears to have said 14s. Then Professor Threlfall says that, allowing for the higher rates paid for wages and materials, he would put it at £1. I went very fully into the question of treating sewage by means of the filtration effected at Webb's Grant, and, allowing for what the scheme will cost when in full operation, I make it considerably under £1 per 1,000,000 gallons. I must ask the Committee to understand that the estimate of £7 13s. 9d. was submitted at the time as very approximate, and only based upon the figures we then had. Another point to be noticed is this, that Professor Threlfall's estimate of £1 per 1,000,000 gallons is based upon the idea that 20,000,000 gallons a day will be treated. All these matters, as far as I can get the information, will be thoroughly inquired into by me whilst at home; but as far as I can see at the present moment, considering the enormous interests at stake through the want of proper sanitation in the suburbs, I do not think there is likely to be any alteration of the scheme.
996. I find, by reference to a work on sewage, that in London during the last century they have tried no less than sixty systems of dealing with sewage. Have we any guarantee that we have anything like the best system now? They are improving the systems from year to year, and I have no doubt that what is being done now will be further improved during the next five or ten years. At the same time, we must remember that they have not anywhere in England such natural facilities for the purification of sewage that we have at Webb's Grant; at any rate, I know of no place.
997. I suppose the sunshine and the fresh air play very important parts with regard to the purification of our sewage? Yes.

Robert William Hardie, Esq., sworn and examined:—

R. W. Hardie, Esq. 24 July, 1889.

998. *Chairman.*] I understand that you are Mayor of Burwood? I was the year before last.
999. You are an alderman of that borough now? I am.
1000. Have you been connected with the municipality for any length of time? For about six years.
1001. During that time have you given any consideration to the necessity for drainage in the suburbs? Yes; it is one of those questions which is always cropping up, and which can never be properly dealt with.
1002. I suppose you are satisfied, like most people there, that there is a necessity for the adoption of some system of drainage without very much delay? I think that is generally admitted.
1003. Have you given any consideration to the scheme proposed by Mr. Stayton, and shown on the plan? Yes. I may say that a number of meetings were held by the Burwood Council to deal with Mr. Cowdery's system first, and subsequently with the more comprehensive scheme proposed by Mr. Stayton; and, after many nights consideration of both, they unanimously decided to recommend Mr. Stayton's scheme.
1004. Then, as a municipality, you may safely say that they intend to adopt the proposal before the Committee? Yes. I may say that the Municipal Council consists of nine members, eight of whom voted for the scheme, whilst the remaining member did not record his vote at all.
1005. Has the matter been discussed by the public at all? Yes; we have had several public meetings. In the year when I was Mayor we had a crowded meeting in the local Town Hall to consider the matter. Medical men and others were present, and I think the general consensus of opinion was in favour of Mr. Stayton's scheme. Practically, the chief reason of that is, that we are very desirous to keep the Parramatta River pure.
1006. I suppose you have given some consideration to the question of cost, as it is a matter that affects the boroughs? That of course is the ticklish question. We have been agitating for years for three things. First of all, the water; second, the City Railway; and third, a sewage scheme. We have the water; but when we were about to get it, the ratepayers in the Western Suburbs certainly grumbled at the prospect of having a large rate to pay; though I do not think that they would now give up the water for the sake of the rate.
1007. Under the law, as it stands, you know that the municipalities are liable to pay back to the central Government the cost of a system of sewerage within a certain number of years—twenty-eight years;—do you think that is too short a time, or is it too long? That question has been gone into, and we think that the time should be extended to the greatest possible limit. I believe that in England it is extended to fifty or sixty years. Our principal argument is that we are a young community, and that we are doing a large work by which posterity will benefit more than we shall ourselves.
1008. *Mr. Copeland.*] I suppose in Burwood, and in the boroughs there with which you are acquainted, the majority of the people could be connected with a system of drainage? I think so. There is a small portion of Burwood that does not come within the gravitation area—a low-lying part that is undoubtedly unhealthy; but the greater part of the borough comes within it, as I think the whole of Strathfield does.
1009. Has the Council at any of its meetings committed itself to the payment of rates if this system is carried out? No; the only meetings that we have had have been to give, for what it is worth, the adherence of the Council to the comprehensive scheme of taking the sewage to Webb's Grant at Botany in preference to sending it into the Parramatta River or dealing with it locally.
1010. You have never had the question submitted to the ratepayers as to whether they would bind themselves to repay the cost of carrying out this work? I think it is a work that ninety-nine out of one hundred of the ratepayers would be glad to see carried out.
1011. They are doubtless all anxious to see it carried out; but would they agree to repay the cost? I do not think they have objected.
1012. Has the question been discussed by the Council? It has been thoroughly discussed by the Council at meetings extending over a period of some months. It has also been dealt with at public meetings when prominent persons in the municipality have argued about the matter from different standpoints; and the outcome is, I think, speaking for Burwood and Strathfield, that they heartily agree to the scheme for taking the sewage to Webb's Grant, and they are anxious not to have the purity of the Parramatta River endangered. Parramatta itself at the present time is suffering from the pollution of the river. Some years ago there was a suggestion to put the abbatoirs on the Homebush estate; but there was a strong protest against it, and the scheme was abandoned, though I do not say that it was abandoned simply because of that protest.
1013. I suppose they have considered the question as to the rate which it would be necessary to charge? I do not think they have; but it is a question of rate against human life. There are many hundreds of persons dying every year in these suburbs who ought not to die, and the question is whether this is to continue.
1014. You know that the estimated cost of the scheme is £830,000? Yes.
1015. Four per cent. on that would come to £33,200, and a heavier rate than that would have to be levied so as to repay the principal along with the interest. I think it is a question for the municipalities themselves to consider, through their aldermen, what rate they are prepared to pay? The question of rate has been considered as an important one, and a deputation waited upon the late Secretary for Works, Mr. Sutherland, requesting an extension of the period in which it was necessary to repay the money, from twenty-eight years to the longest term possible.
1016. *Chairman.*] It was pointed out to that deputation that if the period were extended in that way, a rate of 8d. in the £ would do instead of 10d? I do not think the suburban residents would object to pay a rate of 8d. in the £, if it were necessary, in order to have a proper system of sewerage; because, naturally, every year, as population increased, the rate would decrease.
1017. *Mr. Copeland.*] That is your opinion as an alderman of the municipality of Burwood? Yes; and as one who has taken a great deal of interest in the question during the last six years.
1018. Do you know that similar views are entertained by the majority of the aldermen? Not only by the majority of the aldermen; but I believe that the whole of the Councils of the Western Suburbs have intimated their unanimous approval of the project.
1019. *Mr. O'Sullivan.*] You say that the period for repaying this money is too short—it is now twenty-eight years;—what do you think would be a fair extension? I think the longer the time the better it would be. I think it should be at least sixty years.

1020. *Mr. Humphery.*] In what way do you dispose of the night-soil of the borough at the present time? The night-soil is taken away in carts. We have just inaugurated a new system—the interchangeable pan system—which is a great improvement upon the old one. The full pans are covered with a lid, surrounded by an india-rubber band, and are removed without creating a nuisance.
1021. And an empty pan is substituted? An empty pan, cleaned with steam, is substituted.
1022. Where is the night-soil deposited? I cannot tell you, but outside the borough.
1023. What does this cost each heuseholder? 5d. or 6d. for each pan—5d. I think.
1024. Do you know how frequently they are emptied? They are bound to have them emptied once a week; but I am perfectly certain, for healths sake, the pans should be emptied more frequently.
1025. Is it not a fact that very few householders are visited more frequently than once a week? Very likely.
1026. So that there is the accumulation of a week's night-soil at each house? Not at each house; but at a great many.
1027. Are there many low-rented houses in Burwood? Not so many as in more thickly populated suburbs.
1028. Are there many paying a lower rent than £1 per week? A great many.
1029. A lower rent than 15s. a week? Yes; and some are paying only 10s. a week; but the majority of the houses, I think, are more than £60 a-year.
1030. In many cases the payment of 6d. a week would actually amount to a rate of more than 8d. or 1s. in the £? Very likely.
1031. £26 a year at 6d. would be 13s., so that the cost of removing the night-soil to a great many of the householders is, at the present time, greater than the rate of 8d. in the £? Yes; and the system is very imperfect in regard to the smaller houses.
1032. It is your opinion that in every way, both with regard to the cost and for sanitary reasons, it would be advantageous if the proposed system of drainage were carried out? Undoubtedly.
1033. *Dr. Garran.*] I gather from your recent replies that you have not worked out minutely what the present rate really is? The rate I think is 5d. I am not on the Committee now; but I believe it is 5d.
1034. Do you think you could get from the authorities a statement showing the actual cost of removing the sewage at the present time? Undoubtedly.
1035. Will you supply the Committee with that information? Certainly. [*Vide Appendix I.*]
1036. We desire to compare the present cost with the cost of the more efficient system. In Mr. Stayton's report the greatest cost of the whole scheme is put down at £1,817,896. Have you had any experience of the cost of public works? No; I have not.
1037. You do not know whether they are generally carried out in accordance with the engineer's estimate or not? I believe that sometimes they are under that estimate; but that generally they exceed it.
1038. Do you know whether the cost of carrying out the Sydney water supply works was under the estimate? It exceeded the estimate.
1039. Was the cost of the Bondi sewer under the estimate? It exceeded it.
1040. Do you think it possible that this work will exceed the estimate? That I cannot say; I cannot express an opinion.
1041. As an alderman you think it would be wise to allow a margin? I think so.
1042. And if we can get the work for £2,000,000 we may consider ourselves pretty fortunate? I think so.
1043. Do you think there is a general feeling in favour of paying a rate to defray the cost and the interest? There is a feeling in favour of getting a sewerage system; and if that work were carried out, the ratepayers would be willing to pay the rate.
1044. Then it is only an opinion of your own that they are willing to pay a rate? I am perfectly certain that they would be willing to pay a rate if they had a sewerage system there.
1045. Has the Corporation given any assent officially to the adoption of this scheme, or will they simply allow the Government to carry it out as they think fit? I imagine it will be done exactly the same as the water.
1046. The Government carry out the work, and take steps to enforce payment of the rate? Exactly.
1047. And you do nothing to express concurrence with their action? Only by meetings of the ratepayers.
1048. What do you do officially? We have officially, by resolution, informed the Minister of our concurrence with the scheme proposed by Mr. Stayton.
1049. Supposing it cost 50 per cent. more than it is estimated to cost, would you still consider yourself bound to pay the rate? I suppose that whatever the rate was it would have to be paid.
1050. Do you think you would have any good ground for resisting? We should have no ground.
1051. If you bound yourself to the scheme you must submit to an extension of the cost? I think so.
1052. Do you think that is the general feeling? Yes; but the cost will not be 50 per cent. more than is estimated.
1053. Do you think the opinion of the ratepayers is that they are in honor bound to pay the rates? More than that, they consider that they are legally bound.
1054. You think that they could have no objection to paying the rate? I think so.
1055. It is estimated that the rate will be 10½d. for a short term, and 6½d. for a long term, whilst the longer the term the greater will be the charge for repairs? Yes.
1056. If you do not pay off the cost in less than sixty years you will towards the end of that time have a larger amount to pay for repairs? Yes.
1057. You think that will be fairly met by the larger income from an increased population? Undoubtedly. If I remember rightly, the population is 250 to each mile of sewage, whereas in London it is as high as 2,000, and in Paris, 4,000, so that in the course of fifteen or twenty years we may expect the population to quadruple itself, since in ten years it has increased 170 per cent.
1058. So far as you can express the public opinion in your district, it is strongly in favour of the scheme being carried out, notwithstanding the expense? Yes.
1059. You would rather pay 8d. or 1s. in the £ than allow the present state of things to continue? Yes.
1060. I suppose there is much that is offensive in the present way of dealing with the sewage? Yes. The nuisance is reduced to a minimum, but it is not a very civilized way of treating it.
1061. You can distinctly trace illness and death to result from it? Yes.
1062. That is the opinion of all the medical men in the district? I think so. Might I be allowed to say, with reference to Mr. Cowdery's scheme, that if such a scheme were carried out in Burwood and the neighbouring suburbs, during the summer time, the prevailing north-easters which blow over the suburbs might create a nuisance and be dangerous to health.

John Hinchcliff, Esq., sworn, and examined:—

J. Hinchcliff, Esq. 24 July, 1889.

1063. *Chairman.*] What are you? A merchant.
1064. Residing at Homebush? Yes.
1065. That is the borough known as Strathfield, is it not? Yes.
1066. Are you connected with the Municipal Council? Yes; I am an alderman.
1067. The municipality has only recently been created? It has been in existence three or four years.
1068. I suppose you know all the Western Suburbs very well? Yes; very well, I have a large property at Newtown.
1069. Have you given careful consideration to the scheme for the drainage of the Western Suburbs, known as Stayton's scheme? No; I have not had much opportunity of doing so. I only got notice to attend last Monday. I had a glance at the plan this morning.
1070. Has the scheme been considered by your municipality at all? Not during my time; but they are more or less in favour of it.
1071. Public feeling generally is in favour of it?, There is no doubt about it, as far as I can see.
1072. What is your opinion, as one of the community? I think it is a very good scheme indeed.
1073. As a sewerage scheme, do you think it will serve the requirements of the Western Suburbs? I think so; I do not think the sewage should go into the Parramatta River. I quite agree with what Mr. Hardy said with reference to the north-easterly winds.
1074. You heard what Mr. Hardy said about the people in the borough being quite willing to bear the cost of the construction of the work? I have no doubt about it. We are a very small municipality, and we are better situated than Burwood is.

THURSDAY, 25 JULY, 1889.

Present:—

JOSEPH PALMER ABBOTT, Esq. (Chairman).

The Hon. Andrew Garran.	Henry Copeland, Esq.
The Hon. Frederick Thomas Humphery.	James Ebenezer Tonkin, Esq.
The Hon. William Joseph Trickett.	William Springthorpe Dowel, Esq.
Jacob Garrard, Esq.	Edward William O'Sullivan, Esq.

Charles Alfred Lee, Esq.

The Committee further considered the proposed Drainage Works for the Western Suburbs.

Henry David Bray, Esq., Mayor of Concord, sworn, and examined:—

H. D. Bray, Esq. 25 July, 1889.

1075. *Chairman.*] You are Mayor of Concord? Yes.
1076. How long have you held that position? Since February last.
1077. Have you been an alderman or a resident of the municipality for any length of time? I have been a resident all my life, and an alderman for the three previous years.
1078. Have you given any consideration to the sewerage scheme proposed by Mr. Stayton, and indicated on the map before the Committee? I cannot say that I have. We received a diagram in the Council Chambers some months since, but very little attention was paid to it, seeing that we at present are not troubled to any extent by our drainage. The suburb is thinly populated, and the idea has not occurred to us to provide for the drainage in any way.
1079. But if the sewerage is provided you will have to pay for it, and probably you will not be asked to assent to it. Do you not think it is a matter worthy of your consideration? That is the question. I thought it was almost implied that we should contribute, but the matter has not been brought before our Council.
1080. Your Council has expressed no opinion one way or another since you have been an alderman, with reference to it? No.
1081. At present where is the sewage or drainage of your municipality discharged? On the western side into Powell's Creek.
1082. Does that creek flow into the Parramatta River? Yes. On the eastern side the drainage runs into Hen and Chicken Bay, on the Parramatta River, bounded by the municipality of Five Dock.
1083. What method do you adopt at present for getting rid of the night-soil of your municipality? We have adopted the earth system.
1084. Pans? Yes.
1085. Do you know what that costs each householder per week, or per annum? Sixpence per week.
1086. Each householder? Yes.
1087. Is that 6d. a pan or 6d. for each house? I think it is 6d. a pan.
1088. How many householders are there in the municipality? I can scarcely answer that question.
1089. You have not given the matter any consideration, then? No, we have not entertained it,
1090. Have you formed any opinion about the matter yourself—have you looked into it? I have never seen it described on paper. [*Mr. Garrard here described the scheme as set forth on the map before the Committee.*]
1091. What do you think of it now, having had it explained to you? I think it would be desirable, if we are bound to connect, as you state we are. I think it would be the best way of getting rid of the sewage.
1092. *Mr. Trickett.*] Concord is a municipal district, not a borough? Yes.
1093. You have explained how you dispose of your night-soil; what becomes of your house-slops, and surface sewage of that character;—how does the municipality deal with that? There is no provision made for it at present; but we have not felt any inconvenience from it in any way. I suppose it is absorbed by the ground. The buildings are very far apart there.
1094. Are there any terraces of houses? No.
1095. Any shops? There are three at Mortlake, and three on the Parramatta River.
1096. Not in successive rows? No.

H. D. Bray, Esq.
25 July, 1889.

1097. Have you any means of dealing with your surface drainage, or do you let the people do just as they like? We have no means of dealing with it; but in going through the district, I have not remarked anything approaching a nuisance.
1098. You have no kerbing and guttering as a general thing? Not as a general thing. One or two of the localities have a little kerbing, but nothing of any consequence.
1099. Is the borough a progressive one;—do you think the population is likely to increase? It is rather slow; but no doubt the population will increase. It is a matter of time, I imagine.
1100. What is your way into Sydney by train; do you not come through the borough of Burwood? Yes.
1101. In approaching Burwood from Concord, I suppose you see some of the ill effects of surface drainage in the streets? No, I have not, between the railway station and the Parramatta Road; but I have on the other side of the railway.
1102. You know that there slops, and so forth, run along the streets, in fact, just gravitate to their natural level? Yes.
1103. Do you think that a desirable state of things? No; I do not. I think it is very undesirable; but I suppose they have no other means of disposing of their drainage.
1104. With regard to a locality of that kind, do you think it would be an advantage or otherwise to have a sewerage system by which such a state of things could be got rid of, and the drainage taken to a distant part where it could be treated without being a nuisance? Yes.
1105. *Mr. Garrard.*] What do you do with your night-soil now? It is deposited somewhere towards the back of Enfield.
1106. The night-soil is not buried anywhere within the borders of your district? No; nor within the district of Burwood.
1107. Does the Council or a contractor take it away? It is contracted for.
1108. So far as your knowledge goes, it has to go through two or three other municipalities before it reaches the place of deposit? I think two.
1109. Have you experienced any inconvenience because of other municipalities stopping the conveyance of night-soil within their borders? We have not had any complaints.
1110. Are you aware, as a municipal representative, whether objections have been lodged and proceedings taken by some boroughs, to prevent the conveyance of the refuse of other boroughs within their borders? I am not aware.
1111. You have never had any complaint from the municipalities of Burwood or Strathfield about your night-soil being taken through their territory? No.
1112. *Mr. O'Sullivan.*] In view of the probable increase of population at Concord, do you think the present means of disposing of the surface drainage and night-soil satisfactory, and do you think they are likely to be so for some time to come? They are, and they will be for the next ten years.
1113. Supposing the borough of Enfield objected to your depositing night-soil in it? Then I suppose we should have to go further afield. The contractor lives somewhere on the Liverpool Road, and I suppose he would have to take it further.
1114. Then you would have to adopt some other means? Yes.
1115. *Mr. Tonkin.*] Do you not think that if this sewerage scheme were carried out it would be beneficial to your municipality, supposing it gave you a proper means of getting rid of your sewage? Possibly it would; but, as I remarked before, our population is so slight that the drainage causes no nuisance; and for that reason our people might object to the taxation.
1116. That is your objection to the scheme—that there may be a little extra taxation? Yes.
1117. But the scheme itself would be beneficial to your district if it were carried out? Possibly. I should not like to say that it would be. I think it would be of very little use at the present time.
1118. What is the average weekly or yearly rental of the houses in your municipality? I think you might average them (say) at £60 per annum.
1119. Do you know whether houses rented at that amount would only have one or two pans to be emptied at 6d. per week? That I am not prepared to say; but I am under the impression that one pan is the rule. There may be exceptions.
1120. What do you think the average number of pans per house would be? One.
1121. It would have to be more than one, because every house must have one, while some may have two or three? From that point of view it would be more than one; but I may state that in many cases the pit system is adopted, and consequently that brings down the average. The average may be a shade over one.
1122. If it were shown to you clearly that there would be no extra taxation at all for this sewerage scheme, do you not think that you would then prefer it to the system which at present exists in your municipality? I do not see that we require it. If we required it we only should be too happy to fall in with the scheme as suggested; but at the present time we do not appear to be in want of it.
1123. Do you then think that a system of cess-pits is preferable to a proper sewerage system, whereby you get rid of the whole of the refuse and drainage? I should, of course, prefer the water-closet system myself; but when I speak of cess-pits, it is in connection with properties as large as 8, 10, 20, and 50, and more acres in extent, and on such areas of land as those, cess-pits cannot be objectionable.
1124. *Mr. Humphery.*] I think you said that the average rental in your municipality is about £60 per annum? About £60 per annum.
1125. Is it not a fact that subdivisions have been made, and that a number of small houses have been built there within the last few years? There has only been one subdivision, that is of the Powell Estate; but not one-tenth, or one-twentieth part of that has been built upon.
1126. You said, I think, that one pan a week was about the extent of the use made of the earth system? Yes.
1127. With a family of six, would not the pans become very offensive at the end of the week? I am not prepared to say. I have never used them myself; so I have no personal experience.
1128. Does it not occur to you that that would be so? I should say so; but the pans may be emptied more than once a week.
1129. For sanitary reasons, do you not think it would be very advantageous to be connected with the proposed

H. D. Bray, Esq. 25 July, 1889.

proposed sewerage scheme so as to provide for the natural increase of population in your locality? I should say most decidedly; "abandon the earth system and adopt the water system," and, if that were done, a system of drainage would be of very great service.

1130. Would you offer any objection to the proposed system of sewerage if it could be shown that the uniform rate which it is proposed to charge would not be greater than the amount which the people are in the habit at present of paying for the removal of their night-soil? It is not a matter of cost at all with us, so far as I am able to learn the feeling of the aldermen and the people of the district; it is simply that we could not utilize such a system; the people are too scattered. From where the termination of the sewer is shown upon the map, to the boundary of the municipality is 2½ miles.

1131. At present your contractor, I suppose, undertakes to remove night-soil at a fixed rate? Yes.

1132. And you do not inquire where he deposits it? We know tolerably well where it is deposited—off the Punch Bowl Road.

1133. If the adjoining municipalities objected to the night-soil of your municipality passing beyond your boundaries, how would you then dispose of it? We should have to make some other provision then, I suppose.

1134. In view of such a difficulty as that arising, do you not think that it would be advantageous that you should be placed upon the same footing as other municipalities, and would there then be any objection to all being charged a uniform rate, thinly populated districts having to pay no more than those which were densely populated? As far as my own personal opinion goes I should prefer a system of sewerage before the present system immensely.

1135. On the whole, after giving it consideration, you think you would? That is so.

1136. *Dr. Garran.*] Do you know how much the corporation receives as income from these pans? No.

1137. You cannot tell whether your present charge amounts to a rate of 2d. or 3d.? No, I cannot.

1138. Could the council clerk work it out? He could of course give you the information.

1139. *Mr. Copeland.*] Where do you get your water supply from? The water is laid on for about a mile, and there is a stand-pipe that is possibly of service to half a dozen persons—not more. The water used is principally tank water.

1140. Off the roofs? Yes.

1141. And I suppose you also get water from wells? I do not think there are many wells in the municipality; tanks principally are used.

1142. Do you think that tank water is sufficiently pure for drinking and domestic purposes generally? Yes. We have used it for the last thirty years, I suppose.

1143. Are there many sparrows and pigeons in the district? No, very few. I do not think we are likely to suffer in that way to any extent.

1144. Do you know what the death-rate of your borough is? I think it compares very favourably with that of any other borough in the Colony.

1145. Have you had any cases of typhoid there? I think I have only heard of one case of typhoid during the last six years.

1146. What do you reckon is the population of the borough? I am not prepared to say.

1147. Have you had any cases of diarrhœa or dysentery there? Not that I heard of; on the whole it is a very healthy place.

1148. Do you say that there are a very few people in the municipality who are supplied with water from wells? I do not know of any. I know of one or two wells in the district; but the persons who own them have provided themselves with tanks.

1149. I suppose the night-slops, as a matter of fact, are simply thrown out on to the surface of the ground? Yes.

1150. Thrown out into the back yards? Yes; there is not much nuisance created by it. I have been through the district frequently, and have never detected anything.

1151. I suppose the houses are sufficiently far apart to allow each household to consume its own smells? At any rate there is nothing evident in the way of a nuisance.

1152. Do you think that the people of your borough would be willing to pay such a thing as 10d. in the £ rate, for the benefit of having this system of sewerage extended to them? I scarcely think they would, because they could not apply it. The majority of the people in the district could not apply it.

1153. The question has not been discussed in your council? No.

1153½. Therefore you are not in a position to say either what are the views of your fellow councillors, or of the ratepayers generally upon the subject? No.

Henry Chrichard Fraser, Esq., Alderman of Strathfield, sworn, and examined:—

H. C. Fraser, Esq. 25 July, 1889.

1154. *Chairman.*] You are an alderman of the borough of Strathfield? Yes.

1155. Have you resided there for any length of time? For the last nine years.

1156. Has your council taken into consideration this proposed scheme for dealing with the sewerage of the western suburbs? Yes. We have gone as carefully as we could into the matter, and we believe that the scheme will benefit the borough; inasmuch as the highest point in it is in the borough. There is a very nasty drain, especially after a heavy rain, flowing from Burwood to Strathfield. The nuisance is so great that after a heavy fall of rain the road is completely covered, and I have had to walk round a block to get to the Railway Station.

1157. What are your present means of disposing of your night-soil? We use the pan system.

1158. Can you give us any idea as to what that costs each householder upon the assessed value of his property? If I had the figures with me I could give them to you.

1159. Could you give us a guess, an approximation? We charge 2s. 6d. a pan per month, and certain arrangements are made with the contractors. For instance those who have a larger number of pans than others have get the work done at a lower rate. Of course the more pans the man with whom we have contracted has to empty the better it pays him. There is no doubt that the earth-pan system is far preferable to cess-pits or dome-pits. I was mayor of St. Kilda at one time. In Victoria the municipalities have greater powers than those in this Colony have, because our Act is about twenty years old. At St. Kilda

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Kilda the council determined to close up all the cess-pits and all the dome-pits within the municipality, dome-pits are very expensive. There is a dome at the top of them, which is so arranged that the vitiated air goes up through it. We had a great deal of trouble there in getting rid of these pits, because the people preferred them to the pan system; but before I left Melbourne there was not a cess-pit or dome-pit within the municipality. Prahran has done the same thing. Of course some persons had an arrangement of a double set of pans, and the pans used one week were not used the next, so that they became perfectly dry.

1160. I suppose you look upon the proposed scheme as even superior to that? There is no doubt about it.

1161. And you think your borough would be content to pay an additional rate for the benefit which they would receive from this system of sewerage? I think so. We have not sounded our ratepayers.

1162. *Dr. Garran.*] Could you get your council clerk to send us a statement of what the present system would cost the ratepayers in the form of a rate. How much would the amount which they have to pay now be, if charged as a rate? You mean what rate would be struck?

1163. Yes. You do not levy a rate, at present you levy a charge? For the pan system?

1164. Yes? We appoint a contractor to carry out the work. He signs an agreement and has to carry into effect certain resolutions passed by the council. Of course, he can make any arrangements he likes privately with the ratepayers so as to suit their own convenience. Some will only have a pan emptied once in two months, while others use two, three, and four pans. A larger number of the ratepayers who own a good quantity of land bury the night-soil in their own gardens, and that I think is a good plan where there is a large piece of ground. It is the system which I adopt.

1165. *Chairman.*] And so consume it in the shape of vegetables? Yes.

1166. *Dr. Garran.*] I understand that the ratepayers pay the contractor, not the council? Yes.

1167. Then you have no means of knowing what they pay? No.

1168. Could you make an approximate estimate of what the gross amount would be as a rate, supposing they had to pay as a rate the amount contracted for with the contractor? You want the payments in the shape of a rate.

1169. Yes? I will let you have it.

1170. *Mr. Trickett.*] You say that the pan system is chiefly used now? Yes.

1171. That does not dispose of your slops and waste water? No.

1172. What becomes of that? Unfortunately some of it is allowed to run into the street, though we are trying to stop that. We have, however, very little power under the Act, which was the most miserable Act that was ever passed by any legislature in the world. We say to these people, "You shall not do this," and they ask us to quote the clause of the Act which prevents them; but we cannot, and therefore cannot enforce our resolutions.

1173. And thus the refuse water finds its way into the street? Not all; some of it. We have a very good plan for disposing of the water from washing tubs. A Scotch drain is made, but with larger stones than usual, and if a house has an acre of land adjoining it there is never any offensive smell.

1174. But that is only applicable when there is a considerable area of land attached to each house? Yes. Several of the ratepayers have adopted the plan, and no disagreeable odour has been experienced.

1175. But, when the place becomes more built upon, that system would be impracticable? Yes; it can only be carried out where you have a large area of land. I have 3 acres of land. All along the Boulevard the houses have large areas of land attached to them, and they could easily carry out that plan.

1176. Is the city water laid on in the municipality? Yes; the water from the Nepean, and I am thankful, to say that it is.

1177. Do you find that any nuisance arises from the surface water forming pools? No; except in some places where the water-tables had not been formed. We are only a municipal district, not a borough yet.

1178. Any surface water that escapes runs into the street, and you pass it on to the next street, or borough, as the case may be? Yes.

1179. Do you not think it would be desirable to alter that by having a system of sewerage? Most certainly; and, as a council, we are in favour of the scheme—that is as laymen. We know nothing about the engineering part of the work.

Josiah Mullens, Esq., sworn, and examined:—

J. Mullens Esq. 25 July, 1889.

1180. *Chairman.*] You reside at Burwood? Yes.

1181. You have lived there for some time? For many years.

1182. I suppose you knew the locality almost before it was populated at all? Yes.

1183. Have you taken into consideration this question of sewerage for the western suburbs? I have taken considerable interest in the question, but only as an amateur. I have read Mr. Stayton's report.

1184. You have followed out his scheme as shown on the plan? Yes.

1185. It is of course as a layman that we ask you to give evidence. Do you think the scheme would satisfy the requirements of the residents of the locality in which you reside, as well as of those of the other western suburbs? I do. I think such a scheme is urgently required.

1186. You have nothing better to suggest? No. The reserves in the neighbourhood of Burwood upon the other side of the Parramatta Road are too small to allow of the treatment of sewage that is likely to come from Burwood and Ashfield, and the population is increasing so rapidly that it would not be safe to do anything but to take it right away.

1187. Having regard to the present system of dealing with sewage and night-soil, and the possible doctors' accounts which it occasions, do you think a rate of 1s. in the £ upon the assessed value of property would be a saving to the residents of Burwood;—do you not think the benefits conferred by the system would be so great that it would pay the inhabitants to pay such a rate? I think they would cheerfully pay more than that if necessary

1188. Mr. *Copeland.*] Has the question been considered by the council? Yes, although I am not a member of the council.

1189. You are only speaking as a resident? Yes. I have spoken at public meetings on the subject and have advocated the scheme.

1190. Do you know what the death-rate is? I could not tell you. I have made a memorandum of one or two facts that have come under my own notice which I think may be useful to the Committee. During the first six months of last year four cases of illness, at almost the same spot, came under my notice, resulting from

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from the open drain that passes the Burwood Station on its way to Five Dock. In one case a young lady died of malignant typhoid fever; in another case a young man of 20 died of diphtheria; my own daughter-in-law had an attack of typhoid; and a young man in the neighbourhood was attacked by typhoid and recovered. The houses in which these people were living were all good houses, and their illnesses no doubt were caused by the smell from the frightful open drain through which all the refuse of Burwood flows down to the bay at Five Dock.

1191. What generally becomes of the night-slops there; are they merely thrown upon the ground? The council is trying to initiate a system of earth closets, and to make it compulsory. Most people use earth closets at the present time.

1192. Do they empty the slops into the earth closets? No; the drainage runs into the creeks and makes the smell.

1193. Or into the back yards? Yes. In my own case the drainage is all absorbed by the garden; but then I have 13 acres of ground. There are, however, many houses that have only a small area of land attached to them, and in those cases the slops are turned into the streets.

1194. In the case of smaller houses the slops are very often thrown into the back yards, and allowed to fester in the sun, in the summer time? Yes, and the smells are very bad at night sometimes.

1195. You think that the people as a whole would gladly pay a contribution towards defraying the cost of the scheme? I have no doubt of it.

1196. Has the question been discussed at any public meeting? Yes.

1197. And has met with general approval? We have had enthusiastic meetings in Burwood on the subject.

1198. *Dr. Garran.*] Has there ever been anything like an opposition to the payment of a sewerage rate in your district? Not that I know of.

1199. At present you are contributing to foul the Parramatta River? Yes.

1200. And if you became a nuisance to people lower down you would be open to a law action? I do not know anything about that.

1201. So far as you know the opinion of your neighbours, they cheerfully acquiesce in this system? Yes.

1202. They would be thankful to see it carried out? Yes.

1203. *Mr. Lee.*] Is there any system of sewerage in the borough? None at all.

1204. Is the pan system in existence there? Yes.

1205. Is the population about Burwood increasing rapidly? Very rapidly.

1206. And there is plenty of room for a further increase? Yes; there is plenty of vacant ground.

1207. The borough in the near future is likely to be densely populated? As densely as Ashfield is.

1208. The people have taken this scheme into consideration? Yes.

1209. And I presume they have had all the data before them? All they could get.

1210. They have probably a fair idea of the extra rate they will have to pay in order to meet the interest? I have not heard that gone into; but I do not think it is a matter of any consequence as compared with the public health.

1211. Do I understand that a system of sewerage is absolutely necessary to the borough? I think so.

1212. And, in your opinion, a general scheme would be better for Burwood and the neighbouring boroughs than separate systems? We are advised that a separate system would be much more expensive; in fact we are told that a small system would be expensive and inefficient. Such a scheme was once propounded by a mayor of Burwood; but was rejected by the community as insufficient.

1213. If it is a matter of grave consideration now, it will be still more so in the course of a few years? Yes.

1214. Inasmuch as the population is annually increasing? Yes.

1215. And the residents have fairly considered this, and therefore agitate for the scheme? I think so.

1216. They are almost unanimously of opinion that it would be desirable to have the scheme carried out? Yes.

1217. *Mr. O'Sullivan.*] At the public meetings to which you referred, was there any opposition to the project? None at all.

1218. *Mr. Trickett.*] Where were these meetings held? At the School of Arts.

1219. In the centre of the borough? Yes; and advertisements and placards were stuck up all over the place. We had full and enthusiastic meetings.

1220. You have experienced the greatest nuisance in the neighbourhood of the Railway Station where it is thickly populated? Yes.

1221. Is there not a very extensive open drain upon the western side of the railway line? It has recently been covered, and I think the nuisance has been modified, and the drain confined in a narrow channel; but an officer of the borough could tell you more about that than I can.

1222. But even with that improvement, the drainage is simply being passed on to the lower lands beyond without any system? Yes. Might I suggest that I hope the scheme will extend over fifty years, instead of twenty. I thought that probably I was called to give evidence on that particular point.

1223. *Chairman.*] The Committee have already represented to the Government that they think the period should be extended; but I dare say they would be glad to hear the views of one who is so good an authority on the subject. At present the whole debt is to be wiped off in twenty-eight years. In England the term is generally about sixty years, and in one case eighty years. This is what Mr. Stayton said upon the subject; "It shows that the works already completed, in addition to the proposed works, which are divided into three sections, would result in an ultimate outlay of £1,817,896. The next statement shows the annual ratable value of the boroughs and districts comprising the Western Suburbs. This has a very important bearing on the question. It shows that the ratable value, which in 1884 was £1,116,000, is now £1,700,000; and that on the completion of the first three sections, according to the present rate of increase, it would be at least £2,200,000; in which case a penny rate would produce £8,900 net. At the final completion of the entire scheme in (say) from fifteen to twenty years time, when the population will be double, or nearly treble, what it was in 1887, the ratable value may be fairly estimated at £3,300,000, in which case a penny rate would produce £13,400 net. Then a statement follows as to the rate of interest, and it shows that money may now be borrowed at 3½ per cent., instead of 4 per cent., and it also shows what amount of rate would be charged. Although the total sum looks enormous on paper, yet owing to the increase in the ratable value, the actual rate to be charged to the ratepayers throughout the whole district in 1894, after the first three sections of the work, involving an outlay of £1,445,000, have been completed,

would

would only be 10½d. in the £ under the existing Act and 8d. in the £ under the proposed amending Act. The Minister for Works informed a conference yesterday that the Government had practically decided to extend the term for repayment from twenty-eight years to sixty years, so that instead of a 10½d. rate an 8d. rate would be sufficient to pay for the whole. Then when the entire scheme is carried out, in from fifteen to twenty years time, the rate under the existing Act would be 9¼d., whereas under the proposed amending Act, it would be only 7d. If the interest were taken at 3½ per cent, which seems now to be the current rate for loans, the 8d. rate would be reduced to 7¼d., and the 7d. rate to 6½d. That would provide interest repayment, and working expenses, upon an outlay of £1,817,000." "That would be the gross expenditure to make the whole system complete? Yes."

1224. What have you got to say about the sinking fund? I was only going to suggest that a sinking fund of 2 per cent. be provided to continue until the whole is paid for.

1225. That is provided for now? It is obvious that 2 per cent. in fifty years will pay off the money. I do not propose the sinking fund to be cumulative; but that the Colonial Treasurer should buy debentures each year with the proceeds of the sinking fund and absolutely extinguish them.

1226. *Mr. Humphery.*] A 7d. rate provides for a sinking fund so that at the end of sixty years the entire loan will be wiped out? That is a most beneficial provision. I think fifty years would be a fair term.

1227. *Dr. Garran.*] You do not mean to buy any particular debentures; but any debentures? Yes. They should be bought in London, or elsewhere, and cancelled by him as a diminution of the debt every year.

1228. I should like to ask you another question. Mr. Stayton estimates that he can borrow money at 3½ per cent. With your financial experience can you say that with all the charges such as interest, the transmission of money for repayment, &c., it could be borrowed at that rate? I have not gone into the question so minutely as that; but practically when a loan is made, extending over thirty or forty years, you leave posterity to pay that.

1229. Posterity means the suburban residents in this case? Yes; but you might borrow the money at 2½ per cent. before the loan became due.

1230. And if we borrow the money for fifty years, 2 per cent. would enable us to repay it? Yes. You could buy something else, though you would have to buy at a very dear rate of course, and I should say that the sinking fund should be applied at the market price of the day to purchase debentures until every bit of the debt was extinguished.

1231. Do you take 3½ per cent. as the fair percentage, and assume that we really could borrow at 3½? Yes.

1232. Because there are a large number of charges to be considered? They are not always disclosed; but I think some of the recent loans have shown a profit of a few shillings.

1233. Does that include the remission of interest to England? That is an annual charge; you cannot go into that. If you borrow money from the other side of the world, the charge of repaying it half-yearly has nothing to do with the cost of the loan.

1234. The Government has to send the money to England? It generally borrows money in England, and pays the loan with that money.

1235. As long as we are borrowing money in England, we have not to send any home; but when we are not borrowing we have to send it home. The Colonial Treasurer stated the other day that he had sent home £500,000, and I remember that that has been done on other occasions. That is paid out of the annual revenue, which would therefore be paying a charge created by the suburbs, and which should be paid by them? Yes.

1236. Have you any idea whether these charges have been met in this way? I do not think they have. We have very few scientific accountants called in to help the Government.

1237. As far as I know the money has been remitted—it has been put down to the annual cost, and no one has asked what loan has caused it? Yes.

1238. Suppose we stop borrowing for thirty years, the cost of remission to England would be charged to the annual revenue, and the suburbs would never pay for it? I should charge it to them every year.

1239. Then you would inaugurate a new system? I should.

1240. As far as you know that has never been done yet? No.

1241. We have treated the debt in the lump? Yes.

1242. And have never asked who were the contributors? Yes.

1243. Then you think that if we have to pay this money upon the debt incurred in carrying out the water supply works, it should be charged to those works? Against the rate.

1244. We should send in the bill to the Commissioners for Water and Sewerage? Yes, each half-year.

1245. You still think 3½ is a fair basis to calculate upon? Yes.

1246. *Mr. Humphery.*] And, on the other hand, you think the principal cost should be charged against the rate? It should be charged against the rate until every charge was paid. The scheme should be self supporting; it would be easy enough to make it so.

1247. At the present time the rate of exchange is ⅞ths? Yes.

1248. So that money in England would be worth ⅞ths more than in Sydney? Yes.

1249. So that should be included in the cost? Yes; that should be charged against the rates.

1250. *Mr. Copeland.*] Do you think we are justified in undertaking responsibilities for our unborn grandchildren? I think we are justified in taking measures to protect the lives of our grandchildren.

1251. But supposing that during the next thirty or forty years an improved system is discovered, and these works are found to be virtually useless, do you think that the people then will be inclined to thank their grandfathers for having saddled them with this expense? They will have to take the world as they find it. The English people are paying now for the powder and shot fired off at the beginning of the century. They have to pay.

1252. You think we are justified in placing this responsibility upon the shoulders of people still unborn? I think we have to act with regard to existing circumstances, and not with regard to what may be. We are now attacking a positive evil, and I think it is the duty of every sensible man to attack an evil when he finds it.

1253. But would it not be as well to pay the bill in this generation, say within twenty-eight years? It is a very heavy bill, and we are conferring a benefit possibly upon many generations, just as a similar system in England has conferred benefit upon generation after generation.

1254. You are strongly of opinion that the term should be extended over sixty years? Sixty years is a fair compromise.

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1255. It would be perpetrating no injustice on the people to come? Well; I shall not be here then, so I cannot say.
1256. Supposing they were to rebel? That would not trouble me.
1257. *Dr. Garran.*] I understand that you prefer to have a sinking fund of 2 per cent. instead of extending the period to sixty years? That is for the Committee to decide, 2 per cent. would pay the debt off in fifty years. If you made the sinking fund $1\frac{1}{2}$ per cent. that would lighten the annual burden.
1258. Would you prefer doing that to keeping up the fixed sum? You relieve the annual burden by the interest paid off each year, so that in fifty years by my system you would have to pay interest on £6,000 instead of on £300,000.
1259. Then you would have a diminishing payment? There would be a diminished charge for interest, on my system, every year.
1260. *Mr. Humphery.*] You would be quite confirmed in your view if you were informed that the works are likely to cost £1,000,000? Yes.
1261. *Mr. Trickett.*] Supposing the Government determined to effect a loan for the purpose of carrying out works of this kind, would it not be an advantage if they made it a separate loan? Yes; and a distinct account should be kept from the beginning.
1262. That is the course that has been adopted in the case of London, Liverpool, and other places? I think so.
1263. Are you acquainted with the value of stock of that character in England. Is the London Metropolitan Board of works stock, and the Liverpool stock good? It is sure to be. It is a quasi-Government stock, and of the highest character.
1264. Do you think it would be clearly of an advantage to borrow for a specific purpose in a work of this kind, instead of taking the cost out of the general loan fund? I think so, and to keep a separate account from the very beginning in the Treasury.

Charles Edward Pilcher, Esq., Q.C., called in, sworn, and examined :—

C. E. Pilcher, Esq., Q.C. 25 July, 1889.

1265. *Chairman.*] Where do you reside? In the borough of Burwood, on the borders of Strathfield.
1266. Have you been living there for any length of time? There, and in the neighbourhood, for 15 years.
1267. Of course you have seen a great deal of the growth of population in the railway suburbs during that time? An enormous growth.
1268. Can you say whether these suburbs are suffering at the present time for want of a sewerage system? Most undoubtedly, to a very large extent.
1269. I suppose the inconvenience increases as the population does, and that every year it becomes proportionately greater? Decidedly.
1270. Have you given any consideration to Mr. Stayton's scheme? I had it explained to me once, I think in this room, by Mr. Lackey, by means of diagrams, and so far as I could form an opinion, as an outsider, it seemed to me to be exactly the thing we want.
1271. There has been a good deal of discussion in the suburbs up the line in reference to the disposal of sewage, has there not? I believe so.
1272. Have you heard any objection against this proposal? None whatever, except quite recently, by certain gentlemen, who do not object to the scheme, but who thought that the particular portion of the western suburbs in which they resided did not want such a scheme.
1273. They want to escape the taxation? That I do not know.
1274. Otherwise the scheme is generally approved of? Undoubtedly.
1275. *Mr. Copeland.*] As a ratepayer, you think that the Government would be quite justified in incurring this large expenditure, and in imposing the necessary rates upon the people to repay it? I have not a shadow of doubt about it, because in my opinion a sewerage system is an absolute necessity to health, and is a necessary means of preserving and continuing life.
1276. I suppose you are aware that the first cost of the scheme is set down at £830,000, and that that will probably be considerably exceeded. Do you think, notwithstanding that, that Parliament would be justified in incurring the expenditure? My own idea is that whatever the expenditure, Parliament will be fully justified in incurring it, and that the annual expense would be willingly borne by the people who derived the advantage of it. Of course, I do not mean to say that people would be pleased if money were thrown away, or lavishly expended; but I believe that if the money were spent in securing an efficient system of sewerage the people would willingly pay for a justifiable outlay.
1277. Would they pay a rate of 7d. or 8d. in the £? That is not for me to say. I could not commit other people to that opinion.
1278. That is your opinion from what you have heard? I should think so, but that, of course, would depend a great deal upon the number of years over which the expenditure extended. The annual outlay would increase or decrease according to the number of years over which the expenditure was extended.
1279. That is your opinion with reference to this matter? It is a matter of which I have had no experience, and my opinion would be so crude as to be valueless at best.
1280. At any rate, you believe that if a sewerage system like that proposed were carried out it would decrease the mortality and improve the health of the people in the suburbs? I am sure of it. The supply of water to the suburbs has caused a marked improvement, and the council have done away with all cesspits within the district; that has effected a very marked improvement. Recently they have begun to remove the night-soil on a system which is very pernicious—it is what they call the interchangeable pan system, and it is extremely dangerous, because, although it gets rid of the offensive matter very completely, a pan may be in a house where there is typhoid one day, and next day brought to your own house, and so the typhoid germs are spread throughout the district. The corporation are alive to this, but their difficulty is great in guarding against it. I may mention that several medical men hold the views which I now express.*
1281. In the meantime how are the night-slops got rid of? Kitchen slops?
1282. Yes? They are being absorbed day by day and week by week, and that is sowing the seed of untold disease in the future. 1283.

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* NOTE (*on revision*): And, I may add, I know, from gentlemen residing in Melbourne, that the spread of typhoid there has, in cases, undoubtedly been traced to the change of pans.

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1283. I suppose very few people are dependent on wells for their water supply? I do not think anyone is.
1284. Even for bathing purposes? I do not think so. Nearly all the people out there still have their underground and above ground tanks; but they are useless, because the water supply is very good and very liberal.
1285. I suppose your opinion is that they would be quite as willing to contribute towards the expense of providing drainage as they are now to pay for a supply of clean water? I have not a shadow of doubt about it.
1286. *Mr. Dowel.*] Can you say what is the population of Burwood? I cannot give you that exactly. It goes into thousands, but I cannot give it to you exactly.
1287. You have no idea of the number of ratepayers? I could not give you that.
1288. Have you known many cases of typhoid? Yes; I remember an epidemic of typhoid about two and a half years ago; but I believe that was attributable to the milk supply. There were twenty odd cases at once, and there is no doubt that there were many others which I did not hear of. Out of that number I know for certain that eight very valuable young lives were sacrificed—some vigorous young men, tradesmen of twenty-four or twenty-five years of age, and as fine young fellows as you could wish to see.
1289. Are you aware that public meetings have been held in Burwood in reference to this matter? Yes.
1290. What has been the result of those meetings? My impression is that public opinion as evidenced by those meetings is in favour of the system.
1291. It has been publicly expressed by resolution? I think so.
1292. *Mr. Humphery.*] You have a very large property at Burwood? A good sized one.
1293. At the present time you suffer no inconvenience from the night-soil and slops from your own dwelling? I do and I do not. My kitchen slops run out into the paddock, and they grow grass, at least, the water helps to grow very rank grass; but at the same time, in hot summer weather, you can perceive a smell, and that is objectionable.
1294. How many acres have you? 33 or 34 acres; I am not quite sure of the exact area.
1295. If a rate were struck for the purpose of paying the cost of constructing these works, you would be subject to a very heavy annual charge? No doubt; but so I am now for other purposes.
1296. Notwithstanding that, it is your opinion that the advantages to be derived from this sewerage system will be equal to the increased cost? I am perfectly satisfied of that, and for this reason alone. The average temperature in the suburb in which I live is considerably lower than the average temperature in Sydney, and it is therefore much more healthy, and the only thing you want is to get rid of this necessary evil from your kitchen. When you multiply that it pollutes the atmosphere. If I wanted to sell my property, and people knew that they could get their sewage and night-soil taken away, they would be ready to pay more for the land, so in that way I should get back the amount I paid in rates in another form.
1297. You are of opinion that the owners of land would derive advantages from a system of sewerage which would make it quite worth their while to pay the additional rate? I have not the shadow of a doubt of it.
1298. Therefore it is your opinion that these works should be carried out? Yes; that is my opinion.
1299. *Dr. Garran.*] Supposing a considerable minority were opposed to the construction of these works; do you think the Government would be justified in proceeding with them? I do. Supposing that there were now in the city such spots as existed many years ago, where the worst class of criminals and wretched low people concentrated, I assume that some people would object to an interference with those places; but I think it will be admitted that a small majority would have a right to sweep them away.
1300. You think that even if the reformers were in a minority the Government would be justified in carrying out the work? Yes; but I think the reformers would be a very large majority. Of course you only ask me what in my opinion is right or wrong.
1301. You do not think it is necessary for the Government to get the formal consent of the people of these suburbs to the carrying out of this work if in their opinion it is a wise one? I do not think so.
1302. You do not think there is any necessity to take a public vote? I do not think so.
1303. *Mr. Trickett.*] You are aware, I suppose, that all the sewage is to be taken to Webb's Grant? So I believe.
1304. Have you heard any other system spoken of in the locality, which the people favour in any way? No. The only other system mentioned at all is the electric system. Of course that is only a new idea, and an experiment, and may or may not be effectual. What strikes me is this, that all we can do is to deal with these matters according to what science knows at present. We cannot keep a bad tooth in our heads now because twenty years hence dentists may have a very much better way of dealing with it.
1305. I was not speaking of the treatment; but of the destination? I never heard any other destination spoken of.

Michael Stephen Foley, Esq., Mayor of Five Dock, sworn, and examined.

M. S. Foley, Esq. 25 July, 1889.

1306. *Chairman.*] You are Mayor of Five Dock? Yes.
1307. How long have you occupied that position? During the present year.
1308. Have you been an alderman for any length of time? For the last three or four years.
1309. Have you given any consideration to the proposed scheme for dealing with the sewage of the western suburbs? Personally I have not. It has been discussed in our council, and a majority of the aldermen have come to the conclusion that it would be little or no use, because where the sewer terminates, which is at the highest point, there is little or no population. The great bulk of the population is on the water-frontage, and the council as a whole felt very much disappointed that there was not more provision made in the scheme for Five Dock. I think there has been a good deal of correspondence relating to it. I believe the scheme would be acceptable to the larger portion of the inhabitants if it were general; but if it terminates where it is shown to do on the map, it will be of little or no use.
1310. You complain that the scheme will not benefit Five Dock in proportion to the population—that, as proposed, it will not be of much benefit to the bulk of the population? No; because they could not connect with it unless there was some lifting apparatus, it would be too high.
1311. *Mr. Trickett.*] What is your system of drainage at the present time? Pans.

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1312. I mean drainage such as house-slops? There is none whatever, and this causes a great nuisance. It is a big trouble to the council now.
1313. Does the drainage find its way into the streets and public thoroughfares? Yes.
1314. And accumulates there, and festers on the surface, and becomes a nuisance generally? Yes.
1315. Has the council had under its consideration any mode of dealing with the nuisance of house-slops and surface drains? No. They have not had any other sewerage scheme submitted to them. I think that they have stated that the proposed scheme would not materially benefit them.
1316. Have you had many complaints from the ratepayers of the nuisances which arise? We have had a great many.
1317. Do you not attempt to treat it in any way? We can effect very little improvement. We have by-laws framed so as to prevent these nuisances as much as possible, and where possible, we do prevent it. In the larger portion of Five Dock the areas of the land attached to the houses are very large, in some cases amounting to 60 and 90 acres; that is where the proposed system will terminate. The northern portion of the borough, however, is more thickly populated.
1318. Do you not kerb and gutter there? Yes.
1319. Where does the drainage go? Into the street.
1320. And into the river? Yes; the river runs right round.
1321. *Chairman.*] Does the borough go right down to the Parramatta River? Yes; the portion I allude to is between the two bridges.
1322. *Mr. Garrard.*] The municipality comprises the whole area bounded by Hen and Chicken Bay, the Parramatta River, and Long Cove? Yes.
1323. *Mr. Trickett.*] What is the character of the country between that part of Five Dock coloured lavender, and the water frontage? It is high, undulating country.
1324. Is the part which the sewerage system will touch higher or lower than that? It is higher.
1325. No part of it is very hilly? It is not hilly.
1326. Would there be any difficulty in dealing with the other parts of the municipality so as to connect it with the small portion at some future time? I think that difficulty was explained when it was considered in the Council, that it would be impossible to connect the more northern end of the municipality with it.
1327. Your chief objection to the scheme is that it would benefit so small a portion of the municipality, and that it would not find favour with the aldermen? Yes.
1328. Have the people expressed any opinion; have any meetings been convened? Nothing further than that the matter has been brought before the council. They decided that it would not be a very great benefit.
1329. *Mr Garrard*] How do you dispose of your night-soil? By a contractor.
1330. Where is it buried—within your own borders? No; I think it goes through Balmain.
1331. Has there been any objection raised by any of the boroughs through which your contractors pass? Yes; objections have been made. In fact it is a difficulty which we shall very shortly have to face.
1332. Can you tell us where the contractor bears it, or where he disposes of it? I think it is shipped at Balmain, where the Balmain people ship theirs.
1333. You are not burying it anywhere? I think not.
1334. Did you not at one time use some land at Enfield for the purpose of burying it? It must be a very long time ago.
1335. Is the pan system in operation at Five Dock? Yes.
1336. What do you charge the ratepayers each? About 6d. for each pan.
1337. For one attendance a week? Once only.
1338. Do you know the number of houses that have adopted the pan system? I could not tell the exact number. I think £80 or £100 a-year is about the cost of the removal of night-soil.
1339. I suppose where the thick red line terminates is about where your Council Chambers are? They are somewhere about there.
1340. The ground there begins to fall toward the Parramatta River? Yes; on each side.
1341. Are you aware that it is intended to deal with your municipality on what is called the low-level system? I am not aware of it.
1342. You do not know that it is the intention of the framers of the scheme to embrace that portion of the municipality? This is the only scheme that came under my notice.
1343. So far as the scheme extends it would be a benefit—it would benefit that part of the municipality tapped by it? Yes.
1344. Do you think the people there would be prepared to pay an equitable tax? For the reason that they have so much land about their premises there, I do not think that they would be very partial to it.
1345. Is there any by-law in your municipality to prevent people from burying night-soil on their estates? Yes; there is; but when a man has an estate of sixty acres it is very difficult to prevent him from doing it.
1346. The authorities wink at it? They cannot help it.
1347. If you had a system of sewerage which would get rid of the house-slops, it would be a very great benefit? The system would be a benefit if it served the whole of the municipality; but it would not be a great benefit if it only served the parts shown on the plan.
1348. It would be a benefit to the portion of the municipality which it went through? Yes.
1349. But it would be a greater benefit if it went through the whole district? Yes.
1350. The principal portion of the district is near Birkenhead? Drummoyne; yes.
1351. And drains into the river? That is the natural fall of the water. The drainage is as imperfect there as in other places.
1352. *Mr. O'Sullivan.*] Are the waters round Five Dock polluted by the drainage of Burwood and Strathfield? No; though they are at Iron Cove. I do not think the main Parramatta River has been materially affected yet.
1353. Then you cannot say that the drainage in the eastern municipalities is a nuisance to the people at Five Dock? So far it has not been so to any extent.
1354. Can you suggest any way in which the scheme could be made better than it is at present? No; I do not say that I can, unless it could be put at a lower level, as far as regards Five Dock.
1355. Do you think it would be advisable for you, as mayor, to call a meeting to test the feeling of the people of Five Dock? I should have very little doubt about their decision, if we were to submit that plan and

and ask if they would be taxed to pay for that length of sewerage, they would say, almost to a man, "No," if they were to get no further benefit. M. S. Foley, Esq.

1356. *Mr. Dowel.*] Can you say what is the population of Five Dock? I cannot say exactly—it is somewhere about 3,000 people. 25 July, 1889.

1357. Are you aware of the number of ratepayers? I think the number on the roll is about 900.

1358. Is the population increasing? Oh, yes.

1359. You say that you have given some attention to this scheme. As far as you are personally concerned, do you approve of it? I should approve of it if it took in all the drainage from the river. Eventually we may expect the municipalities to be built upon very thickly, and the water of the river must of necessity be defiled if the sewage is allowed to run into it. Unless the scheme could be made to drain the whole of the districts along the Parramatta River, I do not think it would do any good by only draining a very small portion of the area.

1360. You know of your own knowledge, that many very offensive smells exist in certain portions of your municipality? Yes.

1361. Do you not think that there would be a very considerable improvement in the health of the community if the smells were removed? Undoubtedly, if some scheme were submitted which would remove them; but, as I pointed out, this scheme would not have that effect, because the sewer would not go within 3 or 4 miles of the end of the municipality.

1362. I think you were given to understand recently that it was determined to connect with this system of sewerage a pumping system, of which you would receive the benefit? A pumping system was suggested; but I cannot say that the municipal council fell in with the idea. They looked upon it, firstly, as too e pensive; and secondly, that it might be many years before it was carried out.

1363. You are aware that the present system is an expensive one? Yes.

1364. Do you think a rate of 10d. or 1s. in the £ would not be very considerably cheaper than the present system? It would not be cheaper at the present time; but it must be in the near future—within the next ten years.

1365. Have you known of many cases of typhoid fever or sickness in the district? No, we are very free from that. I have not known more than one or two cases during the last four years.

1366. *Mr. Tonkin.*] Have you any idea what depth from the surface the sewer will be at its termination at Five Dock? If my memory serve me right, when the plan was submitted there were some further instructions; but I remember that it was decided at the time that the greater portion of the municipality could not be drained by this sewer.

1367. That you know from the figures? Yes, that was our conclusion.

1368. You see the junction of that sewer with the sewer at Burwood;—have you any idea whether the land is lower there than it is at Five Dock? From my knowledge of the country, I fancy it is.

1369. You are quite satisfied that the sewer would not serve any portion of Five Dock beyond that coloured on the map? I am quite satisfied that it would be of no benefit to the surroundings. The land on the water frontages is much lower than the land where the sewer terminates.

1370. But if this plan of sewerage were carried out and extended over the whole of the municipality you would have no hesitation in saying that it would be a great benefit to the residents? I think so undoubtedly.

1371. And you think that the ratepayers then would welcome it gladly, and be prepared to pay a proper and a fair rate? I believe they would.

1372. *Mr. Humphery.*] Are you aware that the intention is to specially provide for the drainage at Five Dock together with that of the other low-lying districts? I cannot say that I am aware of it. I heard it explained to some degree that it was the intention after the scheme had been constructed to have something of the kind if it were found necessary.

1373. If such a scheme wers submitted to the Five Dock Municipal Council for their consideration you think it would meet with their approval? I fancy it would not. They think that nothing would satisfy them except a gravitation scheme.

1374. The only objection to the scheme is that it does not take in the whole municipality? Yes.

1375. *Dr. Garran.*] There is a main ridge going through Five Dock which is high land? Yes.

1376. Could not the main sewerage be extended along that? It could be extended along the ridge; but the difficulty would be to get the shores to drain up to the ridge.

1377. But Mr. Stayton has provided a plan which he calls the "Shone" system, by which the sewage would be collected and pumped up into the pipe on the ridge? I understand that it is proposed to do so, but I myself could not fall in with the idea of a pumping system.

1378. If you do not have a pumping system you must drain the sewage into the bay, and filter it before it enters the water? Either that or a lower level.

1379. That might be more expensive than pumping it up? Yes, it might be.

1380. If the pipe were to branch into two directions it would catch a good deal from the houses in low land? Yes.

1381. What I mean is that we could carry the gravitating system out further than the line shown on the plan? I think so.

1382. And take in a good many of the houses on the ridges? It would not take one-fifth.

1383. The remainder would have to be dealt with either by a pumping system or by some system of filtration at the outlet? I think so.

1384. Has your corporation considered which would be the better system? I cannot say that they have. They are of opinion that some system of gravitation would be much the better.

1385. But supposing it is impossible to put all the sewage into the pipe by gravitation and you must have some other system—you have to choose between two. At present I suppose you are fouling the river? To a certain extent.

1386. Supposing the Government came down and said, "You shall not foul the river," you would then have to choose some other system? I suppose they look upon it as the natural flow of the water.

1387. *Chairman.*] But not of foul water. If somebody obtained an injunction from the Supreme Court to prevent you from allowing this sewage to drain into the river, what would you do? We should have to adopt some means to have it removed, as with the night-soil.

M. S. Foley, Esq. 25 July, 1889.

1388. *Dr. Garran.*] Have you any idea of what that costs in the gross, at present? I think about £100 a year.
1389. That is the whole sum the contractors receive? About that.
1390. Not more than that? Not more than that.

Joseph H. Wright, Esq., Mayor of Burwood, sworn, and examined:—

J. H. Wright, Esq. 25 July, 1889.

1391. Where do you reside? At Burwood.
1392. You are the Mayor of Burwood? Yes.
1393. How long have you been in that position? Six months.
1394. Have you been an alderman for any length of time? I was an alderman for three years before that.
1395. How long have you resided in the locality? About ten years.
1396. Have you given any consideration to this proposed system of sewerage for the western suburbs? Yes; in fact the whole council went down to Mr. Stayton's office to have it explained. We also considered a scheme drawn up by Mr. Cowdery specially for the municipality of Burwood, but we decided in favour of the scheme under the consideration of the Committee. We understood, however, since, that you have got something superior.
1397. There was some question as to disinfecting the sewage by electricity, but it has not been shown that a system of sewers could be done away with. It is only a question of purifying the sewage before you discharge it. Have many meetings been held in your borough to deal with this subject? No special meetings; only council meetings.
1398-9. Can you say that the scheme is generally approved of in the borough? Yes; so far as it went the borough was satisfied with it at the time; but we understood that there was some alteration and improvement.
1400. You think this scheme would be effective, that the whole borough would be drained by it? Yes, so far as we can judge.
1401. *Mr. Copeland.*] You heard the evidence given by Mr. Mullens, did you not? Yes.
1402. I suppose you endorse his evidence? Yes.
1403. You believe the people generally would be quite willing to pay a reasonable rate to defray the cost of constructing these works? Yes; we are suffering now from the want of drainage.
1404. In health? Yes; and the present drains cause a great deal of inconvenience.
1405. There is a large quantity of very valuable property in Burwood, is there not? Yes.
1406. I suppose you have no idea of what the total value of the property is? I cannot say just from memory. There is no doubt that we want a system of sewerage there.
1407. The borough council will approve of this expenditure? Yes; we did approve of it once, when it was first started.
1408. *Mr. Trickett.*] As Mayor of the borough, have you heard any objection to the scheme? I have not.
1409. Or any better suggestion? No better suggestion.
1410. You think that it would be a great advantage to have the work carried out? Yes. We are certainly in need of a scheme of some sort.

Robert Dougan, Esq., Mayor of Ashfield, called in, sworn, and examined:—

R. Dougan Esq. 25 July, 1889.

1411. *Chairman.*] Where do you reside? At Ashfield.
1412. You are Mayor of Ashfield I understand? Yes.
1413. How long have you held that position? During the present year.
1414. You have been an alderman for some time? For about four or five years.
1415. How long have you resided in the Borough? Going on for thirty years—twenty-nine years.
1416. Do you know whether this sewerage scheme has been under the consideration of your council? Yes, it has.
1417. What is the opinion of the council in reference to it;—is it acceptable or otherwise? It was ultimately acceptable to them. Some few of our aldermen thought that they should give it further consideration; but I, for one, have always strongly urged that the matter be carried forward as much as possible. Some of our aldermen thought the scheme required further consideration; but I told them that there were very few at the table fit to criticise the report, as the survey had been made, and the engineering done by experts.
1418. The area of Ashfield is rather large? About 1,800 acres.
1419. It is not so densely populated as the adjacent boroughs? It is pretty thickly populated.
1420. I see by a return here that in Ashfield the number of persons to the acre is 4·48, while in Newtown it is 36·03. You think the proposed scheme would meet the requirements of the whole of the borough so far as you are capable of forming an opinion? I do.
1421. You have not heard any strong objections urged against it? I may say I have heard none at all.
1422. *Dr. Garran.*] Do you think your ratepayers would kick at a 6d. rate? I think that would be cheaper than the present system.
1423. Do you think they would stand a 9d. rate? They would like it as cheap as possible.
1424. You do not think there would be any serious grumbling, even if a shilling rate were charged, provided that the scheme were successful? I think there would only be grumbling from those who did not require it. In some parts of the borough, where the population is thick, there is a great difficulty in getting rid of the drainage
1425. Supposing a 6d. rate were charged, you do not think that would be unfair—it would be better than the present state of things? Yes.
1426. *Mr. Humphery.*] The residents who have large properties, and who may not require a system of sewerage, would derive a great advantage from the improved sanitary condition of the borough, if the scheme were carried out? Certainly they would.
1427. And they could afford to pay for it? Undoubtedly.
1428 *Mr. Tonkin.*] Did you say that some of the aldermen want to reconsider this plan? When the report was first submitted, one or two of the aldermen were anxious that the matter should be forwarded back to the Minister, urging the speedy commencement of the work, because they saw the urgent necessity for it.

R. Dougan, Esq.
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1429. Would all the aldermen be satisfied if the work were carried on now, as it is proposed? They have unanimously decided in favour of it.
1430. *Mr. Dowel.*] What is the system at present in use? The pan system.
1431. To deal with sewage? We have no system whatever. We have a by-law compelling people to use up all sewage matter in their own yards, but if a yard is not more than 20 or 30 feet square we find it a cruelty to enforce the by-law, and so it is not enforced, and the sewage runs into the street.
1432. You consider the present system very objectionable? Certainly.
1433. And you think the proposed scheme would be a considerable advantage? I do.
1434. Have you any idea what would be the cost of the pan system? I cannot say exactly; but it is about £1,000 annually.
1435. *Chairman.*] You could let us have a return? Yes.
1436. *Mr. Dowel.*] The proposed system of sewage, with a rate of 6d. or 1s., in the £, would be much cheaper in the interests of the ratepayers than the present method of getting rid of the night-soil? I believe it would.
1437. I presume that you are of opinion that the public health should be considered before everything else, and that that is one reason why you are in favour of the scheme? Yes.
1438. *Mr. Lee.*] You have seen the proposed plan? I see it now for the first time.
1439. Do you think the system will sufficiently serve the borough of Ashfield, or will it not need to be extended? If it were extended somewhat it would be a great advantage.
1440. Your present system is to be looked upon as a bad one? Yes.
1441. And in a rapidly increasing community like that, things must go from bad to worse? The nuisance is getting worse every day.
1442. And consequently must be highly dangerous to human life? Yes.
1443. Under these circumstances it becomes not an actual question of cost, but almost compulsory, that they should have some proper system of sewerage? Yes.
1444. Bad as the present system is you can see that in the future things will be very much worse, and that a proper system of sewerage will become compulsory? That is my opinion.
1445. Are those opinions held in the densely populated suburbs? Yes, and aldermen are urged to try and hasten matters on.
1446. No public meeting has been called to enable the people to express their feelings on the subject? No public meetings. The people of Ashfield generally leave such things in the hands of their municipal representatives.
1447. *Mr. Garrard.*] Is there a by-law in force in your municipality which prohibits the ratepayers from burying their own night-soil? Yes, we have such by-law.
1448. Have you many cess-pits in your borough? None.
1449. All use the pan system? Yes.
1450. How often is the service? Weekly.
1451. Where do you deposit your night-soil? At Punch Bowl.
1452. You pass through Canterbury then? We pass through Canterbury and the new borough of Enfield.
1453. You have heard no objections raised by these municipalities to your night-soil passing through them? Not yet.
1454. You anticipate some? We have not heard.
1455. Has your borough objected to any other municipality carrying its night-soil through it? No.
1456. Ashfield, I think, drains both into Cook's River and into the Parramatta River? Principally into the Parramatta River, at Long Cove and Iron Cove Creeks.
1457. All your house-slops go down by gutters, and eventually find their way into these coves? Yes.
1458. Is it a fact that a great nuisance arises from this? Yes.
1459. Is it a fact that there have been frequent complaints from the adjoining borough of Leichhardt? They have no reason to complain, because they are in the same condition.
1460. That is not the question. Have there been frequent complaints? I have heard of complaints, and have been surprised. What we require in the meantime is a kerbing and guttering Act.

John Wheeler, Esq., M.P., Mayor of Petersham, sworn, and examined:—

J. Wheeler, Esq., M.P.
25 July, 1889.

1461. *Chairman.*] You are Mayor of Petersham? Yes.
1462. And also a member of the Legislative Assembly, as one of the representatives of Canterbury? Yes.
1463. How long have you been Mayor of Petersham? Three and a half years.
1464. Previously to that were you an alderman? I had been an alderman for about six years.
1465. Have you lived long in that municipality? Between twenty-three and twenty-four years.
1466. Then you know all the western suburbs very well;—have you given any consideration to this proposed scheme of Mr. Stayton's? As a council we have considered it two or three times.
1467. What determination did you come to about it? To allow the Government to proceed with the work.
1468. You approved of the scheme? Yes.
1469. You think it would meet the requirements of your municipality? Yes; because we are placed in a peculiar position. Naturally we are receiving no drainage from anybody else; all our drainage runs away from us and passes through Leichhardt into Long Cove Creek, Johnston's Creek, White's Creek, and a creek at the foot of what is known as Taverner's Hill.
1470. *Mr. Garrard.*] How about the drainage on the other side? The quantity of drainage that goes to Marrickville is very small.
1471. They kick up a row about it, though? Not with us. We can deal with the drainage that runs from Petersham into Marrickville. There is only an area of ten or thirteen acres that drains into Marrickville.
1472. *Chairman.*] Do you know as a resident of one of the western suburbs that the scheme is generally accepted there? Yes.
1473. You had many opportunities of hearing it discussed? Yes. Petersham has an area of 880 acres and about 10,000 inhabitants.

J. Wheeler, Esq., M.P. 25 July, 1889.

1474. *Mr. Dowel.*] Is the population increasing in Petersham? Yes, and will increase more when the large areas such as the South Annandale Estate are subdivided. If that and other estates are subdivided the population will increase by 3,000 or 4,000.
1475. Has any other scheme of drainage been considered by your council? None whatever other than our own subsidiary scheme. We have a sufficient number of sewers of our own to drain into the creeks and to connect with the general scheme.
1476. *Mr. Lee.*] You noticed by the map that the sewer will run in three directions through your borough? Yes.
1477. That will serve it tolerably well? Yes; with the exception of one low lying spot, which is known as the Park Area. Although Petersham is densely populated the tenements are not small.
1478. Are the inhabitants generally satisfied with this proposal? Yes.
1479. As being so much superior to the system in use at present? With our present system the drainage runs away from us.
1480. You have the pan system I presume? Yes.
1481. The contents of the pans have been removed and deposited in some other locality? Yes.
1482. Would the inhabitants consider this scheme as one of the most suitable that could be designed? Yes; they are thoroughly in accord with it.
1483. You think it would carry off the sewage matter both solid and fluid? Yes.
1484. And reduce the death-rate? The death-rate is not a large one.
1485. Has any objection been raised to the scheme? None whatever.
1486. Is it generally approved of? Yes, it is.
1487. The scheme is pretty well understood? Yes.
1488. It is pretty generally understood that it means taxation? It does undoubtedly, and the people are willing to pay for it.
1489. But, notwithstanding that it will cause taxation, they are anxious to have that work constructed? Decidedly.
1490. *Mr. Garrard.*] Do you allow cess-pits in your borough? There are very few.
1491. How do you get rid of the night-soil at present? By contractors.
1492. How much do the ratepayers pay a week? 5d. a pan.
1493. For one attendance? For one attendance, or more if required.
1494. Where do the contractors take the soil? To Belmore, the other side of Canterbury.
1495. Then they have to pass through several municipalities? Only through one—Canterbury.
1496. Has any objection been made to their passing through that borough? They have objected to the contractors passing through once or twice.
1497. Did they summon them? No—they did not persist in it.
1498. You spoke just now of a system of drainage you had in operation, that is of the ordinary surface channels, is it not? Some of the drains are underground.
1499. *Mr. Trickett.*] Do you think that your ratepayers will object to pay a tax of 10d. in the pound upon the assessed yearly value of their properties? They are prepared to pay more if you give them a proper system of sewerage.

WEDNESDAY, 31 *JULY*, 1889.

Present:—

The Hon. ANDREW GARRAN (TEMPORARY CHAIRMAN.)

The Hon. FREDERICK THOMAS HUMPHERY.	JAMES EBENEZER TONKIN, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	EDWARD WILLIAM O'SULLIVAN, Esq.
HENRY COPELAND, Esq.	CHARLES ALFRED LEE, Esq.

The Committee further considered the proposed Drainage Works for the Western Suburbs.

Joseph Jolly, Esq., Mayor of Newtown, sworn, and examined:—

J. Jolly, Esq. 31 July, 1889.

1500. *Temporary Chairman.*] Are you officially connected with any of the western suburbs? I am the mayor of Newtown.
1501. How long have you been mayor? About six months.
1502. How long previously have you been alderman? About four years.
1503. You are thoroughly familiar with the want of drainage in that locality? Yes.
1504. It has occupied your attention? Yes.
1505. Has the matter come officially before your council? Yes.
1506. What system are you now adopting? We have the dry-earth system, and we have the old system—the pit system.
1507. You have not found it necessary as yet to abolish the pits? No; because we have found that system the best, and we thought a system of sewerage would be shortly introduced.
1508. Is it a little expensive for the householders to shift from the pit to the pan system? Yes. In the first place they would have to fill up the pits, and then make preparations for the pan system, and that would cause expense.
1509. It is the general opinion with sanitary engineers that the pit system is bad, because it fouls the soil;—is that your view? Yes.
1510. Your observations as mayor have satisfied you that the pit system ought not to be extended? That the pit system ought not to be extended.
1511. Have you any power under the present law to prevent the extension of the pit system? We have no power. We are trying to get the public to adopt the pan system, but we have no power to compel them to do so.
1512. Do you think it would be an improvement in a new Municipalities Act if you had that power? I believe it would.

1513. What is the amount of expense involved in changing from the pit to the pan system? You have, in the first place, to have the pits emptied, although they may only be a quarter or half full. They have then to be filled up, and preparations have to be made for adopting the dry-earth system. The matter of expense would not be very much; but a great many of the residents of Newtown are people owning small properties, and to them the expense would be a consideration.
1514. Does the objection come from the freeholders, however small their properties, or from the owners of small tenements, who let them? It comes from the owners of small tenements; because tenants will not look after the dry-earth system as well as the owners of the property would if they were living upon it.
1515. Then, practically, the objection comes from the capitalists who own small houses, and not from the people living in those houses? From those who own small houses.
1516. How much a week do you charge for emptying one pan? At the present time we are charging 5d. per week per pan if it is emptied once a week. If it is emptied twice a week double that amount is charged. Most of the people, however, and especially the poorer class of people, only have their pans emptied once a week.
1517. Do you think that in an ordinary working man's family, consisting (say) of a husband, wife, and four children, one removal of the pan a week is really sufficient for the preservation of health? I think one removal a week is sufficient, but where there are larger families I think the pans should be emptied twice a week.
1518. 5d. a week would be about 250d. per annum;—how much do you make it? 21s. 8d.
1519. Then what they pay is equal to a rate of 21s. 8d.? Yes.
1520. Do you think that with the proposed system of drainage the rates will exceed 21s. 8d. for the smallest houses? No.
1521. If there were a rate under the proposed system the smallest houses would not be taxed more than they are now? Not more than they are now.
1522. While the larger houses would be taxed more heavily in proportion? Yes.
1523. A gentleman who had servants and a large family would want more than one pan a week, and would pay twice as much, or three times as much, as a poor man? Yes.
1524. Therefore, under the present system, a rich man may pay twice as much, or three times as much, as a poor man does? Yes.
1525. Would the rate on his improved or more valuable property be greater than the present charge? Yes.
1526. It is your opinion that under the proposed system the effect of rates would be rather to let the poor man off a little, and to put the burden on the shoulders of the rich man? Of course the property would be more valuable, and he would gain a benefit from that.
1527. Apart from the question of the increased value of his property, a rate would press more heavily upon the rich man than upon the poor man? I think it would.
1528. Then you think if any objection could be made, from the position of the taxpayer, to this outlay, it would come rather from the rich than from the poor man? By keeping so many servants and men about the place the expense would be increased.
1529. Then, comparing the two classes, the present system is more in the interests of the poor than in the interests of the rich? Yes.
1530. Have you considered the scheme before the Committee? Yes.
1531. Do you personally approve of it? The council approve of it.
1532. Do you personally approve of it? Yes.
1533. The council approved of it by a majority? Entirely.
1534. They have no objection whatever to the expenditure? Not the slightest—they agreed to the scheme upon an unanimous vote.
1535. So far as you know the opinion of the ratepayers do you think they would willingly pay a rate for this system? They are paying it now.
1536. But sometimes people forget that when a rate is imposed? I have not the slightest doubt they will pay it when the system comes into operation.
1537. Have your people to pay for deodorizers? Yes.
1538. That is extra? No, the man includes deodorizing in the 5d. charge. The contractor finds the deodorizer.
1539. Does he clean the pans in any way? No, he merely empties and replaces them.
1540. They are returned smelling and dirty? Smelling and dirty.
1541. During the whole time the pans are on the premises they are more or less foul in their smell? Yes.
1542. Then the present system simply stores a foul smell upon every man's property? It is a very bad system, and leaves a smell upon every man's property.
1543. If the proposed system were introduced and were effective you would get rid of the whole of the filth before it had time to ferment? Yes; and that would be a boon to the public and to the ratepayers generally.
1544. The people would be willing to pay a rate to make the system self-supporting? Yes.
1545. They could pay a rate and not be out of pocket by so doing? Yes.
1546. Do you think you could commit your municipality to an adhesion to the scheme? Yes.
1567. There would be no attempt afterwards on their part to break away—to say that they had not been parties to it and did not approve of it? No.
1548. *Mr. Trickett.*] You have explained to the Chairman the mode of the disposal of fœtid matter from closets; but how do you get rid of the house-slops? The contractor for the night-soil has the contract for the pits and the dry earth-pans, and the contents of these are taken out to works between Newtown and Botany, and destroyed there. The works are called the poudrette-ammonia works. The slops from the houses go down into a sewer between Newtown and Camperdown, and thence through Leichhardt into Johnston's Creek.
1549. Is that sewer underground, or is it a surface-drain? Underground as far as possible. Newtown stands on the rise of a hill, and a portion of her drainage goes down to Macdonaldtown, on the left-hand side, as you go to Newtown into Alexandria, and on the right-hand side into Camperdown, and thence into Johnston's Creek.
1550. Through what borough? Through Leichhardt.
1551. Does that municipality object? They have never objected to Newtown though they have objected to Camperdown; and the Camperdown people have sent us a writ requiring us to prevent our drainage from entering their sewer.

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1552. They are now seeking to prevent you from allowing your drainage to enter their sewer? Yes.
1553. If they succeed you will be in a very great difficulty? We shall be in a very great difficulty.?
1554. Where does the sewage eventually go to—does it find its way into the Parramatta River? Yes. If we only got the sewer from Prince Alfred Hospital to Liberty-street it would get rid of all the nuisance, and it would be no hindrance to our neighbours.
1555. Looking at the scheme as affecting Newtown, do you know any other scheme which is as good or better? I think this is the best scheme that could be adopted.
1556. You see Newtown marked on the plan marked light green? Yes.
1557. You see the red lines running through it, indicating the positions of the proposed sewers;—have you examined the scheme sufficiently to know whether those sewers would serve the borough of Newtown? I have examined the plan at the Council Chambers, and I find that it could not be better.
1558. The sewers would be in the best place in the interests of Newtown for getting rid of the sewage? Yes.
1559. With regard to paying a sewerage rate, do you think the people would pay as much as 10d. or 1s. in the £ on the yearly value of their property? I do not think 10d. or 1s.; I think that is rather high.
1560. With regard to the small tenements that you have spoken of, it comes to as much as that at present, if they have to pay 5d. a week? It does not come to quite as much as 10d.
1561. Fivepence a week on houses worth 10s. a week would equal a rate of 10d. in the £. That would amount to 26s. a year, while at present they have to pay fifty-two five pences, or 21s. 8d.? My opinion about the ratepayers is that if they got the sewerage they would not mind a reasonable charge even though it were a little more than they pay now, because it would get rid of the existing nuisance. The pans are not cleansed but are returned in a filthy state.
1562. Independently of that, does it cost your borough very much for scavenging and cleaning gutters? Yes; we pay a lot for that. We have four contractors, and they get £18 or £20 a month each.
1563. That is for keeping the gutters clean? Yes; and for taking the garbage away from the back yards.
1564. That would be in a measure saved by the proposed system? I do not think so; you could not get rid of it in that way.
1565. But the house-slops, instead of going into the gutters would go right into the sewers? You could not go without the scavenger, because the rubbish would need to be swept up.
1566. Do you not disinfect your gutters? No; we are fortunate as far as the gutters are concerned, because we are on the rise of a hill. The gutters are swept out once or twice a week.
1567. You have heard no objection to the scheme? Not the slightest. I have brought a map of the borough with me. [*Produced.*]
1568. *Mr. O'Sullivan.*] Have you held any public meetings in Newtown with regard to this proposal? No.
1569. Do you know whether any opposition is likely to be offered to it? I do not think any opposition will be offered to it at all.
1570. I suppose the borough council have seen the necessity for a scheme of this character being carried out? We have for a long time.
1571. Can you trace any illness to the present system of disposing of sewage matter? Yes; we have had a lot, not lately, but six months ago, and it was caused by the bad drainage.
1572. I suppose that if the scheme were carried out there is a reasonable prospect that the amount of sickness would be minimized? It would be done away with nearly altogether.
1573. *Mr. Humphery.*] At present is the sewage of Newtown carried out to the adjoining borough of Macdonaldtown? The sewage on the left-hand side, after you pass the Deaf and Dumb Institution, goes down to Macdonaldtown.
1574. That is a separate municipality? Yes. On the right-hand side from Prince Alfred Hospital to Liberty-street, in Stanmore, it goes to Camperdown.
1575. That is another municipality? Yes.
1576. Have you had complaints from the adjoining boroughs? There is an action pending now between Camperdown and ourselves because of our drainage running into theirs.
1577. That is unavoidable? Yes; we cannot help it. If we stand on a hill the drainage must take its course.
1578. The only way you see of getting rid of the present objectionable system is by adopting the system proposed? Just so.
1579. *Mr. Copeland.*] Have you not had difficulties with Macdonaldtown and Alexandria? No we have not, They had an action against Macdonaldtown, and if it had not gone against them we should have heard from them.
1580. *Temporary Chairman.*] How many houses are there in your municipality? About 4,000.
1581. What is the annual value of them? £7,850.
1582. That is the return that you get from them in the shape of rates? Yes.
1583. The rate is 1s. in the £? Yes.
1584. With a rate of 3d. in the £ how much would you get? £1,962.
1585. With a rate of 4d.? £2,617.
1586. With a rate of 6d.? £3,925. At the present we alse receive for the cesspits £1,100, and for the pans £1,600, making together £2,700 per annum.
1587. *Mr. Humphery.*] You pay that for the night-soil? Yes.
1588. *Temporary Chairman.*] I understand that the taxation at present for the disposal of night-soil is £2,700 per annum? Yes.
1589. And a 4d. rate would give slightly less than that per annum? Yes.
1590. That is, at present they are paying rather more than a 4d. rate? Yes.
1591. If they were not taxed more than 4d. in the £ they would be as well off as they are now, and they would have the additional advantage of having their sewage properly disposed of, and the general health would therefore be better? Yes.
1592. In consideration of that advantage they would pay a higher rate? Yes.
1593. *Mr. Copeland.*] The houses in Newtown are increasing rapidly? Yes.
1594. I suppose you anticipate that they will continue to increase, and that that would reduce the rate if the drainage works were carried out? Yes.
1595. *Mr. Humphery.*] A 4d. rate would give about the cost of the present sewerage system, and a 10d. rate upon houses rented at not more than £26 a year would only be equivalent to what the tenants are at present paying? Yes; that is the case.
1596. 4d. is the average rate? Yes.

Joseph

Joseph Graham, Esq., Mayor of Marrickville, sworn, and examined :—

J. Graham, Esq.
31 July, 1889.

1597. *Chairman.*] Do you hold office in any municipality ? I am Mayor of Marrickville.
1598. How long have you occupied that office? I became an alderman in 1869. I was mayor in 1870, and I have held that office off and on ever since.
1599. You have never ceased to be an alderman all that time? No.
1600. You are thoroughly acquainted with the district? Yes; perfectly.
1601. And with the existing system of dealing with refuse? I am.
1602. Is yours a thickly populated locality ? No. We estimate our population at 10,000 people.
1603. Have you not several market-gardens in your municipality? We have.
1604. Then some parts of it are thinly populated and some more thickly? Yes.
1605. And it is only in the thickly populated parts that the drainage difficulty exists? No; I think not. The red lines on the map show where the sewers pass through the district, and the blue lines show the sewers going through the low-level country. There is also a pumping station marked, which will be at Meek's Road. It is contemplated to run that up to what they call the Illawarra Road.
1606. Is the present drainage in your municipality satisfactory? No ; it is very unsatisfactory, when we have the drainage of Newtown, St. Peters, Petersham, and I do not know what coming into it.
1607. You have a great deal of low-lying land in the municipality? It is not so much low-lying land; but it is lower than the surrounding country.
1608. And your neighbours discharge some of their surplus filth into the borough ? They do to a certain extent.
1609. You have no remedy? There was some talk of getting an injunction, but that would not do it.
1610. You wish that they would adopt a better system of sewerage? Certainly.
1611. If they did that they would greatly relieve you? Yes.
1612. Is that your principal difficulty—the trouble with your neighbours ? We have all our own sewage besides.
1613. Leaving out of the question the trouble caused by your neighbours sewage, is the sewerage system in your municipality a bad one? Certainly.
1614. And greatly needs altering? Undoubtedly.
1615. Has the matter received the attention of your council? It has.
1616. Has the scheme before the Committee been considered? It has.
1617. Is the council in favour of it or against it? Our council was the first to adopt unanimously the scheme shown on the map, which is known as Stayton's scheme for dealing with the sewage of the western suburbs. As perhaps you know the late Hon. John Sutherland sent a copy of the proposal to each of the boroughs, and we were the first municipality to unanimously resolve that the system appeared to us perfectly satisfactory.
1618. Since that date has there been any reversion of opinion upon the matter? None at all.
1619. You know the views of your neighbours pretty well in the matter? Yes.
1620. Do you think they would cheerfully pay the necessary rates ? Undoubtedly.
1621. What do they at present pay a pan? Five shillings a quarter. We do our own night-soil work. We pay 5s. for every load that is taken to the Poudrette Ammonia Company, and we empty the pans at 5s. a quarter with our own carts.
1622. Do you sell the material to the company ? We pay 5s. a load to them for taking it.
1623. By that means you are able to dispose of it without creating a nuisance? Yes, as long as they let it stop there.
1624. Where are the works of the company ? At the end of Rickety-street, towards Botany Road.
1625. They are not in your municipality ? They are in the Municipality of West Botany.
1626. You are dependent upon another municipality for a place to which to send your refuse ? Yes.
1627. If you could not do that it would be difficult to dispose of it? Yes.
1628. Could you find any place within your own boundaries on which to deposit it? Certainly not.
1629. You must get rid of the stuff, and you do not know where to put it? Yes; all the municipalities are in the same position.
1630. They all want to deposit the stuff away from their own boundaries ? They do not like to deposit it within their own boundaries.
1631. The pressure which is put upon them in that way makes them willing to fall in with a general good scheme? I do not know that the pressure does so. I believe they would be glad to have a good scheme for sanitary and financial reasons. No money would be badly spent in constructing works that would conserve the health of the people. I have not heard so much about the expenditure as about the great benefit that would result from the carrying out of the works.
1632. You think the people value health and comfort sufficiently to be willing to pay more than they are paying now for a better scheme? Undoubtedly.
1633. Do you think if this system were adopted and proved a success there would be no reversion of public feeling against paying the rate ? I do not believe there would be.
1634. Have you cesspits in your municipality? Yes.
1635. How much is paid to the council for emptying cesspits? £488 9s. 2d. was paid during last year.
1636. How much do you collect for emptying earth-pans? £1,406 15s. 8d.
1637. That is to say, your ratepayers at present pay you altogether £1,895 4s. 10d. for the disposal of their night-soil ? I beg to add that a large number of people who have gardens of considerable area are allowed to empty their pans themselves. The amount which they would pay if the council disposed of their night-soil would be about £250, making a total of £2,145 4s. 10d.
1638. That is what your people pay at present, exclusive of getting rid of the slops? Yes.
1639. If they were provided with a system of sewerage which would get rid of the slops they would have to pay more than that? We have struck a sewerage rate, but they are kicking at it.
1640. What rate have you struck? Three-pence in the £.
1641. You levy a rate of 3d. in the £ in addition to the charge of £2,145 per year? Yes.
1642. Could you tell me what that would amount to? I could not.
1643. How much will the 3d. rate bring in? I think about £1,600, as well as my memory serves me. A rate of 6d. in the pound would be cheap for this system, because we could then get rid of everything.

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1644. The amount paid for your pan and cesspit system is about equal to a rate of 4d. in the £, and as you are levying a sewerage rate of 3d. in the £, your people are paying 7d. in the £ for a very unsatisfactory system? Yes.
1645. Do you think they would pay 8d. or 10d. in the £ for a good system? Undoubtedly.
1646. How many houses are there in your borough? 2,700.
1647. And what is the population? It is roughly computed at 10,000.
1648. What do your rates for this year amount to? £5,700. The rate is 1s. in the £.
1649. Supposing the sewerage rate were equal to the general rate you would have to pay £5,700 per annum? Yes.
1650. A sixpenny rate would bring in half that amount? Yes.
1651. Could your borough be quickly served if the works were put into hand at once? We are the first after the sewer crosses the river, taking all the arms which they branch off.
1652. If the outlet works were completed you could very quickly be joined on to them? Yes. Three main sewers pass through the municipality.
1653. Part of your district is low-lying land which is apt to be flooded in wet weather? An area of about 250 acres; but it is a very small part of the borough because the whole municipality contains upwards of 2,000 acres.
1654. For that area it will be absolutely necessary to have a pumping system? Yes, that is shown on the map.
1655. Is that low-lying land still being built upon? The last floods have stopped it to a certain degree, and we are trying to get the Government to pass a trust Bill so that we can resume the whole of the land.
1656. Have you any power to prevent people from building on land which is too low for drainage? We have not unfortunately.
1657. People can build where they like and then ask you to drain their properties? We cannot drain this land. There is not more than 6 feet fall in 2 miles.
1658. If a pumping system were adopted would the low-lying land be good for the purpose of residence? Not unless it was raised. It must be raised at least 4 feet.
1659. Nothing can make the swampy land healthy unless it is raised? No.
1660. No amount of pumping can do it? It was part of the river once, and was filled in, and sold to unfortunate people. I knew the place twenty-five years ago, and I know almost every house that has been built upon it.
1661. Your people are quite wide awake to the evils of the present system? Yes.
1662. Those evils make them approve of the proposed system? Without any dissent at all.
1663. So far as your council are concerned they give their warmest assent to the Government going on with the work? We do.
1664. *Mr. Trickett.*] At present you have no system of drainage at all? We have no system.
1665. The sewage merely gravitates to the lowest spot? Those who have money get the street in front of their property kerbed and guttered, and they shoot their sewage out into the gutters, and the nuisance is thereby increased.
1666. And when the sewage reaches a place where there is no kerbing and guttering, does it not, if there is not much rain, lie and fester, and become offensive? Is it not notorious that this is the case in Marrickville? For that reason we have tried to get a system of sewerage in order to get rid of these spots, We argue that there cannot be a fever spot without its affecting the whole neighbourhood, but we have no power to compel the people to assist us in kerbing and guttering.
1667. I suppose a heavy rain is a God-send to you, because it clears out the drains? Yes; but the water lies on the flat places, and when dry weather comes the effect will undoubtedly not be beneficial. It is very strange that the lower parts of Marrickville are the healthiest; but that I account for by the presence there of brick-kilns. I believe they keep down the fever germs.
1668. They are destroyed by the smoke and heat? Yes.
1669. Is there much sickness in your district? Very little, and we have to thank the brick-kilns for that.
1670. I suppose you think that this scheme is the best that could be adopted? Yes. It has been before us since it was promulgated, and I have been over it with Mr. Stayton and Mr. Bennett. I also take an interest in the matter because I am on the Water and Sewerage Board; and it further interests me, because I have represented Marrickville so long.
1671. A portion of your borough is really below high-water mark? Virtually it is, because the water used to come up for nearly 2 miles on the low land before the dam was built. This land was virtually a part of Cook's River.
1672. Without speaking from a professional point of view, do you think the position of this land will interfere with the success of the scheme? We have an idea of getting it filled up, or of utilising it in various ways, either for lakes or canals. By the excavation of the sewers we should get an immense quantity of stuff, and that might enable us to fill the swamp up. The main sewer is a large tunnel, and would give a great deal of earth.
1673. You have lived a great many years in Marrickville? Over twenty years. I bought land there over twenty-five years ago.
1674. I suppose you have come into contact with a great many of the ratepayers? I have. I know almost every house.
1675. Do you think they would be willing to pay as high as 10d. in the £ for a sewerage scheme? I think that would be a saving on the present rate.
1676. 10d. in the £ upon the annual value of property would be a saving on what is at present paid? Undoubtedly. The pans are only emptied once a-week, and in many cases they are a great nuisance.
1677. Speaking as a representative man, you think they would pay as high a rate as 10d. in the £? Undoubtedly. A shilling in the £ would be an advantage over the present system.
1678. *Mr. O'Sullivan.*] Is it not likely that the sewers would be flooded if, as you say, the tide goes over the land? The floods would be at that part where the blue lines are; that is all low-lying land. The sewage would have to be brought to a point and pumped up. There are very few houses on that land of any value. It is the only part that would be affected, as the rest of the borough is high land.
1679. What portion of Marrickville was recently flooded? Where the pumping station is marked, as far as the crooked line goes.
1680. Are not the floods likely to occur again? Certainly. 1681.

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1681. Do you think then that the works should be carried out? They could be kept above flood-level. The place will never be fit for building upon until it is raised. We have taken the levels of all the flat land, with the idea of asking the Government to form a trust to take charge of it—to expend money upon it, and to make charges to repay that money.
1682. Have you held any public meetings with regard to this scheme? Not as regards the general scheme. We have had some with regard to the low part.
1683. Speaking just now with regard to the feeling of the people upon the subject, you were only giving the feeling of the borough council? The council had the scheme before them for perhaps a month.
1684. You have no reason to believe that any opposition will be offered to a scheme like this? Certainly none whatever.
1685. And people will be willing to pay a rate of 8d. or 10d. in the £? Undoubtedly; because that would be cheaper than the present charge, and we do not know for a day where we are going to deposit the night-soil. Every municipality has a by-law prohibiting people from carrying the night-soil of other municipalities within their boundaries. We cannot drive a cart through Newtown, and the mayor of Sydney has prevented us from taking the stuff through the city. It used to be taken round to the iron works at Pyrmont, but that has been stopped.
1686. *Mr. Copeland.*] How do you get rid of it? At the present time it is taken by a company called the Poudrette-Ammonia Company, which does splendid work. I think the Committee should inspect the works. The stuff passes through revolvers and through a vacuum pump, and when dry it is sold at £5 a ton.
1687. Where is this? At the end of Rickety-street, near Botany Road. They are doing a great work. I advised them to try and have it gazetted, because they make a very valuable manure. The night-soil is dried so that any one can handle it, and it is not touched by fire. The objection to the process at first was that the fire destroyed the ammonia.
1688. You said just now that you have to thank the brickmakers for the good health of the borough—in what way? Because of the large fires and the smoke.
1689. You think that causes a current of air? It draws the germs from a long distance. There are very few houses in this locality, and instead of the trade being a nuisance we look upon it as a benefit, both as an industry and as a sanitary agent. Upon this flat of 150 acres is deposited the drainage of 1,500 people. It comes from St. Peters, Petersham, and Marrickville, and during the summer there is no current to take it away. Without some sanitary agent it would certainly produce fever.
1690. *Mr. Humphery.*] Where is the sewage carried at the present time—where is it deposited? When floods come it is taken into Cook's River.
1691. But before the floods? It goes as far as Providence will allow it, and there stagnates.
1692. You keep it in the borough? Yes.
1693. It does not go beyond the borough? When it is flooded out it goes into another borough, West Botany; but all the summer it lies upon the flats. We have spent some money in making a drain there, by which we are able to do a great deal of good, intercepting the Newtown and other sewers with old temporary iron pipes. We broom it, and intercept the solids, and thus keep it as healthy as we can. Before the whole place was a quagmire from one end to the other.
1694. Close to the railway station a large area of land is frequently under water? Yes.
1695. When there is a heavy flood? Yes. The railway station is about 10 feet above flood-level.
1696. The land in the immediate vicinity is usually under water in flood time? Yes.
1697. Are there many houses there? A number of people have put up houses, worse luck, but they have had to abandon them.
1698. The scheme you speak of for creating a trust to take over this low-lying land is the scheme known as Carruther's scheme? It was he who laid down the lines that we have followed.
1699. The object of the scheme is to raise all the low-lying land some 4 feet? 3 or 4 feet.
1700. And to deal with the land so that it will pay interest on the sum which it is proposed to borrow? The interest is to be paid by the people draining upon the land, and the capital would be paid back by its resale after it had been properly improved.

Andrew Murray, Esq., Mayor of Macdonaldtown, sworn, and examined:—

A. Murray, Esq. 31 July, 1889.

1701. *Temporary Chairman.*] To what municipality do you belong? Macdonaldtown.
1702. What office do you hold there? I am mayor.
1703. How long have you been mayor? About six months.
1704. How long have you been an alderman? Two and a-half years.
1705. How long have you been a resident of the municipality? For nearly ten years.
1706. You have seen the municipality grow gradually to its present dimensions? Yes.
1707. You are pretty well acquainted with all the streets and lanes? Yes.
1708. Where does the surface water naturally drain? On to the low-lying grounds; it goes through part of the borough of Alexandria.
1709. Into Shea's Creek? Into Shea's Creek.
1710. You helped to foul Shea's Creek? That is where our drainage goes.
1711. Is the present state of things satisfactory? No.
1712. Do you use the system of pans, or cesspits, or both? Both.
1713. Are most of the houses served by pans or by cesspits? By cesspits.
1714. How much a pan do you charge? 4d. a pan for once a week, and 6d. for twice a week.
1715. How much a year does the removal of your night-soil cost the municipality? £700 per annum.
1716. How much a year would a sixpenny sewerage rate yield there? £850.
1717. Then you are paying very nearly a sixpenny rate now? Yes.
1718. You make no provision for your kitchen slops? Only in the gutters.
1719. Have you considered the scheme before the Committee? It has been before the council.
1720. Does your council generally approve of it? Yes.
1721. If that scheme were carried out you would have some provision for slops as well as for night-soil? Yes.
1722. You would be very much better off than you are now? Yes.
1723. The present system costs you nearly 6d. in the £? Nearly 6d. in the £. 1724.

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1724. Do you think your people would be willing to pay 9d. for an improved system? I think so—this would be much better than the present system.
1725. You think that in your district there would be an intelligent appreciation of the advantage of the scheme? I do.
1726. The people are crying out for some improvement? Yes.
1727. They know the value of health and sweet air? Yes.
1728. They would be glad to have their back yards and houses sweet? Yes.
1729. Has there been any public meeting in your district to discuss this matter? No.
1730. You only gather the public opinion from what you know of the people? Yes.
1731. You think you may speak confidently on their behalf? Yes.
1732. *Mr. Trickett.*] I suppose your drainage goes chiefly into the adjoining borough? A small part of it into Alexandria.
1733. The flow is very sluggish, as it is mostly low level land? Low lying land.
1734. Between your municipality and Alexandria there are some very offensive open drains, are there not? Yes.
1735. I suppose in all places where kerbing and guttering has not been been carried out the effect of the present system is very bad? Very bad.
1736. Very injurious to health? Yes.
1737. And causes a very offensive smell? Yes.
1738. I suppose you know of no better scheme for getting rid of the sewage which you can suggest to the Committee? I know of no other scheme. There are two streets in the municipality,—Pleasant and Prospect Streets, which it will be very hard to deal with. I do not know how you are going to connect them, unless through private property.
1739. You see the two sewers marked on the plan as going through Macdonaldtown? Yes.
1740. Do you think those are well situated for the purpose of the scheme? I do.
1741. The greater part of your borough could be conveniently connected with them? Yes.
1742. It would be a great advantage to the borough generally, to have the scheme? It would.
1743. Is there much sickness there? Not at present. Sometimes we have a little.
1744. I suppose in hot dry weather, when the water lies about, it becomes worse? Yes, but we generally keep the gutters scavenged.
1745. Well flushed? Yes.
1746. *Mr. Copeland.*] You have had considerable difficulty with Newtown, in connection with drainage, have you not? Yes. We had an action lately with regard to the drainage from Newtown.
1747. The whole of the drainage from one side of Newtown runs under the railway and into your borough, does it not? Yes.
1748. You have had difficulties with your other neighbours—with Alexandria? No, we have had no difficulty with them. Of course we put it on to them, but we have had no difficulty.
1749. Do they take it kindly? We have had no difficulty so far.
1750. I suppose Macdonaldtown would be a difficult borough to drain in any case, would it not? Yes, unless it went through that way.
1751. I suppose you have a considerable amount of vacant land there yet? There is some vacant land in low-lying places.
1752. Have you any idea of the number of houses in the municipality? I am not prepared to say what the number is.*
1753. At any rate you spoke of the number of houses as increasing very much? Yes.
1754. You expect that the municipality will be a pretty densely populated suburb? Yes, and is at present in some parts.
1755. I suppose mostly by the working classes? Yes.
1756. The houses are generally small? They are small.
1757. That I suppose you will consider a reason for carrying out drainage works—the houses being small and close together? Yes.
1758. You anticipate a pretty dense population there soon in connection with the railway works? Yes.
1759. The Macdonaldtown council are quite in favour of the works being carried out? Yes.
1760. You do not think the people will be likely to object to paying the necessary rates? I do not think there will be any difficulty at all with the people. They will only be too glad to have the scheme.
1761. *Mr. O'Sullivan.*] Have you any sewerage at all in your Municipality? Only the gutters.
1762. The ordinary street channels? The ordinary street channels.
1763. Do you notice that any deleterious effect arises from this—any sickness? It may be so. We have had some complaints; but we have always attended to them.
1764. What is the general state of health of the people in Macdonaldtown? It would compare favourably with that of most other municapilities.
1765. I suppose you have taken steps to consult the people as to whether they approve or disapprove of the scheme? The scheme has only been before the Council; but every person to whom I have spoken has been very much in favour of it.
1766. You have no reason to doubt that there will be no opposition to it? No.
1767. I suppose the peeple will be quite prepared to pay the rate in preference to the present system? I think so.
1768. A portion of the municipality would come under the low-lying system? Yes.
1769. That portion is subject to floods? We are flooded sometimes.
1770. How are you disposing of your night-soil at the present time? The contractor finds the depôt.
1771. I suppose you have to trust to chance whether he can find it? He contracts to take it away from us.
1772. What would happen if he were unable to find a depôt? He would have to try to find one.
1773. At the present time you really have to trust to chance to get rid of this dangerous matter? When we call for tenders it is to take the night-soil and find a depôt for same, and they contract according to that.
1774. In point of fact it is absolutely essential, as far as Macdonaldtown is concerned, that some system of sewerage should be carried out? Yes.
1775. *Mr. Humphery.*] I suppose you are not curious about where the night-soil is deposited? I do not know where it is deposited.

1776.

* NOTE (*on revision*) :—1,107.

A. Murray, Esq.
1 July, 1889.

1776. What is the population of Macdonaldtown? I am not prepared to answer that question.*
1777. How many houses are there in the municipality? I do not know. I did not post myself up in that.†
1778. I think you said that the cost of the residents at the present time is about 6d. per week That is for emptying the pans twice a week.
1779. That is about equal to a rate of 6d. in the £? About equal to that.
1780. That is for disposing of night-soil alone? That is for disposing of night-soil alone.
1781. Do you consider that the system of sewerage would be worth 3d. or 4d. in the £? I think it would be worth that.
1782. 8d. or 9d.? Well, of course, we are only a poor electorate.
1783. But still you would cheerfully pay 8d. or 9d. in the £ to get rid of the surface drainage as well as of the night-soil and nuisances generally? Yes.

John Rowland Dacey, Esq., Mayor of Alexandria, sworn, and examined:—

J. R. Dacey, Esq.
31 July, 1889.

1784. *Temporary Chairman.*] To what municipality do you belong? To Alexandria.
1785. What office do you hold there? I am mayor of that municipality.
1786. How long have you been mayor? For two years.
1787. How long have you been an alderman? About four years.
1788. How long have you been a resident of the municipality? About five years.
1789. Are you familiar with the drains and streets? I might preface my evidence by stating that this scheme will be of very little advantage to Alexandria, as it merely, so to speak, passes through it. Some parts will be as high as 12 feet above the surface of the ground, and we shall get very little good from it, so that it does not interest us much at all.
1790. Has it been officially considered by your council? Yes.
1791. They are not much in favour of it because they do not see the advantage to be derived from it? They are in favour of it so far as it goes, but they consider at the present time that they are simply made a convenience of.
1792. Do any of the other suburbs at present throw their drainage into your municipality? A large number of them do. Redfern, Waterloo, part of St. Peters, Macdonaldtown, and Newtown all do.
1793. Practically, Alexandria is a natural cesspool for the other suburbs? Yes.
1794. Would it not be a great thing to get rid of that? Yes.
1795. That alone would be worth something? We are most anxious to do it.
1796. You have no power at present to prevent the surface water of your neighbours running within your boundary? None whatever.
1797. Do any of them deposit their night-soil within your municipality? No.
1798. Where do you deposit your night-soil? Lately, we have been taking it to Moore Park; but it is a very difficult question to answer. I think the nightman goes wherever he gets a chance, when nobody is looking.
1799. You contract with the nightman and ask no questions? Yes.
1800. Do you think it better to have no eyes or ears? Yes.
1801. But you have noses? Yes.
1802. Are they occasionally offended? It depends where the smell comes from. If it comes from another borough they are very much offended.
1803. Do you use the pan system or the pit system? The pit system. We have a few pans, but not many.
1804. Are the pans emptied by the corporation? Yes; by contract.
1805. Do you know what you get? £450 per annum.
1806. How much would that be as a rate? We just charge them what it costs us.
1807. What do your rates bring you in? £3,000 per annum.
1808. What rate do you charge? A shilling in the pound.
1809. At present, the cost of emptying the cesspits is only small? Yes.
1810. Would the cost of dealing with the pan system be greater? That I could not say—we have no experience.
1811. If you were connected with the proposed scheme, a great deal of your sewage would have to be pumped up? The sewage of a large portion of the borough would have to be pumped up.
1812. Do you think your people would be willing to pay their fair share of the cost of the system?
1813. They would rather do that than remain as they are? Yes.
1814. The fact that you are on low ground makes it a matter of necessity to get rid of the slops in a satisfactory way? It does.
1815. If you were on the top of the hill you would not be so particular? Yes.
1816. Although your present cost is not so great, you would be willing to pay a rate, if the proposed scheme were satisfactory? Yes.
1817. What rate would you be willing to pay? The general impression is that we should have to pay a rate of 1s. in the £. The people are prepared to pay what is a fair thing.
1818. They are quite prepared to pay a rate of 6d.? Yes.
1819. If it were proved that 8d. or 9d. would be absolutely necessary, you do not think there would be much grumbling? I do not think so.
1820. Your people value health? Yes.
1821. They wish to live in pure houses and sweet yards? Yes.
1822. There is general feeling in favour of sanitary reform? Yes.
1823. You can confidently say that they will not stick at a few pence in the £? Yes.
1824. *Mr. O'Sullivan.*] Your present system appears to be as uncertain and insufficient as that of many other municipalities. I suppose you have no security whatever that some day you will not be stopped? None, whatever; we have been stopped lately by the Mayor of Sydney.
1825. In the event of your being stopped altogether, what would you do? We would have to put it in another borough by force.
1826. Notwithstanding the fact, as you say, that you will not be very well served by the proposed scheme, it is essential that some scheme shall be carried out? I am informed by the Government officials that they have some very good thing for Alexandria, but I have not seen it yet. 1827.

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* Note (*on revision*):—5,535. † Note (*on revision*):—1,107.

J. R. Dacey, Esq. 31 July, 1889.

1827. Are you not served at the present time by the outfall sewer to Webb's Grant? Not at all. It is above the level of the ground where it passes through the municipality.
1828. I suppose a great deal of inconvenience is caused through there not being an efficient system of sewerage in the borough? A great deal.
1829. Notwithstanding that this scheme does not appear to offer you much relief, you think some scheme should be carried out? Yes.
1830. And the people are quite prepared to pay a fair rate to maintain that scheme? Yes.
1831. Have you held any meetings to discuss this matter? No.
1832. It has merely come before the Borough Council? Just so.
1833. You think that you can say that the people see the necessity for some safe system. They have experienced so much inconvenience from the bad sewerage that they are quite prepared to endorse any proposal of that character? I believe they would do so.
1834. *Temporary Chairman.*] When you say that the scheme does not do you any service, you mean the existing out-fall sewer to Webb's Grant? I mean the proposed sewer. There is a V shape there, running up into two streets, which would be of use to us, but the rest of the scheme is for the adjoining municipalities.
1835. But when that is constructed it will take all your stuff by gravitation to the pumping station? There is only that V-shape portion of the scheme that will affect us at all, as far as I am aware, and it only affects a couple of streets. The aldermen felt aggrieved until they were informed that there was another scheme in store for us.
1836. If any extension of the scheme will make the system as available for you as for the other people included in it, you will be quite content to fall in with it? Yes. There is a feeling on the part of some of the aldermen that the crossing of the main southerly outfall sewer would interfere with the work at Shea's Creek, through not passing at a sufficient height above the waters of the canal.

Robert H. Judd, Esq., Mayor of St. Peters, sworn, and examined:—

R. H. Judd, Esq. 31 July, 1889.

1837. *Temporary Chairman.*] What municipality do you serve? St. Peters.
1838. What office do you hold? I am mayor.
1839. Ho long have you been mayor? During the current year only.
1840. How long have you been an alderman? For three years.
1841. You have been a resident for a long time, have you not? For five and a half years.
1842. Is your municipality thickly populated? It has a population of 5,000 inhabitants.
1843. Have you had much trouble with your drainage? Not as far as we are concerned, because there is a watershed running through the centre of it and so some portions of the borough drain one way and some another.
1844. Is the ground low lying or high? Practically it is high.
1845. Your houses are mostly on the ridge? Yes.
1846. With a fall both ways? With a fall both ways.
1847. Do you throw your sewage into any adjoining municipality? To a certain extent, but not to any great extent.
1848. You do not complain? No.
1849. Do your neighbours complain? Marrickville complained once. We receive the whole of the drainage ultimately, inasmuch as it all runs into Cook's River, and Cook's River is within our boundary.
1850. The drainage from the eastern side of the ridge goes into Shea's Creek? Yes, but there are few buildings on that portion, with the exception of the northern end. The land is pricipally occupied by brick-yards, and they hold the water.
1851. What falls on the western side of the ridge goes into Marrickville? Yes.
1852. Have your neighbours ever made any formal complaints? Marrickville called a meeting on one occasion, asking us to try and deal with the matter. We have met them amicably, inasmuch as we offered to put down filter beds. The proposal for the formation of a sanitary trust came before us, but it is meeting with some opposition in our borough, the ratepayers objecting to pay a rate towards improving another borough.
1853. Do you use the pan system or cess-pits? We have both. We charge 4d. a week for each pan emptied, and 4d. per cubic foot for each cess-pit.
1854. What is the total amount you receive from the cleaning out of pans and cess-pits? During the last municipal year we received from pits £182 6s. 6d., and from pans £280, making a total of £462 6s. 6d.
1855. How much would that be as a rate—what would you have to levy to get £462. What do you get by a shilling rate? £2,000 from the general rate.
1856. The £462 would be about a 3d. rate? Yes.
1857. You are really paying now a 3d. rate for an ineffective method? Yes.
1858. Do the people of your municipality ardently desire an improved system? When Mr. Stayton's sewerage scheme came before us I was the first to agitate for a public meeting. There was no public meeting called however, but a special meeting of the council was held, and the majority of the aldermen were in favour of the scheme;—they were not all in favour of it.
1859. There is a somewhat divided opinion? As far as the aldermen are concerned; but if you went to the ratepayers I believe they would be entirely in favour of a better system of sewerage.
1860. Is there much sickness in your district? Very little.
1861. You cannot say that the present system is distinctly unhealthy? Not by any means. We have very few complaints with regard to typhoid or other fevers. No doubt the danger is minimised greatly because of the brick kilns in one portion of the borough.
1862. Do you think they are healthy? Yes. The sulphurous fumes arising from the burning brick purify the air. We are troubled of course by Alexandria and other boroughs.
1863. You do not think your district would want to stand out of this system if it were carried out? Not by any means.
1864. They would be willing to come in and pay their share of the cost? If it were not exorbitant. The majority of the residents in the vicinity of the brick kilns are working men, and they could not afford to pay a heavy charge.

R. H. Judd, Esq. 31 July, 1889.

1865. Does not the present system press more heavily upon the poor than upon the rich? It does.
1866. But a rate would press more heavily upon the rich than upon the poor? Yes, it would. 17s. 4d. a year is the average.
1867. So that if a rate were charged on the value of property a gentleman living in a good house would pay relatively more than a person living in a cottage? Undoubtedly.
1868. So that there would be a distribution in favour of the poor man? Yes.
1869. The poor man has to pay 4d. a week for his pan—there is no charge below that? No.
1870. So that the rate would not be more than the present payment? I think it would not.
1871. *Mr. O'Sullivan.*] Are you in the same uncertain position with regard to the disposal of night-soil as the surrounding municipalities? We are. We called tenders at the beginning of the municipal year, and the contractor has to find a place in which to deposit the night-soil. I understand that his depôt is in Canterbury at present.
1872. I suppose it does not matter very much to you where it is as long as you get rid of the nuisance? It would if he deposited just outside the boundary of the municipality. There is a Poudrette Ammonia Company which has works on the border of the municipality, the operations of which seem to be very satisfactory, but I understand that the night-soil contractor is still depositing it in Canterbury.
1873. St. Peters is on low-lying ground, is it not? Not particularly. Some portion of it is, but none of it is flooded.
1874. Have you any power to restrain people from building on land which is liable to be flooded? The Municipalities Act does not give us any.
1875. I suppose in the absence of drainage a good deal of trouble might arise and possibly some danger of sickness through the ground being charged with filth? Not so much now, because we have recently borrowed £10,000 and expended it upon kerbing and guttering;—that prevents the earth from absorbing the drainage.
1876. Does that carry out most of your refuse? Yes; and scavengers clean them out.
1877. Where does the water go to? Into Shea's Creek and Cook's River.
1878. You said just now that although there was some opposition offered on the part of the borough councillors the people generally would approve of being connected with the scheme? I believe they would. A resolution in favour of it was passed by a large majority. My experience of the municipal councils is that one or two will always oppose anything in the shape of taxation, whether it be beneficial or otherwise.
1879. Where was this carried? In the municipal council. I convened a special meeting. I read the proposal through, and I thoroughly agreed with it, with one or two alterations.

J. C. Sharp, Esq., Mayor of Canterbury, sworn, and examined:—

J. C. Sharp, Esq. 31 July, 1889.

1880. *Temporary Chairman.*] To what municipality do you belong? To Canterbury.
1881. What office do you hold there? I am mayor.
1882. How long have you held that office? This is the fifth year; but I have not held it continuously.
1883. How long have you been an alderman? About six years I think.
1884. How long have you been a resident? Seven or eight years.
1885. You are thoroughly familiar with the streets of the municipality? Yes.
1886. And with the present system of drainage? We have none.
1887. Is the present disposal of your refuse satisfactory? It is just the opposite.
1888. Do you think at present it is injurious to health? Well, I can scarcely say that, seeing that we have a very large district, and that the people have, as a rule, large areas of ground attached to their dwellings.
1889. You have no very dense population in any part of the district? No.
1890. You think if the matter of sewage is not attended to soon there is a likelihood of bad sanitary conditions? Our council have always advocated a scheme such as is now proposed.
1891. Has this scheme been officially considered by the council? More than once or twice.
1892. And always favourably? We wish that it would serve a greater number of people than it appears it will do.
1893. You think it will not include the whole of your district? It will not.
1894. But as far as it will go it will be very favourable? Yes.
1895. Is the cess-pit system in vogue in your municipality? We have that system as well as the pan system.
1896. What charge do you make for removing the pans? 4d. per week.
1897. How much for cleaning the pits? 4d. per cubic foot.
1898. How much do you think that is in the shape of a rate? Perhaps £100 in each case. I am scarcely able to say, because men having large areas of land are allowed to dispose of their own night-soil on their own premises.
1899. You charge them nothing? We do not charge them.
1900. You cannot say exactly what the cost is? Not exactly.
1901. Do you think the people would be willing to pay a rate for this system? Yes.
1902. There is no popular feeling against the sewerage rate? I have not heard any one express an objection to it.
1903. Where do you dispose of the night-soil which you take away? Those matters are attended to by a contractor. We had considerable difficulty, because we had to receive it from other places though very much against our wish.
1904. Do you continue to receive it from other places? No. They go beyond the borough now.
1905. You do not prohibit their going beyond the borough? We object to their depositing night-soil in the borough, and we take every precaution to make them go beyond it.
1906. They sometimes will empty it in your borough? Yes.
1907. You have no objection to their going through the borough if they go beyond? Not if they go beyond, but that is the difficulty,
1908. All those contractors want watching? Yes; and they put us to considerable inconvenience and expense.

J. C. Sharp, Esq. 31 July, 1889.

1909. Then the present system is expensive, merely because you have to watch your neighbours? It is.
1910. Besides being very unpleasant and unneighbourly. You would be very glad to see this scheme carried out? Yes.
1911. It would improve the health of your district? Yes. It is necessary for something of the kind to be done, as the river is getting fast polluted and made foul.
1912. Taking the suburbs as a whole, you think the system would be a great advantage to all of them? I do.
1913. *Mr. O'Sullivan.*] While you are sending your night-soil to other people, are you aware that other people are sending theirs to you? We do not send ours to other people.
1914. I understood you to say that the contractor took it away? Right through the bush, but not into another borough.
1915. Why? Because the place to which they take it—Salt-pan Creek is outside the borough, and is not part of a municipality.
1916. Then the night-soil is deposited on Crown land? It may be so.
1917. While you are taking all that care to send it away, however, other people are depositing their night-soil upon your territory, so that you do not benefit very much from your system? I did not say that other people sent theirs to us, but the contractors for other boroughs bring it into our district whenever the opportunity arises. It they can steal in quietly and deposit it unseen they do so.
1918. Is there any law to prohibit that—have you any power to prevent it? We could prevent them from creating a nuisance, but we cannot always be on the watch.
1919. You could take action in the court to restrain them? That has been done several times, but still they do it.
1920. You are in a hazy and uncertain condition, similar to that in which other boroughs are—you cannot tell for a moment when you will be debarred from depositing your night-soil? No. You do not understand me to say that we have a depôt for night-soil within our own boundaries.
1921. I understood you to say that you had a depôt on some Crown lands near Canterbury; No; the contractor goes through our district and deposits the night-soil somewhere beyond it. I do not know where, but the place is outside our district.
1922. I suppose you do not care so much where as long as it is deposited outside your district? No, very little.
1923. If this depot is outside your district, and some one took action to restrain you from depositing your night-soil there, you would be powerless to get rid of it? I do not know what we should do at all. We should be in a mess.

William G. Coward, Esq., Alderman of Strathfield, sworn, and examined:—

W. G. Coward, Esq. 31 July, 1889.

1924. *Temporary Chairman.*] Do you hold office in any of the western municipalities? I am an alderman of the borough of Strathfield.
1925. Have you lived long in that borough? About three years.
1926. Is the pit system or the pan system in use there? The pan system.
1927. How much a pan is charged? 6d.
1928. Can you say what that would be as a rate? No. I cannot; because the fees for emptying the pans are not paid to the council, but to the night-soil contractor direct, and he does not at present empty the whole of the pans. Some of the residents bury the night-soil on their own ground, so we have no means of ascertaining the actual cost.
1929. Do you know how much the contractor gets? No.
1930. You cannot form a relative estimate of what the present cost is as compared what rate it would be? No.
1931. Do you think that the people generally are in favour of a good system of sewerage? I think they are, because at the present time they experience a great difficulty in disposing of the slops. The council will not permit the slops to run into the streets, and therefore the people have to get rid of them themselves.
1932. Every man is shut up to his own yard? Yes.
1933. And he must somehow or other purify his stuff or get rid of it? Yes.
1934. Did you allow people to make cesspits in the borough? Yes.
1935. You encourage it practically? Yes, because they have no other means of disposing of their slops.
1936. Where do your contractors take the closet refuse? I have not the remotest idea.
1937. You leave them to find out a place? We leave them to dispose of it. I do not think it is deposited anywhere in the borough.
1938. Do you prohibit that being done? That I cannot say. At the present time there is a lot of bush-land in the borough.
1939. Do any other corporations send their refuse into your borough? Not to my knowledge.
1940. Do they send it through to any place beyond? I am not certain whether the night-carts from Burwood pass through it.
1941. So far as you know the borough is favourable to the scheme and willing to pay the expense of it? Yes.
1942. *Mr. Copeland.*] It seems to me that each of these municipalities shoots its night-soil into some other municipality—you send yours away to some other place, but does another municipality deposit its night-soil within your boundaries? I do not think so—not to my knowledge.
1943. Are you aware of some general depôt for night-soil? I am not aware of any. There is a lot of bush-land beyond Strathfield, and possibly it is taken there.
1944. You are under the impression I suppose, that it is taken there? Yes. The person who contracts for Strathfield I believe contracts for Burwood and some other municipalities, so I suppose he deposits it all in the same place.
1945. Are there any residences near this bush-land? Some scattered houses.
1946. Do they complain? I never heard of any complaint.
1947. Have you any idea of the average value of the houses in your district? £24,000.
1948. That is the total value? The total rental value of the house property.
1949. Comprising how many houses? 250 houses.

W. G. Coward, Esq. 31 July, 1889.

1950. I suppose you anticipate a large increase in the number of houses? The district is rapidly growing.
1951. It is quite a favourite borough? I believe so.
1952. On account of the many through trains? Yes; and because of the way in which we have laid out some of our streets. We have planted trees along them.
1953. I suppose the houses there are of rather a superior character? Yes. There are a good many houses of the rather superior class.
1954. Not belonging to the working classes? No. It is by no means a working man's suburb.
1955. Therefore the people will be well capable of paying a reasonable rate for drainage? Certainly.
1956. You think they would be inclined to do so? I am sure they would.
1957. Has the matter been considered by your council? It was considered by the council and the then Mayor, Alderman Von der Heyde, myself, and the Council Clerk were deputed to wait upon Mr. Stayton to inquire into the scheme. We afterwards made the report to the council, and they unanimously approved of the scheme. Mr. Stayton's scheme does not provide for the drainage of the whole Borough—there are some high parts the scheme will not take in. I do not know whether they would be able to levy a sewerage rate on those portions.
1958. Could you not drain from the high parts to the lower parts? Mr. Stayton told us that these parts would have to come in later by some other scheme. If you notice on the map there is a sewer marked by a dotted line going through Enfield and Canterbury—that would take in the portion of Strathfield which the other sewer would not take in.
1959. Then I suppose you would be glad, speaking as the Mayor, to see the Government carry out these works? Yes; the council would be glad to see them carried out. I am not the Mayor—the Mayor was unable to attend, and asked me to come in his stead.
1960. *Mr. Humphery.*] You can give us a professional opinion as to the desirableness of the scheme? Yes.
1961. Do you speak in your capacity as an alderman or from your professional knowledge? In a dual sense.
1962. You have no doubt that the scheme is a good one,? It is. It is the best scheme that they have placed before us.
1963. You fully approved of it? Yes; we looked at Mr. Cowdery's scheme, but we did not consider it at all suitable for the purpose, because at Hen and Chicken Bay at high tide we thought that the filter beds would be flooded, and of course the drainage would be unable to get away, and a great nuisance might have resulted.
1964. I suppose at the present time you really do not know where the night-soil from the municipality is deposited? I do not.
1965. You make no inquiry when the contractor removes it for a certain sum? Yes.
1966. *Mr. O'Sullivan.*] Have you any subsidiary sewers or channels in your municipality—any drains? Yes. We have one or two creeks. We have one creek called Powell's Creek, which at the present time is a great nuisance.
1967. Does the foul water from houses drain into these creeks? It is not supposed to do; we do not allow it to be done. The creek comes from Burwood, and it brings with it a lot of dirty water.
1968. Where do the creeks flow to? The creek, I believe, eventually empties itself into the Parramatta River.
1969. All the way down I suppose the air is pervaded by a smell from the bad water? Yes. Of course, with a storm like that which we had recently, it gets well flushed out; but after a time, as the water begins to run off and to dry up, a number of little pools are formed, in which the water stagnates, and becomes very offensive.
1970. I suppose a great deal of inconvenience and damage is caused from the want of drainage in the district? There is not much damage done. Sometimes the creeks overflow after a heavy downfall, but the greatest objection is the nuisance from the smell.
1971. You appear to be pretty well in the same position as your neighbours in regard to the night-soil question—you have no certain depôt? We have no certain depôt.
1972. *Temporary Chairman.*] As an architect, you are familiar with the cost of the constructive works? Yes.
1973. Have you checked the calculations of Mr. Stayton at all? No.
1974. You could not give the Committee any evidence as to whether you consider the estimate a sound one? I have not gone into the question at all.

THURSDAY, 1 *AUGUST*, 1889.

Present:—

The Honorable JOHN LACKEY (VICE-CHAIRMAN.)

The Hon. ANDREW GARRAN.	HENRY COPELAND, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JAMES EBENEZER TONKIN, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	WILLIAM SPRINGTHORPE DOWEL, Esq.
JACOB GARRARD, Esq.	EDWARD WILLIAM O'SULLIVAN, Esq.

JOHN HURLEY, Esq.

The Committee further considered the proposed Drainage Works for the Western Suburbs.

John Trevor Jones, Esq., Engineer, Water and Sewerage Board, sworn, and examined:—

J. T. Jones, Esq. 1 Aug., 1889.

1975. *Dr. Garran.*] What is your position in the Civil Service? I am engineer to the Board of Water and Sewerage.
1976. You know something about the scheme of Mr. Stayton's, into which the Committee are inquiring? Yes.
1977. If it is carried out, and water-closets supersede the present privies, there will be a large demand for water for the service? There will.

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1978. Can you give the Committee any estimate as to the probable quantity per individual that would be consumed? I have been called unexpectedly to attend this meeting of the Committee, so I can only give you such an estimate as occurs to me from my long experience. I fancy it would be about five gallons per individual.
1979. Is that an estimate based upon present experience? It is not based on any calculation from present experience, but from a recent experience in Surry Hills, where the carrying out of sewerage works made that difference in the consumption of water.
1980. There was no other cause to stimulate the consumption? There may have been, but I do not know of any other. The increase was immediately noticed, and my attention was drawn to the fact that the pressure was less in certain portions of Surry Hills after the sewerage works were carried out there, I then took the matter into consideration, and the pipes being too small, I was obliged to lay down larger pipes to meet the new demand. I tkink I am correct in saying that 5 or 6 gallons per individual per diem would meet the extra consumption.
1981. I suppose there is always some risk of waste in connection with water-closets? There is some risk; but with the careful inspection such as we profess to apply just now, the risk is very much reduced. It is reduced in proportion to the inspection.
1982. You are looking forward to having to supply the whole of the district with water for sewerage purposes? The reticulation of water pipes was laid out with that view.
1983. By the time the scheme is ready you will have an abundant water supply for the purpose? Everywhere. Had I not been called unexpectedly I might have looked over the plans and obtained a little information, but I have a very good knowledge of the reticulation, and also of the proposed sewerage system. I do not remember at present that it goes into any place that we cannot supply with water.
1984. What population are you now supplying with water for closet purposes? Including Darlington, we are now supplying close upon 35,000 houses. I think we are supplying that number of houses.
1985. What do you estimate is the quantity consumed per house? I should estimate that each house consumed 25 gallons per day for water-closet purposes
1986. Have you any idea of the additional population that you will be called upon to serve? By the time the sewers are made, I expect that the population will be very largely increased. I take it that if the sewerage were ready to start to-morrow there would be in the western suburbs close upon 40,000 houses, and estimating five persons to a house, that is 1,000,000 gallons a day more than we have to supply at present.
1987. The population in a few years time in the western suburbs may be quite equal to the population which you are at present supplying? Yes; the population will then be considerably increased.
1988 And the demand upon you would be doubled? Yes; but the pipes are laid with a view to meeting it.
1989. Will you have the water to meet the demand? The water will be there. The Board has passed the duplication of some of the larger supply mains, and that will keep us ahead with all requirements in the way of water.
1990. You expect that the dam at Prospect will be thoroughly settled by that time? Yes; and even without that, I do not expect that there will be any want of water.
1991. Where is the storage besides that? The storage there is abundant for the present population. It was designed for a very largely increased population in fifteen or twenty years time.
1992. Is the Prospect reservoir half full now? I fancy it must be about half full.
1993. That would be about a six month's supply? Far more than a six month's supply. We do not depend upon that—the river is always flowing in and keeping it full.
1994. Not in dry weather? It has never stopped yet. If it were allowed to flow in the canal there would always be enough.
1995. But are you not obliged to allow the people at Camden a certain amount of water? 10,000,000 gallons per day is the quantity directed by the Act to be allowed to flow down the river to satisfy riparian claims.
1996. I am asking these questions because I want to know whether in case of a drought there is a possible risk of all these water-closets being thrown out of gear through the want of water? There is not any reasonable possibility.
1997. You think we may confidently recommend this immense extension of the water-closet area without any fear of the water supply running short? I quite think so. You must not forget that Botany will be available for some years hence.
1998. But we are told that the quality of the Botany water is being deteriorated by the manuring of the Centennial Park, and through other causes? Whatever deterioration there is is not to be discovered by any test that has been made.
1999. Not as yet? Not as yet.
2000. Have you had the water tested lately? Not for some time. It is unfair to test it now, since the heavy rain has washed the road sweepings into it, and it is very muddy. I should only test it in its best condition.
2001. Have you tested it since the manure was put on to the Centennial Park? Not chemically.
2002. Then you cannot possibly say whether the sand filtration has been enough to take away any bad effects of the manure? I cannot say.
2003. The tendency of settlement in that district will be to destroy by degrees the quality of the water? I am making strenuous efforts to prevent that, and to keep the water clean. The Kensington Syndicate who bought the Terry and Winder grants propose to sewer their property and to carry away the drainage from the stream altogether, allowing the stream to pass through the ground without pollution.
2004. If you can keep the water clean you have all your works in good order, so that you could fall back upon that supply? Yes.
2005. Are the pipes sufficient to bear the pressure? Yes; there would be 5,000,000 gallons a day available from Botany.
2006. The reservoir is full? We have been obliged to hasten its flow into the sea to relieve the dams on account of the wet season.
2007. The water has been running over for many months? Yes; you are probably aware that one of the dams in the Centennial Park was washed away.
2008. You are an engineer yourself, and although this matter does not come under your department, I think it is a fair question to ask you if you have looked into the scheme? I have.
2009. Do you as an engineer commend it? I do.

2010.

2010. You do not know of any better plan? I think there is no better plan which the Committee would be justified in accepting. The plan I did favour goes further in the way of excluding all rain water than this does. It is what is called the separate system, but it has had so little experience to justify it that I am going upon theory. Upon a former occasion I said that this was perhaps the best plan that could be reasonably recommended to Parliament, and I still hold the same opinion. The separate system has been so little tried that an engineer has to go largely upon theory. While this evidence is being taken a most valuable treatise by Col. Waring has been published and received here. The volume was placed on the table. Col. Waring is perhaps the highest authority in America on the question, and he has demonstrated to my satisfaction the superior efficiency as well as cheapness of the separate system, as proved from the experience of fifteen years at Memphis, U.S., as well as a large number of other towns in America and Europe.
2011. The principal advantage of the separate system would be that smaller pipes could be used and the work could be done more cheaply? That is one advantage. You could also more efficiently cleanse small sewers artificially, instead of allowing the work to be done by the rain water. There are many months in the year when no rain falls at all, so we have to make artificial provision for flooding the sewers, so we must use all the other water which we can get, such as the waste from baths, to cleanse them. In a small sewer the sewage would probably be less in quantity and more intense than in a large sewer, and if it were required to purify it before it went into the harbour, it could be more easily dealt with, while on the other hand if it were wanted for fertilising the ground it would be richer for the purpose.
2012. In order to thoroughly flush the sewer do you require a full bore of water? For a certain distance.
2013. Then the smaller the pipe the less water you waste? That is one of my reasons for advocating the separate system.
2014. You admit that the experience of large cities has not yet been sufficiently in favour of the separate system to recommend it? It has not been sufficiently tried, and therefore I take it that Messrs. Stayton and Bennett's scheme is all that could be desired, leaving out for want of proof the excellence of the other.
2015. Have you gone into Mr. Stayton's estimate of expenditure at all? No.
2016. You are not able to tell us whether he has under estimated anything? I have not gone into it at all, but I have sufficient faith in Mr. Stayton to think that his estimate will be quite correct.
2017. You think we may rely upon him? He has had large experience and has been practically connected with many sewers in England, so I think that he can be relied upon in that respect.
2018. *Mr. Copeland.*] You say that you are at present supplying about 30,000 houses in the western suburbs with water? I think the number must be about 40,000.
2019. I understood you to mention Surry Hills and other places? Surry Hills drainage is discharged at Botany, therefore in that respect it is analagous to parts of the western suburbs, or at least the lower part of it is. Still it is within the city and has been sewered for a few years. There are 30,000 houses I believe to be supplied by this scheme. I am at a disadvantage because I have not the plans with me and I am not quite sure of my figures.
2020. I understood you to say that you were supplying 30,000 houses now, and that when this scheme was completed you would have to supply 20,000 additional houses? I did not say that. I may have expressed myself badly. I take it that there will be 40,000 additional houses to be supplied when the scheme is finished.
2021. How many houses are you at present supplying with water for sewerage purposes? I think we are now supplying in the city some 20,000 houses;—rather over that number than under it in the city alone.
2022. Taking the average of five people to a house, you will have to supply a population of 250,000 inhabitants when this scheme is carried out, then? Yes.
2023. Have you any information as to the ratio of the increase of population in the suburbs and in the city? As you probably know the population has increased from 200,000 about five years ago—I am speaking from memory—to 250,000 at the present time; that is an increase of 100,000 a year by rough calculation.
2024. An increase of about 20 per cent.? Yes.
2024½. *Vice-Chairman.*] Is that in the whole of the suburbs? I am alluding now to the western suburbs.
2025. *Mr. Copeland.*] How many years would it be likely to take the Government to complete this system of sewerage? That is rather a large question; but I think the work ought to be finished in five years.
2026. Taking the increase of the population during those five years, and the additional supply of water which will be required for sewers and domestic purposes, could you give us any idea of the quantity of water which would be consumed daily;—have you computed what the population will be? I have not computed anything, but I could put it down in a very few minutes.
2027. *Dr. Garran.*] Could you send us in some statement? Certainly. I think that would be the best way. [*Vide Appendix* J.]
2028. *Mr. Copeland.*] I presume these works, when completed, will last for a great many years? Practically they will last for all time.
2029. What I should like to have is an estimate of the probable population, say twenty years hence. I think I understood you to say that the waterworks at Prospect are calculated to be able to supply the city and suburbs twenty years hence? Yes, I think the supply will be sufficient during that time without a supplementary dam.
2030. Is that calculation based upon the ordinary supply for domestic purposes, without sewerage? No; it takes into consideration the sewerage as well. It is estimated to give a liberal supply.
2031. You are of opinion that the present water supply will be sufficient to provide for the population twenty years hence if it increases at its present ratio? I am with such supplementary works attached as may be found necessary in the interim. Works may be found necessary to distribute the water; but I think the supply at Prospect will be sufficient twenty years hence.
2032. *Vice-Chairman.*] Without increasing the catchment area? Certainly; but it might be necessary to increase the storage;—to build another dam like Prospect, though I think it is doubtful that that will be necessary.
2033. *Mr. Copeland.*] You had something to do with the inspection of that dam recently? No, I was not called upon to inspect it.
2034. You stated just now that the engines at Botany were being kept in order? Yes.
2035. Is it not a fact that those engines are perfectly worn out? No.
2036. I think we had it in evidence upon a former occasion that the engines were quite unsuitable for the work? I have had them recently roughly examined, but I purpose to have a more minute examination of them made. The engines are said by an English engineer, who has just come out from home under the service of the Board, to be fit for excellent work. He also said that the boilers, which were condemned some time ago, are still fit for many years work.

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2037. You are not using the works now? Not unless there is a breakage of a pipe, or some stoppage. We have been obliged to use them three times through such stoppages.
2038. Do you think any danger is to be anticipated from the connecting pipes going wrong in connection with the sewerage, and so polluting the water? Not any.
2039. I think I have known cases where that has occurred? Where the water in the pipes has been polluted?
2040. Yes? No; it could not be so theoretically. You can easily understand that the force of water is very much greater in a water-supply pipe, and any pollution with which it comes into contact is driven away from it, instead of being allowed to enter it. Water issuing from an orifice in the pipe would drive everything away—nothing could pass it, because of the great force of the water coming out. Of course we take care not to lay pipes in contact with sewerage. There is one source of pollution—and perhaps I have only just now seized your meaning. Some years ago it was found that people connected water-closets with the water system directly, without any intervening cistern.
2041. That is what I mean? Well, of course, very great care will be taken by the Sewerage Board to prevent any connections being made direct. When pipes are entered, for putting in a new service or anything like that, they will suck in anything that comes into contact with their ends; but the cocks which have been put on since I have been here, and which will be used in future, prevent any flow into the pipe. The cocks are of a high pressure, and they act by means of a valve which prevents anything going more than one way, and that is outwards.
2042. Would not the cost to the individual houses be greater under this system than it is under the present system of pans? Quite the other way. It will be a great saving.
2043. Would not the water-closets be more likely to get out of order? No. By this system there will be a great saving to the citizens.
2044. A monetary saving? A monetary saving.
2045. Do not the water-closets frequently get out of order? Very seldom. I probably do not hear of every case; but if there were anything serious I should know of it. It is very seldom that a water-closet properly managed gets out of order.
2046. I know that at the Legislative Assembly they are continually getting out of order? I am afraid they were badly laid in the first instance, then. The older sewers in Sydney are very badly laid, and the result is that the best houses are the worst sewered and the worst ventilated.
2047. Are you of opinion that the water-closet system is better than the dry-earth system? I very much prefer it to the dry-earth system.
2048. *Mr. O'Sullivan.*] What is the minimum sewage-flow allowance for these works? For an individual?
2049. What would be the allowance it would provide? About 2 gallons at each flush. That is a liberal allowance—each individual would use 5 gallons a day.
2050. I suppose on washing-days it would be greater? Yes.
2051. I find that in London the main sewers carry off half the sewage matter in six hours;—do you think that could be accomplished here with the quantity of water that you could supply? I think so. It has less distance to travel, and I should judge from that that it could be carried off in less time.
2052. I suppose it has come under your notice that upon several occasions recently in the higher parts of the city the water has not ascended to the top rooms of the houses—that has happened in Darlinghurst, for example? There is one point in Darlinghurst to which the water does not reach; but preparations are being made to carry it higher, though they will be very costly, considering that only one or two houses are concerned. The houses stand at the top of Albion-street.
2053. Does not that indicate that the pressure is very weak? It is optional with the Board to give a higher pressure. They have five sources, every one of them with an increasing pressure.
2054. Do you think it would be an improvement, as far as the sewerage scheme is concerned, if by-and-bye we carried out the Kenny Hill pressure scheme? I think the Kenny Hill scheme is too late now. I was amongst the first to advocate it; but I think it is too late now, because if you introduced it it would confuse the systems. As it is now there is a certain pressure to every zone of levels. Crown-street has its own zone, which it supplies. The next zone is 70 feet above that at Paddington, and the water is distributed from there to every place to which it can be conveniently and perfectly supplied. If the Paddington water supply cannot be distributed to a place, we are obliged, as in the case to which you have referred, to draw from the Woollahra reservoir, and if we cannot avail ourselves of that water we draw from the 360 feet level at Waverley.
2055. You have no doubt in your own mind that there will be ample pressure for flushing the sewers? I have no doubt of it.
2056. *Mr. Humphery.*] What is the total consumption of water daily at the present time? About 10,000,000 gallons.
2057. What could you supply? We could supply 18,000,000 gallons, and when the duplicate main comes in we shall be able to supply over 40,000,000 gallons.
2058. If you had to provide for the flushing of water-closets, with a population of 400,000, you would only require 2,000,000 gallons of water per diem to do it at the rate of 5 gallons a head? Yes.
2059. So that there is not the slightest probability of the water supply being insufficient? I never looked upon the sewerage system as being at all likely to trespass upon it over its capacity.
2060. Therefore the question of making provision for the flushing of water-closets gives you no anxiety? No.
2061. *Mr. Hurley.*] Have you given any consideration to a proposal made by Professor Threlfall for dealing with sewage matter by electricity? As much as I could. I read Professor Threlfall's paper, and I have spoken with other scientific men about it. It is a highly scientific paper; but Professor Threlfall does not speak of the system as the best system. He seems to be of opinion that, after all, there may be a chemical system that will answer the same purpose.
2062. Have you read a report of, or have you any information with regard to, the works at Crossness? Yes. There are a lot of things to be considered apart from such results which you get from new experiments. I never allowed myself to run after new experiments to any great extreme.
2063. You look upon this system as an experiment upon its trial? Precisely so. I think that is the state of the case at present. I am assured by other analytical chemists that this is only another way of applying

applying a chemical system which could be applied with equal efficiency chemically instead of by electrolysis. It is most efficient; but the expense is yet to be proved.
2064. I suppose you have given some consideration to the sewage farm at Botany? I have a little, though it has never come before me. It belongs to another department, and they do not supply me with any information with regard to it, so I have a little delicacy in asking for it.
2065. *Mr. Dowel.*] You have stated that you believe the water-works scheme at present is sufficient for all requirements in regard to the carrying out of this sewage scheme? Such is my opinion.
2066. For the next twenty years, probably? With such additions as may be called for during those twenty years. We may need a supplementary reservoir over Prospect; but that is not very likely.
2067. Are you aware that applications for water for hydraulic lifts have been refused because there was not sufficient water to provide for them? Yes, I am pretty well aware of that fact; but it requires a little explanation. Hydraulic lifts are worked at a time of the day when it is difficult to supply enough water for domestic purposes. When they are at work they consume very largely, and thereby deprive the domestic system of its proper pressure, and would prevent the water from being delivered to the very lofty houses now being built. For that reason it was deemed wise not to be too free in allowing water for these lifts. In Melbourne, where they have twice the pressure that we have—they have 300 feet to our 140 feet—the water elevators have been found to embarrass the supply. They have been known not to work during the middle of the day, because of the extra consumption in other places during the dinner-hour. If that is the case in Melbourne, where the pressure is twice as much as ours, it would require twice the amount of water to do the same work here, and if the water supply in Melbourne is embarrassed by these lifts it will be much more the case here.
2068. You stated that our water supply was sufficiently ample for all public requirements, and yet you now state that you could not give a little water for these lifts? I did not say a little water—it is a very large quantity.
2069. Is it not a fact that only a very small quantity of water is required? It is a fact that every lift of a ton takes 80 gallons of water.
2070. For how long? It takes 80 gallons of water in the course of a few seconds.
2071. Continuously? These lifts are very cheap. They are much cheaper than any other means of raising weights—such as by gas-engine lifts, and it appears to me that hereafter they will be so popular that every lodging-house and every public-house must have one. They are getting fashionable, and they are also very useful; but if they were so numerous they would to a certainty interfere with the domestic water supply. They would not do so of course at present, nor would they if there were fifty or 100 of them, but when they came to thousands, which I expect they would do, they would interfere. I am only nipping the matter in the bud. I have also in view that an hydraulic-power system will be inaugurated in Sydney, and I am doing my best to encourage such a state of things. It is not that we cannot supply the quantity of water, but we cannot supply it at the time when it is needed, because that is exactly the time when it is most required for domestic purposes.
2072. You practically admit that you are not able to supply that public requirement? Yes, that public requirement.
2073. And yet you stated that you were prepared to supply a sufficient quantity of water for this large and extensive sewerage scheme? It bears a small proportion to the quantity required for the system of lifts, and, apart from that, it is extended over the whole day and night. It is not all taken at once.
2074. Under any circumstances, I suppose there should be no real difficulty in duplicating all your services? You mean mains. There would be no real engineering difficulty, if it could be shown that it would pay.
2075. There would be sufficient water under any circumstances? There would be plenty of water if we could only have the mains enlarged for it.
2076. You consider that the water-closet system would be a great advantage over the present pan system? I am certain of it.
2077. A large quantity of water would have to be taken to considerable heights? Yes. Those people would be deprived of water in the event of hydraulic lifts being largely used.
2078. *Vice-Chairman.*] Where do you measure the gravitation from—from the head of the catchment area, or from the storage reservoir at Prospect? Only from Crown-street.
2079. The pressure only comes from Crown-street? For one system—the lower system. We have another system supplied from Paddington. That is a very extensive system, and goes as far as Petersham. The water comes in one way, and goes back to Petersham from Paddington. Another zone confined to the eastern suburbs, is that supplied from Woollahra.
2080. Was the storage reservoir at Petersham constructed in order to supply parts of Sydney which could not be reached by other means? No.
2081. Part of the suburbs? Part of the western suburbs.
2082. How are the high levels in Macquarie-street and North Shore supplied? They are supplied by the higher level—Paddington. This particular part is supplied from Paddington.
2083. When you tap the reservoir at Prospect, will that give you an additional pressure? If brought all the way in a pipe it would give us 25 feet more if the reservoir were full, but that pressure would be variable. It would only give us 25 feet at the highest level.
2084. Supposing you were to increase your storage supply, as you stated might have to be done, could that be done in such a way as to give you an increased pressure? As I said before, it would throw out of gear the whole system. That is where the higher pressure was desirable in the first instance; but now that everything has been arranged, and sometimes the pipes of the three systems interlace, to introduce water from a large head into all those would rather interfere with them. Still, there is nothing impossible in it.
2085. Could it not be done in such a way as to increase the storage at Prospect, and not interfere with the reticulation in any way. Supposing the increased storage were above Prospect, and its operation kept the Prospect reservoir full, would not that give you an additional pressure? It would give us 25 feet, but that would not be enough; we want another 100 feet. Then there would be no pumping worth speaking of.
2086. You are keeping your Botany dams in fairly good order? Yes. The engines are sometimes fired up in order to move them, and keep them from going out of repair.

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2087. Is it the case that some of the principal dams have been giving way recently? Yes. Some fresh turf was put on to one of the dams by the Centennial Park authorities, and the by-wash carried away some of the turf. It only required that to throw the whole surface back, until one dam was emptied into another, or nearly so. If it had all been emptied considerable damage would have been done.
2088. Had the soil of the dam been shifted? Yes. As the water came to the bottom, which was newly turfed, it carried away one turf, and that was quite enough to start all the rest.

Edward H. Buchanan, Esq., Mayor of Balmain, sworn, and examined:—

E. H. Buchanan, Esq. 1 Aug., 1889.

2089. *Vice-Chairman.*] You are Mayor of Balmain? Yes.
2090. How long have you held that office? This is my second year of office.
2091. How long have you been a resident of that suburb? For fifteen years.
2092. Have you become impressed with the necessity for an improved system of drainage there? What drainage there is in existence is very good, but there are some streets still undrained. As regards the surface drains I do not think anything could be more satisfactory. We adopt a system of concrete guttering.
2093. What system of sewerage have you? We have scarcely any underground sewerage.
2094. What is done with the fœtid matter? The earth-closet system is adopted. Each bucket is emptied twice a week and the contents are towed out to sea.
2095. They are towed out to sea twice a week? At least twice a week.
2096. Have you given any attention to the proposed system of drainage set forth on the plan? I did when the matter was referred to us last year. I was in the chair when a motion was carried asking the Works Department to omit Balmain from the scheme.
2097. They do not desire to have it included? No.
2098. Is that their opinion still? The matter cropped up again about a fortnight back, when one of the aldermen moved, "That we adopt the scheme proposed by Mr. Stayton." The motion received scarcely any support, and as we were then experiencing some difficulty with regard to the disposal of our night-soil, the matter was postponed indefinitely.
2099. You would not give it as the opinion of the residents of Balmain that they are opposed to the scheme? I think that 99 out of 100 of the residents know very little about it.
2100. Of the representatives of the residents in this municipality? The majority are against it.
2101. You think that is their fixed conclusion? Yes.
2102. What is your own individual opinion? My own opinion is that the scheme will be inefficient and too expensive. We are so very far removed from the outfall, and so much of Balmain is below the level of the main sewer, and will require to be pumped up to different levels, that the scheme will not be as effectual as if it were one continuous drain, while the expense, £91,000, will be a tremendous sum with which to saddle the public. Even at that cost Mr. Stayton does not propose to sewer the whole of the borough, but to drain the lower levels into the harbour and into the river.
2103. Do you find any great inconvenience to arise from your having to carry the night-soil in carts to the punts? Lately we have been chased from pillar to post. Recently we used to take the stuff over the river into the bush, but when those suburbs became populated they objected. Then, along with other boroughs, we used to deposit it in Brown's yard, at Pyrmont; but within the last month the Mayor took action to prevent that, and we were forced to seek for a place of deposit further afield. We then went over the river again, but the Hunter's Hill people objected, and we have now been forced to purchase a piece of land at the head of Iron Cove in order to deposit the stuff there; but as it will take some time to get this system into working order, I have had to arrange for a depot at the foot of Adolphus-street, in Johnston's Bay. We have not had any objections from the people there, because we have gone to great expense in disinfecting the stuff. The municipality distribute half a pound of disinfectant to each closet gratuitously. The powder is put into the closets and the empty tins are collected twice a week.
2104. Is the dry earth system regularly used? There is no dry earth used. The refuse is simply collected in the pails, and they are emptied twice a week. The supply of disinfecting powder has reduced the nuisance which used to arise from the passage of the carts through the borough to a minimum. The question is, can the Council still maintain this course without charging the ratepayers for the disinfectant?
2105. Do you think the inhabitants of the surrounding neighbourhood, as the population increases, will become consenting parties to your system going on for any length of time? I do not think so. Of course as the place becomes more thickly populated, and improved methods of collection and disposal are discovered, we must move on with other people; but what those methods will be I do not know. I believe that we shall eventually, if we are allowed to keep outside this scheme, adopt a system of burning the refuse. Sir James Farmer's system of disposing of the refuse by fire would receive more consideration than any other system.
2106. Have you had evidence of how that system would work? Only from Sir James Farmer's writings.
2107. Do you know that there are one or two of his machines in the colony already? Yes.
2108. And that they are working very successfully? I have heard very favourable reports from the one at the Auburn Meat Works.
2109. *Mr. Trickett.*] Is the pan system universal in your borough, or are cesspits used as well? There are 4,300 pans and 300 or 400 cesspits.
2110. How much a week do you charge the people who use these pans? The average cost would be 4½d. per week for a double emptying, and 2¼d. for a single emptying.
2111. What is the total for the year? It averages upon 4,300 closets at £1 per annum.
2112. That is your revenue from the emptying of the earth closets? Yes.
2113. Is your borough generally thickly populated, or is there much vacant land? Where it is populated it is what you may call thickly populated. I had a calculation made not long ago, and the number of allotments 20 feet by 100 feet, allowing a superficial area of 2,000 feet for each allotment, is 5,000. I think there is still that quantity of land left.
2114. Are there any localities in the borough to which you can point as being prejudicially affected by the present system of drainage? Yes; what is known as "Happy Valley" is such a place. There was originally a creek there running from Beattie-street to the head of Wide Bay, and it is now a very nasty and unhealthy drain.

2115. It is a low-lying portion of ground? Yes. There is another such drain running from the head to the foot of Reynold-street, from below Lees Hotel, and the other end of Beattie-street.
2116. The same primitive drainage exists there as in other parts of the borough? We have not been able to have any drains there. We have simply cut traces in the rock and allowed the drainage to flow through.
2117. It is not kerbed and guttered? Those two places are not guttered.
2118. Is the health of those localities bad—is there much sickness there? I do not know that we could attribute any, or but very little, of our sickness to our drainage, because we keep these places flushed. We never allow the stuff to lodge there.
2119. Seeing that you do not appear to approve of Mr. Stayton's scheme as applicable to Balmain, have you or the Council generally any alternative scheme which you could suggest to the Committee? No. I did not want to propose anything until this proposal had been submitted and gone through again by the Council, but I thought of proposing the burning process. I have all the figures ready. We have a piece of land which I think could be used without any objection being taken by the Government or by surrounding municipalities, and we think that by joining three or four municipalities together the cost could be very much lessened. Five Dock and other suburbs on the western side could use this scheme. For towing the night soil we now pay per month £110; but when we, in conjunction with some twenty other municipalities, had it conveyed to Brown's yard at Pyrmont, we only paid £43 a month, so that through our working by ourselves the cost is considerably increased. In fact, we have now to go to an extra expense of £700 or £800 a year.
2120. Before, you were working conjointly with other municipalities? Yes; with some parts of Sydney, Paddington, Redfern, Leichhardt, Balmain, and the Glebe. Those municipalities all used to go to Brown's yard at Pyrmont.
2121. Do you pay a heavy sum for the water supply to flush your gutters? No; the Water and Sewerage Board allow the water free for flushing purposes, so long as we pay for the cost of stand-pipes, and maintain them. Of course this system is under the supervision of a man with a turn-cock, to whose salary we contribute some trifling sum, but I forget how much.
2122. Do you not regard your present system of disposing of both closet refuse and drainage matter as very primitive and undesirable? I think the surface drainage is right enough. Of course in some places where there are large areas to drain, it could be improved by allowing the drainage to pass through silt-beds before it reached the harbour. As regards the system of disposing of the closet refuse, there is no doubt that it is primitive, but I do not think the people would agree to pay a taxation for the interest upon an expenditure of £91,000, and that is only the probable cost of the scheme.
2123. Is the liquid matter, such as bedroom slops and soap-suds, thrown into the streets? Yes.
2124. Speaking as a representative of Balmain, would you go so far as to say that the people generally would rather not have the scheme applied to Balmain—would you say that from your general contact with them, and from your knowledge of their views? I should not like to speak of the public generally. We are very differently situated from any other suburb, because there are so many drains. The gutters are so formed that the smaller the quantity of drainage passing down them, the smaller the nuisance. We have also very steep falls. In that respect we are not like many of the other suburbs, where the gutters are flat, and the drainage is likely to be blocked by paper or some other obstacle.
2125. Speaking as Mayor, you say that the majority of the aldermen do not desire this scheme? I do not desire to say that they would give the present system the preference before a better system. Of course, I believe that the underground sewerage system, if it could be carried out for anything like a reasonable amount, would be preferable.
2126. Has the question of a sewerage rate ever been discussed by the Council? No. The lowest that we expect to pay is 4 per cent. on £90,000.
2127. *Mr. Copeland.*] You say that at the present time you send the night-soil away by punts to sea? Yes.
2128. By that system, is not a very bad smell created in the neighbourhood where the punts are loading? At times. If there is a heavy wind blowing you certainly get the effluvium. I have been down there on two or three quiet nights when the smell was scarcely perceptible. It is greatly lessened now, because the pans are disinfected, and we also use a liquid to disinfect the carts. The nuisance is nothing like as bad as it used to be.
2129. The night-soil is emptied from the carts into the punts? It is tossed into the shoot, and thus finds its way into the punt.
2130. Are there any houses in the immediate vicinity of where the punts load? The Premier does not live a stone's throw away. This was the most accessible place we could get, because the land at the back of the shoot is fairly high. Even though the carts have to pass down Adolphus-street, where there are a number of small tenements, we have not had an objection from one householder.
2131. How far out do the punts go before they discharge? According to the specifications they have to go out five or six miles—they will not go out further than they are forced.
2132. There is no supervision to see that they go out that distance? No.
2133. You say that the cost of emptying the night-pan is 2½d. per pan? For each emptying.
2134. We had it in evidence yesterday that in some of the other boroughs it cost 5d. per pan? Yes. I have paid as high as 6d. in some of the other suburbs. You had also to give notice.
2135. How is it that you manage to dispose of yours so much more cheaply? I think because in years gone by we were within easy reach of a depot. Having a depot at Hunter's Hill, we were rather favoured in the matter of price. The Council have never lost anything by that charge; in fact I think they have reaped a little profit from it.
2136. Have you noticed any sickness prevalent in the neighbourhood of where the punts are loading? No.
2137. You think the people there are just as healthy as those living in other places, notwithstanding the bad smell? I never heard of any sickness which could be attributed to anything connected with the removing of the night-soil. The contractor for collecting it has twenty or twenty-five men in his employ and they all board and lodge at his place.
2138. They seem to thrive on the smell? I do not know whether they thrive on it; but they keep themselves free from disease.

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2139. Has this question been brought up before the council formerly? It was brought forward last year; but I do not know exactly the date. We had a letter from the Works Department asking us to take the matter into our consideration, and to forward a report, or something to that effect. The matter was gone into, and referred to the works committee, and considered by them. I think it stood over for three or four months. It was spoken of at various times, and we finally passed a resolution asking the Government to omit Balmain from the scheme.
2140. That resolution was carried unanimously by the council? Yes.
2141. Since then no public meeting has been held? I do not think the public as a whole know anything of the matter. There may be a few people who interest themselves in public works but outside of them I do not think the general public are seized of the nature or the extent of the scheme.
2142. Is the £91,000 you mentioned your proportion of the cost? I believe so. I think Mr. Garrard informed the council that that was the probable estimate.
2143. Did you calculate what rate it would be necessary to levy on property to cover the interest on £91,000? No; we took it on the lump sum.
2144. Have you information as to the number of houses in your borough? It is over 4,300. I could let you know the exact number.
2145. Then I suppose we may estimate the population at about 20,000? At least 26,000, according to the latest returns.
2146. You anticipate, I suppose, a considerable increase in the population as time goes on? If we get an electric tramway, I anticipate that there will be a very big increase, but otherwise I expect that there will only be the usual increase. Last year the buildings in the borough only increased by fifty or sixty, and the year before that by something like 150.
2147. Have you plenty of spare land? We have a fair quantity. I think in the future many of the present one-storied buildings, and especially weatherboard buildings, will come down, and be replaced by buildings of two stories. That will be especially the case on the main road.
2148. And yet you are satisfied to continue this primitive pan system rather than pay for more modern appliances which would get rid of the bad smell altogether? I should not like to answer for the whole of the public;—they are not fully seized of the nature of the scheme.
2149. Individually it is your opinion, as Mayor, that you would rather put up with the present bad smells than pay for a cleaner system? I do not admit that there are the bad smells attached to the system which we carry out, that many might imagine.
2150. *Mr. Garrard.*] I think you told us that the revenue you receive from the dry earth system is £4,300 a year? Yes.
2151. What is the total cost to the municipality of the collection, disinfecting, and disposing of the night-soil by punts? At the present time the cost of collecting per month is £210, the cost of deodorants and disinfectants £80, the cost of punting to sea £110, and the allowance for depreciation of plant in the wear and tear of the night-carts £5; making a total of £405 per month, or £4,860 per annum.
2152. Then you are losing about £500 a year through the transaction? At the present time.
2153. Because you have to dispose of the stuff yourselves? Yes; and because we charge nothing for disinfectants.
2154. But you mentioned nothing as to the cost of supervision;—I understand that you have two inspectors of nuisances? Yes.
2155. What are their salaries? £130, and £100 per annum.
2156. Is it a fact that a principal part of their duties is in connection with the disposal of night-soil? Yes; the greater part of their time is taken up in that way.
2157. Is it a fact that a large amount is owing to the council as arrears for the pan system? There is about £3,000 outstanding.
2158. Is it a fact that you have no remedy at law; that you cannot sue these people for attendance. Is the contract merely between the council and the ratepayers, or can it be enforced by law? I do not think we could sue them at law for the recovery of the money.
2159. In the event of a ratepayer not paying the debt which is due, have you any means of forcing him to do so? No.
2160. You can only discontinue the service? Yes.
2161. Will you tell the Committeee what are the average bad debts incurred per annum by the council in connection with the dry earth system? I could not answer that question. I know that last year I reduced the amount considerably, although some of the property-holders, if they had liked, might have withstood my action. Several paid, and the amount was reduced considerably.
2162. Is it a fact that the allotments in Balmain are comparatively small in area? They are very small.
2163. Therefore Balmain is likely in the future to be very densely populated? Yes.
2164. And a defective system of drainage will consequently have a bad effect upon the public health? Yes.
2165. Owing to the density of the population? Yes.
2166. Is it not a fact that the greater part of the time of the council is taken up in inquiring into and remedying complaints concerning nuisances which are supposed to arise from the pan system and the surface drainage? No.
2167. How many miles of streets are there in the borough? Forty-four.
2168. How many miles of surface guttering are there? About 30, I think, finished.
2169. And they all fall into the harbour at various points? Eventually.
2170. The two worst places that you know of being the Happy Valley drain and the Beattie-street sewer, where the drainage lies upon mud flats at the foot of the outfalls? Yes.
2171. Is it a fact that the Balmain night-soil carts have been prevented from going through other boroughs to a place of deposit? Yes.
2172. In the event of Sir James Farmer's process being adopted, the night-soil would have to be collected and carted to a depôt? Yes.
2173. That system would not deal in any way with the ordinary house and kitchen slops—those would still have to go into the surface gutters? Yes.
2174. Can you tell the Committee whether all the members of the council were present when this matter was discussed last year? I could not say whether every member was present; but certainly three-fourths of them were.

2175.

2175. Can you tell the Committee whether this scheme was decided against by a unanimous vote, or what proportion of aldermen were against it? I think the vote was unanimous. Those who favoured the scheme at first, after their objections were spoken to, withdrew them, or at any rate they did not press them, and no one voted against the resolution.
2176. What was the result of the division the other day of which you spoke when it was proposed to reopen the discussion? When the matter came up it was decided to postpone the consideration of it. Because of a paper which you sent me in reference to some evidence that had been taken with regard to the electrolysis system, I advised the aldermen that they should hold this matter over.
2177. In view of the possibility of dealing with the sewage at the local outfalls, it was decided not to reopen this question at the present time? Yes.
2178. There was a municipal election between those meetings? Yes.
2179. Do you know whether the sewerage scheme formed a platform for any of the candidates during the campaign? I do not think so.
2180. No public meeting has been held for or against the scheme nor has any protest been made against the supposed excessive burden which it would place upon the shoulders of the people? No.
2181. Then I understand that you gather from the opinions expressed at the council meetings that the objections to this scheme are;—first, the cost of the works, and, secondly, that they will not be applicable to the whole borough? Quite so.
2182. Considering the extra amount which you are now paying for the present efficient or inefficient system as you like to call it, do you not think that it would be better to have a thoroughly efficient service, although it would cost you as much or a little more than the present system? If it were only a little more.
2182½. Yes? Decidedly.
2183. Is it not a fact that at almost every meeting of the council complaints come from the ratepayers as to the inefficiency of the present method of dealing with the night-soil and the nuisance caused by the night-carts going round the borough at all sorts of hours? At the last meeting of the council a petition was sent in signed by a number of persons, complaining of the non-attendance of the night-carts on a certain street. The inspector visited this place, and it turned out that the people had been induced to sign this petition under the impression that they were signing for a water main. That is the only complaint of inattention for the last three or four months. Complaints of inattention are scarcely worth mentioning since the present contract began.
2184. One reason why you favoured Farmer's scheme was that it would deal with the house rubbish? Yes.
2185. Have you any difficulty in dealing with that now? It is hard enough now to get a place in which to deposit it, and as the locality becomes more populated it will be still more difficult.
2186. That is one reason why you favour Farmer's scheme? Yes. We thought that with an improved system of collection there would be more economy, and that good material would not be wasted.
2187. What is the population of the borough now? I think about 26,000 people, as near as I can get at it.
2188. Judging by the size of the allotments, I suppose it is capable of carrying a population of nearly double that number? I do not know about double it; I should not like to say that, but it certainly could be considerably increased.
2189. Is it a fact that the council have recently gone to considerable expense in buying land, and erecting a wharf for the purpose of getting rid of the night-soil? We bought a property for £1,150, and it will take £300 or £400 to make a shoot and construct a wharf to use it temporary for a depôt. Eventually, if we adopt the burning process we shall erect the works there.
2190. *Dr. Garran.*] Do you think that your people would grumble at 1s. rate? I think so.
2191. You say that at the present time 1s. a house is charged? That is about it.
2192. You think that a man who has a house worth £20 a year would grumble very much at a shilling rate? I think he would.
2193. What is a shilling rate on £20 a year? It would be £1 a year.
2194. Well, that is what he would be paying now? Yes. A small tenant pays 4s. 9d. a quarter, which comes to 19s. a year.
2195. And no provision at all is made for his slops? No.
2196. And no earth is provided for the pans? No.
2197. The fæces are kept in the pan for half a week? Yes.
2198. Do you think that is a nice sweet way of doing things? It would be far better out of sight, of course.
2199. And a man pays a pound a year for that? Yes.
2200. He would have to pay a pound a year for an efficient sewerage system which would take away the slops from the back yard as well? Yes.
2201. He would grumble at the sewerage rate? I do not know that an individual in that position would grumble.
2202. I want to know why he should grumble at paying a rate for a better system when he has at present to pay the same amount for a bad system? I think that if everybody was sure that the better system which you suggest could be carried out at the same price as the present system cost there would be no objections to it.
2203. You say they do object at present? The aldermen object.
2204. They object to being taxed? They object to the carrying out of this scheme owing to the many levels. There is one from the School of Arts for something like 60 feet. The sewer then goes over the next hill into Happy Valley, and I believe the scheme is to carry it over there on tressels, to connect with the main outfall sewer in the Newtown Road. They all have an idea that this will not be done for £90,000.
2205. Supposing it could be done for £90,000, it would not much matter if part of it were on tressels No; I do not think it would.
2206. Supposing it did not cost more than £90,000, that, at 4 per cent., would be £3,600? Yes.
2207. You admit that you are now paying £4,860 a year for disposing of your night-soil? Yes.

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2208. So that you would gain by this system £1,260 per annum; what I want to know is, why the Balmain ratepayers prefer a bad system to a good one, and why they object to be £1,260 per annum to the good? When we get properly fixed up we expect to lessen the present cost very much. There is nearly £1,000 a year given away, I think, for disinfectants, and I expect that eventually we shall have to charge a rate of 1d. or ½d. in the £ to cover that.
2209. But still, with the present system, you have to disinfect, collect, and carry away the stuff, and provide a private wharf in order to ship it, besides keeping a perpetual stink on each property, and losing £1,260 a year? Yes.
2210. Yet your people prefer the dirty to the clean plan? Presuming that there are some evils connected with the present system the council are under the impression that it is better to put up with the evils they know rather than with those that they do not know. Besides, we have never been assured that this work will cost only £90,000, and we do not know that there is a length of sewer of 1,200 feet with a fall of only 1 foot, which is large enough for a population four times the present size. There is scarcely sufficient water to flush this, and the aldermen want to know where the required velocity is to come from to sweep out the sewage. We really do not find so much objection to the present system of collecting and disposing of the sewage as to wish for a system of which we are somewhat frightened.
2211. Balmain is a great district for engineers, is it not? We do boast of a few.
2212. I gather from your last answer that the great objection to this scheme is from an engineering point of view? That objection has been brought forward. I do not wish to criticise Mr. Stayton's proposal, though I have studied it. You seem to think that we prefer the dirty system to what you call a cleaner system, and I do not want it to go forth that I, as a representative of Balmain, am so thick-headed as to wish to continue a dirty system.
2213. I called it a dirty system because you say you do not use dry earth. You simply keep the human excrement in a pail for half a week at a time; I call that a dirty system, do you not? Yes; but the cesspits are worse, because they may not be emptied more than every three or six months.
2214. They rot the earth in the neighbourhood? Under the old system we had more than we have now. I think we have now only 300 or 400, and they are properly constructed with bricks.
2215. Still I understand you to admit that your existing system is a dirty one? I should not like to say that it is a clean one.
2216. You admit that it costs £1,260 more than 4 per cent. on £90,000? Yes.
2217. So that it cannot be cheaper than the proposed system? No.
2218. Then it must be dearer. The question is, what is the basis of the prejudice against having a clean and cheap system. I gather from your evidence that you distrust the engineering part of the scheme? That is one very great objection to it.
2219. You do not believe it could be done for the money? No.
2220. You do not believe that the stuff would be freely carried away? No.
2221. *Vice-Chairman.*] What disinfectant do you use? Permanganese of potash, carbolic acid, and dry ash.
2222. *Mr. O'Sullivan.*] What would happen if an injunction were taken out to restrain you from carrying the nightsoil down to the harbour, or taking it to any depot outside the municipality. What system could you adopt then? That is a very difficult matter. Of course if we could not get out of Balmain we should have to stay in it.
2223. Are you not liable to such an impediment? I do not think so, as long as we commit no nuisance. We could take our punt anywhere down the harbour and nobody would know anything about it.
2224. Possibly what you might not consider a nuisance other people would, and it is within the bounds of possibility that the Supreme Court might uphold their application? I do not think the harbour authorities, unless we emptied the stuff in the harbour itself, would be justified in doing anything of that sort.
2225. If the repayment of the cost of the scheme were extended over 50 or 60 years, and the rate reduced to 8d., do you think your aldermen would take it up? If the cost were lessened it would go a long way in removing our objections.
2226. What you are afraid of is the high rate of 1s. in the £? And, as I said before, the distance from the out-fall at Bondi, and the almost dead level of some of the lines of sewers. Another objection is, that when the sewers get down to the bottom of various valleys, the sewage will have to be pumped up again to the heights, in order that it may enter the main front sewer.
2227. But these dangers have not arisen in large cities like London and Paris, where such sewers have been constructed. You have not heard of them in those places? No.
2228. Is it not quite possible that if the scheme is based on scientific lines it will be as good as those schemes? Yes; but large cities such as Birmingham and Manchester collect their refuse and burn it.
2229. But of course you are aware that they cannot send it away by gravitation to a suitable place of deposit, like we can? No.
2230. We have every reason to believe, from the evidence of scientific experts, that this scheme is feasible. We have every reason to believe that it will be a success. That being so, and there being a possibility of the rate being lowered to 8d. in the £, do you think the people of Balmain will adopt the scheme? I think that if they get an assurance that it will not cost more than a certain amount, and that the repayment will be extended over a considerable period, they may reconsider the scheme, and, perhaps, look at it more favourably.
2231. In view of the fact that you have not had a very definite decision upon the matter, or that you appear to have had two decisions, would it not be advisable to call a public meeting of the ratepayers? I decidedly think that the people ought to know something about it. I do not believe that 99 out of 100 know anything about it at the present time.
2232. You think that if a meeting of the council were called, and you explained to them the possibility of only an eight-penny rate being charged, they would be likely to adopt it? Presuming that it is extended over the term mentioned—yes.
2233. *Mr. Humphery.*] What is the annual value of the ratable property at Balmain? You mean our annual revenue?
2234. The annual value. I suppose you charge a rate of 1s. in the £ upon it, and get a revenue in that way? We expect close upon £14,000 this year—£13,800.
2235. That is with a shilling rate? Yes.

2236. *Mr. Garrard.*] That includes gas? Yes; it is from a 1s. 4d. rate;—4d. being charged for gas.
2237. *Mr. Humphery.*] What is the annual value of the ratable property? About £180,000.
2238. Do the Committee understand that the bedroom slops from 26,000 people are cast into the streets daily? Do you mean urine, and so on?
2239. Yes? They are thrown into the pails, I presume. We should not tolerate urine being thrown into the surface gutters.
2240. But, for all you know to the contrary, these slops may be emptied into the gutters or thrown into the back yards? I do not think so. I do not think you could throw urine into the gutters or yards without creating a perceptible nuisance.
2241. Would the soil-pan hold the house slops of a family for three or four days? I think so.
2242. You gave us an estimate of the cost of treating your nightsoil at the present time, and it came to £5,090 without the £3,000 arrears. Do you anticipate to lose that £3,000? I do not anticipate that we shall lose much because, supposing property is transferred, and a debt is owing by the previous owner, we can discontinue the service to the incoming tenant or owner if he will not pay up. I think this large amount of arrears is due to the neglect of the council officers in not having been sharper with the tenants in previous years.
2243. You can make the new tenants pay the arrears of emptying previous tenants' earth-pans? We have done it in many instances, in the case of the owners of property.
2244. Do you provide the punts? No.
2245. The contractor provides the punts? The punts, all the labour, and the towing.
2246. And he provides the carts—or do you? We provide the carts.
2247. What is the cost of them? We have not had any new carts since I have been mayor? I suppose each cart costs about £40.
2248. What do you value your plant at? At from £400 to £500.
2249. It occasionally requires to be renewed? It has to be repaired. The contractor has to keep it in repair.
2250. I daresay you would be surprised to hear that you are paying now what is equivalent to 4 per cent. on £130,000? I know that it looks very bad against us in that way, but then when we get into our own place we shall be able to reduce the cost of collecting, because the place of deposit for the carts will be so much nearer home, and there will be far more competition in the way of towage. We are paying a great deal now, because we were thrown into a corner, and had to take the first man we could get. The stuff was sent back from Hunter's Hill one day and it was standing about, so that we had to try and get rid of it as soon as possible.
2251. In the face of the difficulties which you perceive before you, under the present condition of things do you not think it would be well for the Council to reconsider their resolution, and to ascertain whether the cost of treating the whole of the sewage of the borough, by its being included in the general scheme, would not be less than you are paying at present? Decidedly. After what I have heard to-day I shall consider it my duty to see the matter opened up again. I might say that after the last resolution was passed—rather than do anything that might be thought absurd or pig-headed—we wanted Mr. Stayton to come over and have an interview with us about the scheme; but in the meantime he had left the Government service.
2252. From what you have heard during your examination to-day you are inclined to modify your own views, and you think that your brother aldermen may be inclined to modify theirs when you explain to them what you know in connection with the proposed system? I think so.
2253. *Mr. Tonkin.*] You say that the rate of valuable property in Balmain is about £180,000? Yes.
2254. Do you know that 4 per cent. upon that would be £7,200? Yes.
2255. And that 4 per cent. upon £90,000—the estimated cost of the work—would be £3,600? Yes.
2256. So you would only have to levy upon your ratepayers a rate of 6d. in the £;—would they object to that? I do not think so.
2257. They are now paying, I think I understood you to say, something like £4,860 a-year? Yes.
2258. That is without counting inspectors of nuisances; and, in all probability, if this scheme were carried out, one would be sufficient to do your business? Yes.
2259. The total cost at present is £4,990, or nearly £5,000 a year. If you get the work for £3,600 do you not think it would be much better to the corporation? Decidedly.
2260. Even if the proposed system cost the same price as the present system it would be better? Yes.
2261. But if it can be done at a less price you would be perfectly satisfied? If we could get a better system we are perfectly willing to pay for it, as long as the price is reasonable.
2262. Are you not satisfied from the questions asked you that the charge upon the ratepayers would actually be less than it is not? Yes.
2263. Under the circumstances what objection could the aldermen have to the proposed scheme? Once the difficulty of the cost is got over I do not think there will be any objection, though they would like to see more fall in the sewers. However, if the ground will not permit that there is an end to it.
2264. But supposing it is proved to the satisfaction of your council that the water supply will be so much increased that it will be quite sufficient to flush the sewers, no matter what the gradient, will not the council be satisfied that they are doing a good thing? That is why we wanted to get Mr. Stayton over, so that we could ask him about the flushing, and also as to the working of the Shone system—the pumping up.
2265. Do you think that an engineer of so much experience as Mr. Stayton would bring forward a scheme of this kind without having given sufficient attention to the drains? No. That is the reason why I have never liked to propose anything against this scheme. I know Mr. Stayton personally, and I do not think he would father a scheme which he did not think practicable.
2266. You are not so much opposed to the scheme now as you were at first? No.
2267. Do you think it would be advisable to call a meeting of the council and place the matter before them in a different light? I shall certainly, next Tuesday evening, as far as I am able lay before the council a report of the information given to me, and the conclusion to which I have come.
2268. *Mr. Dowel.*] You stated that you had given some considerable attention in your official capacity to the sewerage and drainage question as affecting the borough of Balmain? Yes.
2269. Have you given attention to this particular scheme? I have read Mr. Stayton's report through; that is the only opportunity I have had of examining it.

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2270. I understood you to say that one of your principal objections to the scheme was that the sewers were so flat; or, in other words, that they were elongated cesspools, and that you could not see a proper mode of flushing or getting rid of the contents? That was one of the objections raised at the time, that the gradients were so trifling that the question was whether the system would not be a nuisance.
2271. Have you an ample supply of water in your borough? I should not call it ample. There are hundreds of houses not yet supplied from the mains, and these people are simply relying upon tank water.
2272. Many of the allotments in the borough, I think, are very small? Very small.
2273. And the population in some parts very thick? Yes.
2274. Is it not a fact that some parts of the Borough of Balmain are as dirty as can be found in the neighbourhood of Sydney—for instance, Happy Valley? No; you could find far dirtier places than Balmain.
2275. Portions of it? No.
2276. Have you not in your travels through the borough observed very obnoxious smells? From the drainage?
2277. From surface drainage and other causes? The only places which could be taken exception to are Happy Valley creek and the Reynold-street creek.
2278. Those places are very offensive at times? In summer-time. They require cleaning almost every day to keep the nuisance down.
2279. From your knowledge of sewerage and drainage do you not think the appliances which you have at present are unsuitable for the requirements of the public health? I know they are not the best.
2280. They are anything but cleanly I should imagine? It is certainly an objection to the scheme.
2281. Although you propose to dispose of your sewage by fire, will not the present objectionable means of conveyance exist? We should still have to collect.
2282. Have not numerous complaints been made to you in your capacity as mayor, about the nightmen coming at unseasonable hours, and about other things in collection of night-soil? No, not for the last eighteen months. The system is in good working order. The men have certain districts to go to every night, and I do not think that during the last eighteen months we have had any complaints about inattention on their part, or of their entering premises at improper hours.
2283. Have you any system you would propose in lieu of this one? No.
2284. You are aware that a large portion of this scheme will be carried out with stoneware pipes? Yes.
2285. And that your objection to flushing would not stand good with regard to those pipes, that flushing would cleanse them well? No.
2286. *Mr. Garrard.*] Are you aware that Mr. Stayton has put forward an alternative scheme to bring the sewage together by gravitation and then pump it up? No.
2287. I presume you will lay this matter before the Council, and that a special meeting will be called to consider it? I could call one.
2288. I understood you to say that it would be considered on Tuesday night, and that probably there would be a meeting following that;—would the presence of an officer of the Sewage Department be of assistance to you in laying the matter before the Council? I think perhaps we had better discuss it first, and then narrow the whole thing down to the question of cost, etc; we could then have another meeting, when I shall be glad to avail myself of any assistance.

WEDNESDAY, 7 AUGUST, 1889.

Present:—

JOSEPH PALMER ABBOTT, Esq. (Chairman.)

The Hon. John Lackey.	Henry Copeland, Esq.
The Hon. Andrew Garran.	James Ebenezer Tonkin, Esq.
The Hon. Frederick Thomas Humphery.	William Springthorpe Dowel, Esq.
The Hon. William Joseph Trickett.	Edward William O'Sullivan, Esq.
Jacob Garrard, Esq.	John Hurley, Esq.

The Committee further considered the proposed Drainage Works for the Western Suburbs.

Benjamin Robert Moore, Esq., Mayor of Leichhardt, sworn and examined:—

B. R. Moore, Esq. 7 Aug., 1889.

2289. *Chairman.*] You are Mayor of the borough of Leichhardt? Yes.
2290. How long have you occupied that position? Since February last.
2291. Had you been an alderman for any time previous to that? For five years; this makes the fifth year.
2292. You are a resident of some considerable standing? I have been a resident for about thirteen years.
2293. Have you given any consideration to the proposal to drain the western suburbs? I was at a meeting in the Public Works Office, at which the late Hon. John Sutherland presided, and the borough of Leichhardt unanimously agreed to this scheme.
2294. Have there been any meetings in the borough of Leichhardt to discuss this scheme? Not public meetings.
2295. So far as you are able to form an opinion, can you tell us what is the feeling of the people of Leichhardt in reference to the scheme? The general opinion is that a system of sewerage ought to be carried out, more especially in the lower levels of the borough. The plan does not show the lower levels, but that is really where the sewerage is required.
2296. You have done a great deal yourselves for the disposal of night-soil and drainage? Johnston's Creek and White's Creek are done down for a considerable distance with concrete inverts, and I might say the same of Wentworth Creek.
2297. The effect of that, I suppose, is only to throw the filth of your municipality into another? Into the harbour.
2298. Have you any idea what it costs you at the present time to get rid of your night-soil? The average annual expenditure for wages, salaries, tools, and sundries is £1,248 5s. 5d.; for horses' keep, feed, &c., £250; for rent of depôt and punt, £335; for deodorant, £280; making a total of £2,113 5s. 5d.

2299. You have 2,700 pans in the borough and 750 pits? Yes.
2300. And a population of 14,600? Yes.
2301. And the total income, if all paid, would be £2,500? Yes; that is under the new rule of charging for pans at 4s. per quarter, and for pits at 6d. per cubic foot. Formerly we charged 8d. a cubic foot and 6d. a pan. I might state that it is the opinion of the aldermen that the term for repaying the money incurred upon the proposed works should be extended from twenty-five to fifty years. The burden upon the ratepayers would then be lighter. If the money has to be paid within twenty-five years, I think the tax will be very heavy.
2302. *Mr. Lackey.*] You confine yourselves, I suppose, to the dry-earth system? It is called the dry-earth system; but that is all you can say.
2303. You do not regard the system as a success? I do not.
2304. You do not use any deodoriser, or any other agency, for the purpose of destroying the smell from the fœcal matter? We do use a deodorant; and I may say that some of the medical gentlemen from Callan Park have seen it tested, and are quite satisfied that it gets rid of the bad smells and disagreeableness.
2305. What becomes of the accumulation eventually? Lately we have had to carry it to a punt at Pyrmont; but there is some Government reclaimed land, where we can place it when the weather is fine.
2306. But when the weather is bad you have to place it on board the punt? Yes; and take it out to sea.
2307. When it is deposited upon the reclaimed land, is it merely thrown on the surface or dug in? Trenched in and properly deodorised.
2308. Is the land cultivated at all? It will be cultivated.
2309. Is the locality near Leichhardt? It is just within the municipality.
2310. Is there a depôt where the soil is collected in the first instance? Of course there is a depôt where the horses and carts stay, but it is never taken there.
2311. It is taken direct from the houses to its place of deposit, or to the punt? Yes.
2312. What is the state of the health of the people in your municipality—is it pretty good? At the present time the health of Leichhardt is in a very good state.
2313. What reputation has Leichhardt, as far as the health of its inhabitants goes;—have you had typhoid fever there to any large extent? We have not had any cases within the last eighteen months. The late Mayor, the Honorable Sydney Smith, inaugurated a system of underground drainage, and I think we have now 8 or 9 miles of drain pipes, which carry the filth underground instead of on the surface.
2314. They carry off surface drainage? Yes.
2315. Have you compared the sanitary condition of your municipality with those of other municipalities in the neighbourhood of Sydney? We have.
2316. How does it compare? There are less deaths from fever in Leichhardt than in any borough around. We had statements from the Prince Alfred Hospital certifying what cases might be taken away from the borough, and I believe that on the average the deaths are fewer in our borough than in any other borough around. We had a little diptheria two months ago, but that seems to have disappeared.
2317. Is it usual to provide a supply of dry earth;—how is the dry earth provided? There is no dry earth provided; a deodorant is provided. The system is only called the dry-earth system. I think there is hardly a municipality around Sydney which provides dry earth for its closets.
2318. What regulation is there regarding the emptying of the pans? They are emptied once a week, and if it is required, they can be emptied twice a week.
2319. *Mr. Copeland.*] What is the nature of this deodorant? It is an acid made up by our inspector. Dr. Ashburton Thompson in his report seems quite certain that it will kill all disease germs.
2320. It is a local production? No; we have to get it from the chemists.
2321. Has it no name? The name of it is deodorant. It seems to have done very well.
2322. Do you know the number of houses in your municipality? I should take it to be about 3,500.
2323. Is the land pretty well occupied, or do you expect that the population will increase? It will increase considerably. The borough contains 2 square miles, and there are 70 miles of streets in it at the present time.
2324. So that you have no fear of undertaking the responsibility of paying for these works, because you know that the increase in the population will reduce the rate? There is an immense amount of land yet to be occupied, not only on the Annandale side, but also on the other side of the borough. Only half the land is occupied at the present time. I think Mr. Hurley could certify to that.
2325. Do you think the people would be willing to pay a rate of 8d. or 9d. in the £ for the benefits of the proposed drainage system? The amount of money is the main thing. I believe that Mr. Stayton's estimate, if the term of repayment were twenty-five years, would not come to much more than that. If the term is extended to fifty years, it must reduce the amount of cost to the public at large. I think that a rate of from 6d. to 7d. in the £ would be quite sufficient.
2326. You think the people would willingly pay that? For the preservation of their own health they ought to.
2327. Are there any wells in the municipality—how are the people supplied with water? Pipes have been laid down by the Water and Sewerage Board through almost the whole of the borough.
2328. Are many wells used? Very few; and wherever I could have them filled in I have done so. I had several filled in the year before last, when I was in office, because of cases of fever which were brought under my notice.
2329. What becomes of the night-slops and general house-slops—are they put into the pans? I do not know. Sometimes they are thrown into the gutters, and sometimes into the yards,—you do not know what they do with the slops.
2330. *Dr. Garran.*] You think that it would be a great improvement to your district if the slops were dealt with as well as the contents of the night-soil pans? I do.
2331. Then it would be worth while paying something extra to have that done? Yes, in the interests of the public health.
2332. You think that the general public opinion in your district is in favour of a good system and a fair rate? I have never heard anyone say a word against the scheme.
2333. Do you think, if it were necessary to go as high as a 9d. rate to make the scheme a success, that there would be any opposition to it in the locality? I could not say that there would be no opposition to a 9d. rate; but I think there would be no opposition to a 7d. rate.

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2334. You see, as a public man, that if we go into this system at all we must do it thoroughly and well, and run the risk of whatever the ultimate cost may be; so I ask—supposing it should turn out that a 9d. rate will have to be paid, will there be any rebellion against such taxation? As far as I am concerned, and from what I have heard, I conceive there would not be any. There is not the least doubt that health is the first consideration. This filth lying about disseminates the germs of fever. Twelve years ago doctors could not live in Leichhardt, but now there are four or five. At the time I speak of, the nearest doctors were at Ashfield and at Balmain.
2335. *Mr. Copeland.*] How many have you now? There are several, besides four or five chemists shops. When I first went to the borough to live the revenue derived from rates was not above £400 a year; but now the revenue from a shilling rate is £6,000 a year.
2336. *Dr. Garran.*] Your experience of public works leads you to expect a certain margin upon the calculation of engineers? Mr. Stayton told us at the meeting over which the Hon. John Sutherland presided, that the estimate which he had given was more than the works would actually cost.
2337. But still you always exercise a little discretion in taking an engineer's estimate? I think so.
2338. You would prepare yourself for a margin? It is my experience that most Government work costs more than the first estimate.
2339. So that if the estimated rate were 7d. your ratepayers would be prepared to see it increased to 9d.? I think they would.
2340. Is the deodorant which you use, used in other municipalities as well? Balmain on one occasion sent over to us, and got some of our deodorant. They were satisfied with it: but you have to use it in large quantities.
2341. Is it a liquid? It is a liquid.
2342. Do you distribute it? The ratepayers can have it if they wish for it. They have only to come and get it.
2343. How many people do take it? I cannot tell you.
2344. Do the majority of the ratepayers take it? No.
2345. The majority of the ratepayers prefer the smell to paying for the deodorant? They do not pay for it if they come for it.
2346. They will not even take the trouble to come for it? No.
2347. Yet you think that people who would not take that trouble would pay a 9d. rate? When the pans are deodorised the bad smell from them is got rid of. Some of the ratepayers come to get the deodorant, and some is taken to them. It is there if they like to come for it. A motion was passed in the council to the effect that anyone who wished for the deodorant could come and get it.
2348. You admit that the pans are very offensive? I do; and I think that the pan system is a terrible nuisance.
2349. I understand that your system is the dry earth system without the dry earth? Without the dry earth.
2350. This deodorant is required to make the system inexpensive. Have you made any attempt to take it round for a week, so that the people may test the improvement made by using it? It would be a very expensive affair for the borough to have to take it round every week. There are 2,700 pans in the municipality, and if we had to call at 2,700 houses to distribute the deodorant we should have to employ several people to do the work.
2351. Have you tried the experiment for a week—just to see how the people would like it, and then made them pay for it? No.
2352. If they had tried it do you think they would adopt it? Some of them would.
2353. Do you not think it would be a great improvement if they did so? I do. I may say that although the pans were emptied some of the ratepayers refused to pay for the work. They will not pay unless a great deal of trouble is taken to get the money from them, and if they are above paying for the emptying of their pans they are above paying for the deodorant.
2354. What would they do if they did not empty their pans? Bury the contents in the back yards.
2355. Or in somebody else's back yard? Yes. I have known people to actually bury their night-soil upon a property having a frontage of only 18 feet.
2356. You prevent that as far as you can? Yes.
2357. There is a by-law prohibiting its being done? Yes; stopping anyone from burying night-soil in their ground.
2358. Even if their land is 3 or 4 acres in extent? It is supposed to be the same.
2359. *Mr. Humphery.*] What is the total amount you receive from a rate of 1s. in the £? £6,000 per annum, and £2,000 as a gas rate.
2360. That would make the annual ratable value of the property about £120,000 after deducting 10 per cent., so that the average rental of the properties in your municipality would be between £35 and £40 a year? Yes; a great deal of the land in the borough is unoccupied, and not more than one half of it is really built upon. It runs away from Battle Bridge to Camperdown, and from there on to Balmain, and the foreshores of Roselle Bay. Taking the average value it would not be £40 a year.
2361. You have a large number of low-rented houses? Yes.
2362. Houses valued at from 6s. to 15s. a week. Quite so.
2363. To houses of that class the cost of the sewerage system, even with a rate of 1s. in the £ would be less than that now paid by them for the earth closets? I think it would.
2364. *Mr. Hurley.*] The cost of the dry-earth system is £2,113 5s. 5d. you say, and the receipts from it £2,500, so that the receipts exceed the expenditure by £400 per annum? Yes, they would do so if all the ratepayers paid up, but they do not do so.
2365. You say that you use a deodorant besides dry earth—practically there is no dry earth used at all? Not unless people provide it themselves.
2366. They have to supply their own dry earth? Yes.
2367. If they wish it they can have this deodorant? They can.
2368. Are they made acquainted with the fact that they can become possessed of this deodorant on making application to the council? A motion was passed in the council so that every one could know that they could have the deodorant by applying for it.
2369. Do you think it is to the interest of the health of the borough to have these pans in use, and not to supply them with earth? The men who empty the pans carry the deodorant with them, and they generally put a little of it into each pan after they have emptied it.

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2370. Would you be surprised to hear that not 5 or 10 per cent. of the persons in the borough are acquainted with the fact that they can secure the deodorant by applying for it? I am not acquainted with it. It was given out officially that they could get it.
2371. You have an Inspector of Nuisances, of course? Yes.
2372. Have many pits been reported to the council recently as being dangerous to the health of the people of Leichhardt and Annandale? I have not heard of any recently. Whenever any cases of that kind are reported to me I give the Inspector power to fill them in or give the people who own them notice that they will have to be filled in within so many hours.
2373. As the Mayor of Leichhardt, you believe that the people generally are in favour of connecting with the scheme set forth on the map? I have heard no objection raised against it.
2374. *Mr. O'Sullivan.*] Have you held any meetings of the ratepayers to discuss this matter? I have not.
2375. Do you not think it would be desirable to do so? If the gentlemen present think it is requisite I shall call a public meeting.
2376. Do you think that it is desirable that the ratepayers should be called together? I have never heard anyone pass an opinion antagonistic to this scheme of sewerage. It has been well ventilated, and the ratepayers know very well that it is likely to be constructed, because at public meetings and elections it has been talked of. Every one seems to be in favour of it, and I am not aware up to the present time that anyone has objected to it.
2377. In view of the fact that your opinion now may commit the ratepayers to a charge for meeting the expenditure upon this work, do you think it would be advisable to carry it out? I think that we should not consider the interests of a few people to the detriment of those of the many. We must have a system of sewerage, whatever it costs, and the people will have to pay for it. The present system, by which the filth is cast upon the foreshores of the bays cannot continue. If something is not done soon with regard to Long Cove, I believe there will be more fever in that locality than anywhere else near Sydney. This work must be carried out in the interests of the public health.
2378. You think that on sanitary grounds you are quite justified in giving it as your opinion as Mayor of Leichhardt that work ought to be done? I think so.
2379. *Mr. Garrard.*] Has the matter been specially before your council? Yes; several times.
2380. And gone into in all its details? They had the plan sent out to them. What they are specially anxious about is the drainage of the lower levels. We can drain the higher parts ourselves; but it is the lower levels round the bay that want draining.
2381. That is to say, you can drain the high levels into the lower levels; but so far as the scheme shown on the plan is concerned, the Borough Council, as the representatives of the ratepayers, are fully in accord with it? They are.
2382. And they understand the cost and expense involved in it? They understand that they will have to pay a rate.
2383. Is there any by-law in your borough prohibiting the burial of night-soil in private properties? There is such a by-law.
2384. You stated the number of cesspits and pans in your borough. Are you increasing the number of cesspits, or are you trying to introduce the pan system in every instance? We are trying to make every one adopt the pan system.
2385. Where did you deposit your night-soil before you had the present depôt? It was taken out to Homebush to Tresseder and Bartlett's nursery for some time. The system was then altered, and we took it to Brown's yard at Pyrmont.
2386. Is it a fact that you had to pass through several municipalities in order to reach the depôt at Homebush? We had to pass through Ashfield and Burwood.
2387. Was any objection to your passing raised by either of those municipalities? No; they never objected. The carts were all properly deodorised, though there is always a sourish smell with them. We have our own carts and horses.
2388. Is it a fact that the City Council prevented you from going to Brown's wharf? Yes; they took action to prevent us from going there, but they seemed to have withdrawn their prohibition again with regard to some of the other municipalities.
2389. Owing to the action of the City Council you were obliged to secure a depôt within your own boundaries? Yes.
2390. That depôt is the Callan Park Asylum grounds? It is the reclaimed land there.
2391. The whole of your surface drainage and house slops at present find their way down to White's Bay, Roselle Bay, and Long Cove? Yes; that is where it goes.
2392. Causing a very great nuisance? At low water, and when the sun is strong, the smell is very bad.
2393. Is it a fact that the greater part of the drainage of Ashfield, and part of the drainage of Petersham, goes into Long Cove? Yes; it flows under Battle Bridge.
2394. Any sickness that occurs in Leichhardt is generally among the people residing near this locality? I cannot say that. There was a little sickness there two months ago—diphtheria, but there was no typhoid. This being winter time, the nuisance is not so bad.
2395. I suppose if there had been any objection on the part of the ratepayers you would have heard of it? They are very fond of public meetings in Leichhardt; but with regard to this matter they have not agitated at all.
2396. You think that if there were any opposition to the scheme it would have been expressed? I do.
2397. *Mr. Trickett.*] What is the area of land upon which you deposit your night-soil? I think about 40 or 50 acres.
2398. Is it all made land? It is all reclaimed land. The place was filled up with the silt from the harbour.
2399. Is it cultivated at all, or merely used for grass growing? Not at the present time. The land is lying idle, and has to lie idle for two or three years.
2400. You say that in wet weather you cannot use it? Yes.
2401. And that then you are driven to use the punt. May I ask you how long the punt lies at the wharf at a time? I do not know how long it lies there; but it is supposed to go away every night.
2402. Do you think it does? I could not say. The wharf is over in Pyrmont.

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2403. You cannot tell us how long the punt remains at the wharf? No, I should not like to say how long it lies there, Mr. Brown is the owner of it.
2404. So far as you know, all the ratepayers of Leichhardt are agreed that it would be far better to adopt this system, which would take away this stuff direct from the houses, than to have it carted away? I am sure of it.
2405. What rate does the 4d. which you now charge represent upon the annual ratable value of the property in the municipality? The system that we have had in operation up to the 31st of this month makes a charge of 5s. a quarter if the money is paid in advance, or 6s. 6d. a quarter if it is allowed to stand over; but the new system only costs the ratepayers, 4s. each a quarter, which need not be paid in advance. That really only means 16s. a year, while before it was a pound or £1 6s.
2406. That is only on small houses? On all houses large or small.
2407. It is a charge of so much a pan? Yes.
2408. What rate would it represent upon a house worth £20 or £30 a year? They would still have to pay 6d. a cubic foot, or 4d. a pan, and the charge would be just the same for a house worth £50 a year.
2409. Would the people be willing to pay as much as a shilling rate? I could not say. I think that if the term of repayment is extended, the taxation of the public will be relieved, although it will take longer to pay the money off. The rate would be lowered, and the next generation would have to pay for the work as well as ourselves.

Benjamin Morgan, Esq., Mayor of Camperdown, sworn, and examined:—

B. Morgan. Esq 7 Aug., 1889.

2410. *Chairman.*] You are Mayor of Camperdown? Yes.
2411. Have you held that position during any length of time? Since February last.
2412. How long have you been an alderman? For about six years.
2413. *Mr. O'Sullivan.*] I suppose you have pretty much the same method of removing night-soil as other municipalities have? Yes, pretty much the same.
2414. Where is your depôt? At Botany.
2415. Are there any complaints made about your depositing it there? We have never experienced any difficulty as regards the depôt. The man who contracts to do the work provides his own depôt. That has always been the case with regard to Camperdown.
2416. Have you had an opportunity of testing the feeling of the ratepayers of the borough with regard to this project? Not by public meeting—only casually, by mixing with prominent ratepayers.
2417. I presume the matter has been discussed in the Council? Certainly.
2418. Are they in favour of the scheme? Yes, unanimously.
2419. And you think that the ratepayers generally would be? From my general knowledge, I think they would. I have never heard any objection to the scheme.
2420. I suppose there is no certainty at all that you can go on using the depôt at Botany? No; there is no certainty, but we have never had any difficulty so far.
2421. Supposing some one took out an injunction to prevent you from depositing it there, what would happen? I suppose the contractor would throw up his job.
2422. For that reason I suppose you think it is absolutely essential to have some such scheme of sewerage as that proposed? In my opinion, and in the opinion of the Council which I represent, it would be very desirable.
2423. There is no doubt that it would be a very great improvement to your borough from a sanitary point of view? Not the slightest doubt.
2424. Do you think that the ratepayers would be willing to pay for it? I believe they would be willing to pay a fair rate, but not too high a rate, towards the cost of carrying out the scheme.
2425. Did you come to any decision as to the length of time over which the repayments would extend? On two occasions when this matter was before the Council it was their opinion that if the time in which the money should be repaid were extended from twenty-five to fifty years it would reduce the amount which the present generation would have to pay, and make posterity pay some of it. They thought 6d. or 7d. in the £ would be a fair rate. That would about meet what we are paying at present.
2426. *Mr. Garrard.*] What system of collection of night-soil have you—do you use pans? We use both pans and cesspits.
2427. What proportion do the pans bear to the cesspits—are there more pans than cesspits? At the present time there are 707 pans.
2428. And how many cesspits? I have not got the number with me. The cost of removing the night-soil from the earth-pans is £612 14s. 8d. per annum.
2429. Is that the total cost? Yes, and the average cost of removing the night-soil from the cesspits for the past two years has been £243 1s. 9d.
2430. Did the borough make any profit out of it? In regard to the earth pans, the contractor contracts to empty them twice a week, for 4d. a pan, and he collects his own money.
2431. And does he supply dry earth to the residents? No.
2432. Does he supply deodorant of any kind? He is supposed to deodorize the pans when he empties them into the carts.
2433. He leaves the deodorant in the bottom of the empty pans? Yes.
2434. In getting to the depôt he has to pass through other municipalities? Through Newtown and St. Peters.
2435. Has there been any objection raised by these municipalities to the night-carts passing through them? I have never heard of any objection.
2436. If permission to pass through were refused what would you do—you are entirely surrounded by municipalities; you do not touch any arm of the sea? No.
2437. There is no place within your boundaries where you can bury it? No; I do not know of any place.
2438. Therefore it is of the utmost importance to you that some efficient system for dealing with this matter should be adopted? It is of great importance.
2439. How does the health of Camperdown stand with regard to that of other municipalities—is the death-rate high or low? The health is very good.
2440. Where do the night-slops and kitchen-slops go—into the surface gutters, or have you a system of underground drainage? Up to within two or three years ago it ran down the surface gutters; but within the last five years we have spent £6,000 or £7,000 upon underground drainage, so a great deal of it is now carried beneath the surface.

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2441. It all finds its way into Orphan School Creek? Into Johnston's Bay.
2442. Does not a great nuisance arise from the depositing of drainage upon the flats of Johnston's Bay? I have never heard of any.
2443. The Glebe and Leichhardt intervene between you and the place of deposit? Yes.
2444. You are quite willing to send your drainage to your neighbours and let them deal with it? We have to be content with that.
2445. You have no other alternative? We have no other alternative. We receive the drainage from Newtown—we all share and share alike.
2446. I suppose your Council upon the two occasions to which you refer went thoroughly into this matter as to the probable cost, &c.? Upon two occasions. The first occasion was some months ago; and the scheme was again considered when I received notice to attend the Committee.
2447. Have any public meetings been held in your borough to protest against the scheme, or to discuss it? There have not been any public meetings.
2448. The ratepayers are content to leave the matter in the hands of their civic representatives? They are quite willing to leave it in their hands.
2449. *Dr. Garran.*] The main sewer passing through your borough is marked red on the map? Yes.
2450. That would connect with the Prince Alfred Hospital sewer? Yes.
2451. Then the greater part of Camperdown would be drained into the Bondi sewer? Yes.
2452. And only a small part of the north-western portion would drain down to Webb's Grant? Yes.
2453. Your municipality is peculiarly situated in this respect, that you will be indebted to each system for doing part of the work? Yes.
2454. The main portion of the Camperdown sewage will be drained into the Bondi sewer? Yes.
2455. So that if the scheme were approved of only a small extent of sewerage would be necessary to drain three-fourths of your municipality, leaving only the north-western portion undrained? Yes.
2456. You state that you have some underground sewers; have they been made out of current revenue or by borrowed money? By borrowed money.
2457. They would be superseded? In constructing our sewers we were guided by the knowledge of the fact that this scheme was in hand, and therefore endeavoured, as far as possible, to take the sewage in the way required.
2458. But the sewers all go down hill towards Orphan School Creek? Yes.
2459. Then, can they run into a sewer the level of which will be much higher? The sewers which we have already made are upon the higher ground.
2460. They could all flow into a sewer which would join with the main sewer? The greater portion of them could.
2461. But you would have to write off a certain amount of money? Yes.
2462. What you have done is only to deal with your surface water? Yes.
2463. You admit that at the present time you are making a nuisance? Yes.
2464. Supposing the Government forbade you to do so what would you do;—at present you are creating a nuisance for your neighbours? Leichhardt and Camperdown joined in the cost of cementing the creek. We spent £100, and I think Leichhardt a similar sum. The work was done at the time when the unemployed were so numerous.
2465. Still you admit that you do foul the head of the bay? Yes.
2466. If an injunction were obtained to restrain you from doing so you do not know what you would do? No.
2467. Then it is very important that this system should be carried out? Certainly.
2468. And you think your people would appreciate that when a rate was imposed. A heavy lawsuit with an injunction following upon it would cost them almost as much as the rate. Do you not think that you should be very thankful of having the chance of getting such a scheme? I believe the aldermen are thankful that the scheme has been proposed.
2469. And they would be willing to connect with it as soon as possible, and would pay a rate as soon as the work was completed? That is the opinion of the Council.
2470. *Mr. Dowel.*] How long have you resided in the borough? I do not think I ever resided away from it, with the exception of a few months now and again in the country.
2471. I presume then that you have a thorough acquaintance with the whole of its area? I have a thorough acquaintance.
2472. What is the area of the borough? I suppose about 13 acres—I mean the populated portion; I do not include the University grounds.
2473. You have stated that yourself and your fellow councillors have given considerable attention to the proposed sewerage scheme? Yes.
2474. And that you consider it a desirable one? Yes.
2475. You have also stated that you have constructed a considerable length of sewers; what are they, brick or stoneware pipes? We have both kinds of sewers; but they are principally stoneware pipes.
2476. What provision have you for flushing them? We have no provision, except the ordinary stench traps. We have had permission from the Water and Sewerage Board to flush the gully shafts.
2477. Have you a good supply of water? A man goes round twice a week and fills the shafts with water. That prevents the stench from rising.
2478. Independently of the sewer that you have constructed for the purpose of receiving the surface drainage, is it not a fact that a large portion of the borough is now inconvenienced from the want of such drainage? Certainly.

Percy Charles Lucas, Esq., J.P., Mayor of the Glebe, sworn, and examined:—

P. C. Lucas, Esq. 7 Aug., 1889.

2479. *Chairman.*] You are Mayor of the Glebe? Yes.
2480. Have you occupied that position for some time? This is the second year of office.
2481. How long have you been an alderman? For ten years. I was Mayor of the Borough of Camperdown for four years consecutively, and an alderman for about nine years.
2482. Have you given any consideration to this proposed scheme of sewerage? Yes.
2483. What is your opinion about it? Speaking with regard to the Glebe, it appears to me that the sooner we have a system of sewerage there the better. I feel certain that the ratepayers of the Glebe will

P. C. Lucas, Esq. 7 Aug., 1889.

will have no objection to paying a rate, because we have had some experience of the benefits of the system. A few years ago the whole of the drainage of the Glebe ran along the surface gutters, and sickness was then very rife in the borough, and the death rate high. The Council then commenced to put down drain pipes, and they have spent £8,890 in laying drain pipes to carry away the kitchen slops and the drainage from the yards. As a consequence of this, the death rate has decreased from 24 in 1,000 to 15 in 1,000, while the population has increased from 12,000 to 15,000. Judging from this experience, I think that the sooner we have a system of sewerage the better. I, personally, shall be pleased to see the scheme carried out, and I have no doubt that the whole of the ratepayers are of the same opinion. While we have spent this £8,890 in putting down drain pipes, we have effected a saving of £500 per annum in the sanitary department of the borough, so that although we borrowed money for the work, the ratepayers are actually getting the benefit of it for nothing.

2484. In what way do you save £500 a year? In the cleansing of the borough. It costs us £500 a year less to keep the borough clean now, and it is kept very much cleaner than it used to be for the larger expenditure.

2485. Do you think the ratepayers of the Glebe would be satisfied to pay a rate of 10d. in the £ for the purpose of getting a sewerage system of the character proposed? I do not suppose the ratepayers of the Glebe would object to pay more than they paid in other boroughs.

2486. Do you know what it costs now to cleanse the borough? The removal of night-soil costs £1,386 per annum.

2487. You could not tell us what rate that would be? The rates received for this year amount to £7,569, but I might say that while it costs us £1,386 to get rid of the night-soil, 200 houses in the borough are connected with the existing sewerage scheme. If they had to pay to have their night-soil removed the amount would be increased. There are 3,300 houses in the borough altogether.

2488. *Mr. Garrard.*] Have you the pan or the cesspit system in operation in your borough for the collection of night-soil? Both.

2489. What proportion do the pans bear to the cesspits? There are 205 dry earth pans.

2490. And the rest of the houses are provided with cesspits? Yes.

2491. Properly constructed? Constructed according to the by-law. They are bricked and cemented, and puddled outside.

2492. How do you get rid of the night-soil in the dry earth closets;—by contract? By contract.

2493. Is dry earth supplied to the ratepayers? The contractor who removes the night-soil has contracted to supply dry earth, and as I have never heard any complaints, I presume he does so.

2494. He does not deodorise the contents of the pans in any way except by dry earth? Yes.

2495. Does he use a deodorant for each pan, or for the carts only? At the Glebe we pursue, I think, a different course to that pursued in any of the other boroughs;—we provide the disinfectant ourselves. I am now speaking with regard to cesspits. It is the duty of the Inspector of Nuisances, when he receives an application for the emptying of a cesspit to go round with the nightman to measure it, and at the same time to see that the cesspit is disinfected or deodorised.

2496. What about the pan system? In the same way he provides the contractor with disinfectant.

2497. And does the contractor leave this disinfectant in the pan every time it is emptied? Yes.

2498. Where is the night-soil taken to from the cesspits? To Johnston's Bay.

2499. To Brown's Wharf? Yes.

2500. Have you had any objection to that on the part of the city authorities? Yes.

2501. Have you been prevented from going there? The contractor has been stopped on two or three occasions; but the plan is still being continued, until the Council can adopt some other means of getting rid of the night-soil.

2502. Where did you deposit it before the punt was provided? The Council never had a depôt. They always called for tenders, and in the contract the contractor agreed to find his own depôt.

2503. You do not know where the depôt of the contractor has been? A considerable amount of the night-soil went to Moore Park, I believe, until that was stopped. Some of it went to Botany.

2504. Has the proposed system of sewerage been specially before the Council? We have never had any special meetings to consider it, but the matter has been before the Council several times.

2505. Have you held any public meetings? No. It is very difficult to get up a public meeting in the Glebe upon anything.

2506. The people there are quite content to leave these matters in the hands of their municipal representatives? Evidently.

2507. Will the proposed system of sewerage deal with the greater part of the Glebe, or will there be levels of the borough which cannot be dealt with? There will be some levels too low to be dealt with. Some parts of the Glebe are only 4 feet above high-water mark.

2508. But those parts do not embrace a very large area? No.

2509. The principal part of the borough is elevated? Yes.

2510. And only places around the shores would be left undrained? Yes. The height of the land above high-water mark ranges from 120 to 4 feet.

2511. I suppose the great part of the land which is only 4 feet above high-water level is round Johnston's and Rozelle Bay, and in Allen's Bush? Allen's Bush, Toxteth Park, and Wentworth Park.

2512. *Mr. Dowel.*] What is the population of your borough? 15,600.

2513. What is the area of it? About 1 square mile.

2514. What number of houses does it contain? 3,300.

2515. You state that you have constructed a considerable length of sewers in your borough, chiefly of drain-pipes, stoneware-pipes, I presume? Yes; though some part of it has been done with square iron-bark boxes filled in on each side.

2516. Have you any water-closets connected with the sewers? I think 200 of them are connected with the sewers. They empty themselves into the sewer running through Wentworth Park.

2517. Have you at all a good water supply? Yes, excepting on the very highest levels. The water service of the Glebe has been down for very many years. When it was first put down the houses were fewer than they are now. The service has not been replaced, but steps are now being taken to replace it. I have drawn the attention of the Water Supply and Sewerage Board to the necessity for relaying the service and putting down larger mains.

P. C. Lucas, Esq. 7 Aug., 1889.

2518. Do you think the system you have adopted of allowing the night-soil to go into the sewers by means of water-closets preferable to the pan system? Yes. The difficulty I find with regard to the pan system is the getting it properly attended to.
2519. *Mr. Humphery.*] I think you said that you have no doubt that the sanitary conditions of your municipality would be greatly improved if the proposed system were carried out? Yes.
2520. And for that reason alone, without any other, you think it advisable that there should be no delay in proceeding with the works? Yes.
2521. *Dr. Garran.*] You say that some of the houses in the municipality are drained by sewers? Yes.
2522. Where do they discharge? Into the sewer running through Wentworth Park.
2523. Into the bay? Into the bay.
2524. That does not improve the bay? I presume not. The sewer drains the whole of Chippendale.
2525. Most of the houses draining into that sewer would be capable of draining into the main sewer? Yes.
2526. It would be a great advantage to get the sewage of these houses diverted? Yes.
2527. There is only a small quantity of low flat land at the head of the bay the sewage of which would require to be elevated? Yes.
2528. Are you aware whether or not the sewage coming down the Orphan School Creek from Camperdown is very offensive? It is.
2529. It would be a great advantage if it could be diverted? Yes.
2530. No complaints have been made about it by the adjoining municipality? No; what would be the use?
2531. It would benefit you both if the proposed scheme were carried out, and it might prevent law suits being commenced between you? It would benefit not only the Glebe but also Leichhardt, because Johnston's Creek, through which the Camperdown and Newtown sewage flows, is the dividing line between the Glebe and Leichhardt, so that the whole of Annandale is drained into it.
2532. Then your neighbours are a nuisance to you, and you are both aware of the fact but cannot help it? Yes.
2533. Then you would both gain if the proposed scheme were carried out? Yes.
2534. Even if you had to pay a small rate? Yes.
2535. What is the cost of the deodorant which you use? It is almost infinitesimal; 5d. worth of it would disinfect a cesspit containing 50 or 60 cubic feet.
2536. Is it included in the £1,386? Yes.
2537. You have not tried the liquid deodorant used at Leichhardt? We use a liquid deodorant.
2538. Is it an acid? Several combined.
2539. Do you know whether it is the same they use at Leichhardt? I should not be surprised if the basis were the same.
2540. Is it any kind of patent? No; the disinfectant was made under my instructions. We had an officer who superintended the pumping of salt water to water the streets, and to save expense and to use the extra steam from the boiler I gave instructions that it was to be made at the engine-house. He, of course, learnt how to make it, and applied for and obtained a patent, and I think the disinfectant is now being called "The Frederick Disinfectant."
2541. You say that you pump up the salt water;—do you flush the drains with it? Not now. This was previous to the fresh water supply.
2542. You have given it up? Yes.
2543. The Glebe system of sewerage could be connected with the Bondi sewer? Yes.
2544. And the work could be carried out whether the Balmain chose to be connected or not? Yes.
2545. And could be put in hand as soon as it was determined to carry it out? Yes.
2546. Has it occurred to you to consider whether the cost of the Bondi sewer should be separated from that of the other sewer or whether the two should be put together? We have never taken the question into consideration at all. We thought that a thing of that sort was too large for us.
2547. You think the Glebe people would be contented whatever way it was done? We presume that when the matter is decided upon we shall be dealt with fairly.
2548. Do you think that the city and metropolitan area will be taken as one and treated as a whole? Yes; so that the cost is justly distributed.
2549. You said that a few houses in the municipality were outside the level which would enable them to be drained by gravitation. They would not be one-tenth of the whole number of houses? No; I do not suppose that there are ten houses upon land only 4 feet above high-water mark, and I hope that no more will be built there.
2550. Do you know what the level is where the sewer ends at the corner? I do not.
2551. It will have to be raised from there to the other point? Yes.
2552. You do not know the level of the highest point of the Glebe sewer? The highest point of the Glebe is 121 feet above high-water mark.
2553. But the highest point of the sewer? No.
2554. There could not possibly be at present many houses which would not be drained into it? No; very few, I think.
2555. So far as the Glebe is concerned you have a very satisfactory system? I think so.
2556. But by getting rid of the sewage as well as the night-soil we shall have a great additional gain? Yes. By the present system the death-rate has fallen considerably, and if this system were carried out it would be still further decreased.
2557. But you understand that it will be an increased cost as well as a gain? Certainly.
2558. And as Mayor of the borough you think the residents will be prepared to pay a reasonable price? I think so.

William Crispin, Esq., Mayor of Darlington, sworn, and examined:—

W. Crispin, Esq. 7 Aug., 1889.

2559. *Chairman.*] You are Mayor of Darlington? Yes.
2560. How long have you occupied that position? I have been an Alderman for 6 years, and I was Mayor 3 years ago.
2561. You have held that office twice? Yes.
2562. How long have you been a resident of the borough? I have not resided in Darlington for eighteen years; I have been residing in the Glebe.

W. Crispin, Esq. 7 Aug., 1889.

2563. You have given some consideration to the proposed scheme of sewerage for the western suburbs? The fact is, we have got our borough completely sewered.
2564. Draining where? To Bondi.
2565. You are connected with the Bondi sewer? Yes; the Government constructed a sewer running along the boundary between us and Redfern, and 3 years ago I had the whole of the borough connected with that sewer. There is not a cesspit, a pan, or anything of the sort in the municipality.
2566. Then you approve of the scheme? Yes.
2567. *Mr. Lackey.*] How far does the main sewer with which you are connected go towards Newtown? Up to Forbes-street, the boundary between Darlington and Newtown. It is only a small sewer, with a 12-inch pipe.
2568. Darlington is almost part of the city? It is close to the city.
2569. And I understand that you have a thorough system of sewerage there? Yes.
2570. And, therefore, the proposed scheme does not interest you? We have not a wet gutter in the borough. Slops and everything else are taken right away.
2571. *Mr. Hurley.*] What amount do you charge as a sewage rate? 4d.
2572. Is the health of the people in the district good? Yes, it has been very much improved by the system of sewerage.
2573. Have you had any cases of typhoid during the present year? Three or four cases were reported by the Medical Board; but we found that they occurred outside the boundaries of the municipality.
2574. The health of the residents generally is good? Very good. There was one case of typhoid last month, and the patient died. I wrote to the Medical Board complaining that his death was due to the bad smell arising from the Prince Alfred Sewer, which runs through the borough, and Dr. Ashburton Thompson came out to see it. He has since recommended to the Government that they should put up ventilating shafts to carry away the foul gas. A most abominable smell arises from this sewer in four or five places.
2575. Having complained of the smell, the annoyance to the people is all the greater? Yes.
2576. Have the Government replied to you? Yes; they sent an engineer out a week ago to-day.
2577. And the evil is likely to be remedied? Yes, if I can induce some of the property owners to allow ventilating shafts to be erected on their own properties. I have interviewed some of them; but I did not get a direct answer. I hope, however, that they will allow it to be done.
2578. What is the area of your borough? I do not know exactly. There are 4 miles of streets and lanes. I do not know how many acres it contains.
2579. Can you say what number of houses there are in the borough? 725.
2580. What is the population? 2,988.
2581. You have stated that the whole of the houses in your borough are connected with the main sewer by a proper system of sewerage. Have you an ample supply of water for flushing purposes? We have plenty of water.
2582. You were acquainted with the borough I presume previous to the present sewerage scheme being carried out? Yes, I was an alderman previous to the work being taken in hand.
2583. Have you found from experience that the present system is superior to the old one? Yes, in every way.
2584. And you would strongly recommend other boroughs to do what you have done, in the interest of the public health, not to say a word about convenience? Yes, independently of convenience.
2585. *Mr Humphery.*] To whom is the rate paid? To the Council.
2586. To the Darlington Council? Yes; 2d. will pay the interest on the money expended.
2587. By whom was the main sewer constructed? By the Government.
2588. At your cost? At their cost. We do not pay for that. It was constructed 4 or 5 years ago.
2589. At present you are not being charged anything for the use of the main sewer? No.
2590. All you have paid for is the construction of the subsidiary sewers? That is all.
2591. And the rate of 4d. is sufficient to cover that cost—in fact 2d. would be enough? Yes.
2592. You expect later on to be charged for the use of the main sewer? We expect that.
2593. And are willing to pay? Yes.
2594. *Dr. Garran.*] I understand that the rate of 2d. covers the cost of reticulation? Yes.
2595. And when you pay for the complete scheme, you will have to pay a charge not only for your own borough, but an average rate on the schemes as a whole? I do not know about that.
2596. The little piece of sewer in your borough would be of no use to you if it were not for the other 2½ miles leading to Bondi? It will be perfectly fair to make us pay our share of the cost of the sewer to Bondi.
2597. And the residents of Darlington would be quite willing to come in with their neighbours and pay a rate upon the construction of the work? Yes.
2598. At present you are in an exceptionally favorable situation. You are only paying rates upon the cost of your own subsidiary sewers, and are having your sewage carried 3 miles away from you? Yes.

John Crowe, Esq., Mayor of Redfern, sworn, and examined:—

J. Crowe, Esq. 7 Aug., 1889.

2599. *Chairman.*] You are Mayor of Redfern? Yes.
2600. And have been an alderman for some time? For seven years.
2601. And a resident for a still longer time? For 36 years.
2602. Have you given any consideration to the proposed system of sewerage for the western suburbs? I have not to this particular scheme, but I have to the Redfern scheme, which is now being carried out.
2603. What is being carried out at Redfern forms part of the whole scheme. You have given some consideration to the part which relates to Redfern alone? Yes. We borrowed money to carry out our part of the scheme some 12 months ago.
2604. Was that to connect with the sewer which the Government are making? To connect with Bondi and Shea's Creek.
2605. Does your Council generally approve of the scheme? Yes, and the residents too.
2606. And they are prepared to pay their fair proportion of the cost of the whole work? When we borrowed the money we calculated for a rate of 4d. in the £. We will carry out our scheme for £30,000.
2607. You are connecting yourselves? No, the Sewerage Department is doing the work, which is being carried out under the direction of Mr. Smail, the engineer.

2608. Will it drain the whole of the borough of Redfern? The whole of it.
2609. To Shea's Creek? Yes, and to Bondi.
2610. *Mr. Lackey.*] You said that the Redfern works are now being carried out? Yes. 500 connections have been made since February of this year. The work has been in progress for eight or nine months now.
2611. And it is being carried out in conformity with the plans and designs of the general system? Yes, under the Sewerage Department. They have taken our loan over, and they are carrying the scheme out.
2612. Have you any drainage in operation at the present time? Yes, there are about seven miles laid at the present time.
2613. Does that go to Shea's Creek? Some of it, and some into Bondi.
2614. What is the nearest point of the Bondi Sewer? I think it is at Cleveland-street.
2615. Cleveland-street is the boundary of the borough? Yes.
2616. As far as the operation of the sewerage has gone, have you found it to be an advantage? A great advantage.
2617. Do the sewers carry off the sewage pretty freely? We have never had a complaint since the system was started.
2618. Has your attention been drawn to any marked difference between the state of the health of the borough now, and before the sewerage was carried out? Redfern has always been a very healthy borough. It has had a natural drainage. Waterloo and Alexandria have had to suffer from Redfern.
2619. The surface drainage from your municipality goes into Waterloo? Yes.
2620. How long have you resided at Redfern? The whole of my life.
2621. Then I suppose you are one of the oldest authorities? I lived there before it was a municipality.
2622. When you were there first it was nothing like the populous place which it is now? It was all paddocks then.
2623. *Mr. Trickett.*] You have had the advantage of seeing the working of the old system and of the new? Yes.
2624. I suppose there is no comparison between the two—the water closet system is far the better? In my opinion it is. I have certainly approved of the sewerage scheme.
2625. You still have cesspits to empty in some parts of the borough? We have; but that will terminate at the end of the year, because by that time the whole scheme will be finished.
2626. Do you charge the people who use this particular scheme a sewerage rate? Not at present. We found that according to the Water and Sewerage Act we should have to hand the money over to the Board, and it would be a great deal of trouble for us to collect and hand it over for nothing.
2627. These people are getting the benefit now for nothing? We have the dates of their connections, and we shall hand the record over to the Department whenever they choose to ask for it, so that they can charge from the date of connection.
2628. Do you know what rate you will be asked to pay in connection with this scheme? We calculated 4d. in the £ when we borrowed the money. The Government has taken that over from us.
2629. I suppose the people would pay even more than that if necessary? I think they would complain if they had to pay over 6d.
2630. *Mr. Garrard.*] The rate of 4d. in the £ is only for the local subsidiary sewers, and does not take in the cost of the main sewers? We did not calculate for that. We thought we should be allowed to drain into the main sewer without being called upon to pay anything.
2631. Then how did you expect that the large expenditure upon the main sewer would be met? That question did not occur to the Council when they were considering the matter.
2632. They thought that the Government had provided them with two main outlets, and all that they had to do was to find their own drainage? That is the view the Council took.
2633. Before you were connected with the main sewer what was the cost of dealing with night-soil? £1,800 a-year.
2634. Is that what it is now? No, it is only £1500 a-year. now.
2635. I suppose at that time you had frequent complaints from the neighbouring boroughs of Alexandria and Macdonaldtown? We used to have complaints about our storm-waters washing the roads away.
2636. But your ordinary house-slops before you adopted this scheme were conveyed into these municipalities? They were pretty well dried up before they got there.
2637. In your own gutters? In our own gutters.
2638. Much to the detriment of the health of your own people? Yes.
2639. How are you dealing with your night-soil now, other than that which goes into the sewers? The contractor removes it, and takes it to Brown's Wharf, at Pyrmont.
2640. Have you been interfered with by the City authorities? The contractor has been fined twice.
2641. And does he still continue to go there in spite of the fine? The Poudrette Works at North Botany offered to take it, and I am not certain whether he takes it there or to Brown's Wharf.
2642. In that case he would have to go through two other municipalities? Through three.
2643. So that it is a general passing on of your nastiness through other people's domains? Yes.
2644. Do you not think that the people would be willing to recognize the responsibility by paying an increased rate? As long as it was not too high.
2645. *Mr. O'Sullivan.*] What reason have you for believing that they would be favourable to this sewerage scheme? The matter was thoroughly discussed before we borrowed the money, and whenever a resident or ratepayer of Redfern met an alderman, he would say to him, "I hope you will soon have the sewerage scheme carried out," and it is the same now. They are all anxious to see the scheme finished as soon as possible.
2646. You have had no public meeting, or any manifestation of public opinion? No; we had the matter settled twelve months ago.
2647. You feel justfied in saying that the ratepayers will approve of the scheme? Yes.
2648. You have seen the efficacy of it in regard to the outfall sewer to Webb's Grant? Yes.
2649. Does that take away some of your sewage matter? About half of it.
2650. *Mr. Dowel.*] What is the area of your borough? 750 acres.
2651. What is the population of it? 20,000.
2652. What is the number of houses in it? 4,300.

J. Crowe, Esq. 7 Aug., 1889.

2653. The system of sewerage to which you refer as being in existence comprises a large part of the borough? No; about one-third of the borough has been done.
2654. The results of the system were so satisfactory to the ratepayers that they wanted it to be extended to the whole borough? It is to be extended.
2655. They are quite satisfied with the present results? They keep urging us to have the matter finished, and the Sewerage Department is carrying out the work as fast as possible.
2656. And your opinion is that this system is far superior to the cesspit system? I am quite sure about that.

THURSDAY, 8 *AUGUST*, 1889.

Present:—

The Honorable JOHN LACKEY (VICE-CHAIRMAN).

The Hon. ANDREW GARRAN.	HENRY COPELAND, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JAMES EBENEZER TONKIN, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	WILLIAM SPRINGTHORPE DOWEL, Esq.
JACOB GARRARD, Esq.	EDWARD WILLIAM O'SULLIVAN, Esq.

JOHN HURLEY, ESQ.

The Committee further considered the proposed Drainage Works for the Western Suburbs.

John Trevor Jones, Esq., Engineer, Water and Sewerage Board, sworn, and further examined:—

J. T. Jones, Esq. 8 Aug, 1889.

2657. *Vice-Chairman.*] Have any circumstances come to your knowledge since you last gave evidence upon the sewerage scheme for the western suburbs, which you would like to give to the Committee? Yes. When I was here last some of the members of the Committee asked me what I thought of the estimated cost, and whether the work could be carried out for the amount estimated. The question was a surprise to me, because I had not thought it my duty to go into that matter, and, as it was a very large question, I had not had time to consider it properly. I saw that the works were to cost £833,000 and my answer to the Committee was that I considered Mr. Stayton a fully competent person to furnish a reliable estimate. The question, however, came to my mind during the evening, and upon the following day I brought the matter before Mr. Henson, who, with myself, went into the matter. Mr. Henson pointed out to me that £833,000 only provided, so far as he could judge from the report, for the carrying out of the main sewers, and that a rate of 6d in the £ would only pay for the cost of that work, together with the interest upon the money. This seemed to me a very serious matter, because I knew at once that the reticulation would add to the cost very largely. As I thought the Committee were just about to report upon the matter I hastily wrote a note to the Secretary, informing him what my impression was, and as a result of that letter I am here to-day. In my letter, I stated that I thought half as much again as the estimated cost would be required for completing the work, which would bring the rate up to 9d. in the £.
2658. The gross cost of the works would amount to 50 per cent. more than the estimate? Yes. I have heard since that the Committee are aware of this, and that they have got Mr. Stayton to address himself to the question, and that he has furnished them with information upon it in the form of an appendix to his report. That appendix I have not seen. Mr. Stayton having done that, and the Commmittee having considered the matter, my anxiety with regard to it is at an end, and I do not think that I have anything further to say about it.
2659. Of course the increased charge to meet the interest upon the expenditure would be 50 per cent. more than the present estimated charge? Yes, more than the charge based upon the estimate of £833,000. I find also, through the same channel by which I obtained the other information, that Mr. Stayton's estimate for the whole work exceeds mine, that it amounts to over 100 per cent. more than the first estimate.
2660. This is then the original estimate? Yes, without providing for the reticulating mains through the streets. Nearly 300 miles of streets will be embraced within this system, and the cost of the smaller pipes required to drain those streets will be over half as much as the cost of the original works. With regard to another matter, I have something to say however, and that is, that some of the western suburbs drain, or are proposed to drain, into the existing sewer, that is to say, into the large intercepting sewer built by the Roads and Bridges Department.
2661. The main sewerage system to Bondi? The Bondi sewer. There is nothing in the report to show that the residents of the municipalities which drain into that sewer will have anything to pay towards the cost of it, and this, I think, should be added to the charge to be imposed upoon them.
2662. You think an additional charge for the main Bondi sewer would be a fair charge? Yes. I think a quota of the expense of that sewer should be met by the residents of the suburbs which drain into it.
2663. That would add to the amount they would have to pay for the sewerage service? Yes; so that when you finally came to strike a rate for those suburbs the amount would have to be added to the rate of 6d. in the £.
2664. Together with the cost of reticulation? Together with the cost of reticulation.
2665. Then the rate would be 9d. with an additional amount, which would be a proportion of the cost of the Bondi sewer? That is what I wished to convey to the Committee.
2666. You have thought no more of the system of electrolysis, which has been so much spoken of? I have had no further opportunity of inquiring into it.
2667. Have any further developments, so far as you know, taken place in reference to the electric system? No further developments, except those contained in the very excellent paper written by Professor Threlfall. Nothing with regard to the matter has come before me since I read his paper, beyond statements from chemists and others, which show that the same end might be obtained by chemical means.
2668. Some startling evidence has been given by some of the mayors of these suburbs with regard to the dry earth system. The Committee were rather surprised to find that in a great many places no dry earth is used at all? Very little indeed is used, and then only by careful persons, who wish to suppress all nuisance.

2669.

2669. Some of the mayors say the system is impracticable—that the earth cannot be used, and is not used? The practice of using dry earth always falls into disuse in large communities.
2670. And in addition to that, that the decdorant, which is given gratuitously, is not always used? It is not always used.
2671. In view of these circumstances, is it not your opinion that the community runs a great risk of plague or pestilence? There can be no doubt that sickness is greatly brought about by this system.
2672. Is it not an alarming state of things, as far as the health of the community is concerned? I quite think so. I think we are in a very perilous position with regard to this question, and the greatest haste is necessary to provide a cleaner system. I should like to say one thing further. I have found from various sources that there is more to support my views with regard to the separate system than I believed available before. If the Committee approve of the scheme as it is, there is nothing to prevent the Government considering whether the separate system should not be carried out upon the same lines, in order to effect a great saving of expense. I have found various books which support my views, from one of which (one of Colonel Waring's, a great American authority, published this year) I could make very favourable quotations. It quotes the greatest authorities in London and elsewhere upon the subject as being in favour of the system. The book is by an American author, and is the most recent work upon the subject. I never heard of it until the day before yesterday.
2673. *Mr. Garrard.*] You do not know the names of the authorities who support your views—you say that the highest authorities in the world are favourable to the separate system? Yes. The author of the book is a Colonel Waring.
2674. I suppose Sir Robert Rawlinson is an eminent man in his profession? Yes; he is in favour of the separate system, and so is Colonel Jones.
2675. Do you know whether Sir Robert Rawlinson was in favour of the system in the earlier part of his professional experience, or later on in life? He must have taken it into favour later on in life, because I know that at one time he was in favour of the combined system.
2676. Sir Joseph Bazalgelte is also a man standing high in the profession? He stands very high in the profession.
2677. He is not in favour of the separate system? He is not quoted, to my recollection, in the work to which I have referred.
2678. If the separate system were carried out the sewers would of course be smaller, but there would be two sets of them? No; there would not be two sets; that is where the mistake lies. People think that if the separate system were adopted there must be another system, providing for the rainfall; but there need be no such thing. The rain-water will follow the same course as it does now, upon the surface of the ground, where it ought to be, until you take it to the foreshores. The tank stream provides what you may call the foreshore drainage; that is to say, rain water could flow over the street gutters until, as it approaches the outfall, it becomes too bulky from aggregation. At this point an under-ground channel must be prepared for it; but these are usually short, and, moreover, are necessary under the combined system, therefore they add little or nothing to the cost.
2679. Remembering the heavy downfalls which we had during our summer thunderstorms, do you not think that a large volume of water running down the gutters would be a greater danger? It is not so now.
2680. Is it not a fact that in Melbourne, where there is no under-ground drainage, it was found to be so? Yes; but they made what is called a culvert for some distance up Elizabeth-street to carry the water away, similar to the system I now advocate.
2681. In any case, there would have to be a duplicate set of pipes near the outfall? I admit that; but it would be a very small matter, and you would have to do the same with the combined system. You could not think of repeating what has been done in Sydney before, and put the sewage into a stream like the tank stream again. You would have to duplicate that, whether you had a separate or a combined system.
2682. Do you think there is sufficient merit in the separate system to warrant the Committee putting off their decision upon this work for some time, in order to inquire into it, or do you think we have had sufficient evidence upon the subject? I think the Committee would be under no necessity—I am giving this as my own opinion—to do that on determining on the scheme put before them. The proposed scheme with regard to routes and everything like that would answer every purpose of the separate system, but the size of the sewers would be lessened.
2683. Then the whole scheme would have to be recast—in other words, the main sewers, if the separate system were brought into operation, would be too big for the work which they were called upon to do? Yes.
2684. But they are already partly built? Yes.
2685. So that only the continuation of the main sewers would be diminished in size? Yes.
2686. *Mr. Copeland.*] Do you not think it would be an advantage to have the water from the summer storms to cleanse the sewers? So long as the showers came it would be a decided advantage, but you cannot depend upon the rain to cleanse the sewers; you must have an artificial system. If you depended upon the rain, for many months in the year the sewers would not be cleansed at all.
2687. But suppose we combined the two—suppose we had artificial flushing as well as natural flushing—it would in any case be necessary to use conserved water for flushing sewers? Yes.
2688. And we could save a large amount of water whenever a storm occurred by allowing the storm water to run through the sewers? You would get, perhaps, twenty or thirty flushes in the year from the rain, whereas the sewers would require flushing much more frequently than that. An artificial system of flushing would not be a great drain upon the water. At the top of each smaller sewer a chamber could be constructed, which would be filled with water, and that water, when it was discharged, would have sufficient velocity to cleanse the sewer. Then all the small sewers pouring their contents into the larger sewer would cleanse it too.
2689. But would it not be a benefit to have these thirty natural flushes? The benefit is very dearly bought when such a large increase of cost is incurred, and when the flushing can be done artificially at little cost of water.
2690. But considering the rapid increase of population, and the consequent increase in the consumption of water, both for domestic and drainage purposes, would it not be desirable to make use of the summer storm supplies for flushing? They are so precarious that I think we had better not depend upon them, unless we can get them at stated periods, and, for that matter, they could be used under the separate system under restriction.

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2691. Of course you cannot order a rain-storm at a stated period; but, supposing you were intending to have a drain flushed out with the conserved water and a storm came on, you could put off the flushing by the conserved water and use the rain water, and you would thereby save a large quantity of water. That seems to me a great object? The water scheme was designed having in view the flushing of the sewers. That was one of the first things thought of when the scheme was projected. The Government has given water free for flushing purposes.

2692. But has not our water consumption increased beyond all expectations? No; it has not come up to my expectations; but it will increase when we get a higher pressure.

2693. You stated the other day that we have not enough water to supply hydraulic apparatus? We have plenty to do so now; it is the pipe system that is too small, but I am nipping the matter in the bud, as it were, to prevent the use of water for lifts, &c., becoming general.

2694. But if hydraulic lifts are a convenience to the community, instead of nipping the matter in the bud would it not be better to allow their use to extend? If we could supply the water. I am informed that another scheme is on foot in order to supply water for this purpose, and it will perhaps be cheaper for the people to get water from a hydraulic power company than to get it from us. There would be a great increase in the number of these lifts in the future if water were allowed for the purpose, and the same thing would happen here as has happened in Melbourne—the water being largely used in the middle of the day for lifts, the top floors of private houses would be deprived of it for domestic purposes; and I think the scheme was principally designed to supply water for domestic purposes. Very tall houses are being built now, and it is my belief that it will become very popular to place the kitchens and other offices upon the top floors, so as to get rid of the smells.

2695. All this goes to show that our water supply, instead of being over-abundant, is, if anything, not too abundant? Far from that. I only say that the pipes have been laid to supply water for domestic purposes, and that the supply of water for lifts is foreign to the first design. I tried very hard at one time to get a higher head of water in order that it might be used for these purposes; but I failed to get it. I represented it to Mr. Moriarty, who was then Engineer-in-Chief, that it would be desirable to have water at a higher head for lifts and other things; but he said it would be useless to bring water at such a head for these purposes, seeing that 700 lb. would be required per square inch. You can see that the designer of the scheme had it in his mind to refuse to supply water for lifts, knowing that a very large quantity is consumed that way, and at a time of the day when it is most required for domestic purposes. It takes 100 gallons of water to lift a ton to an altitude of 40 feet. That water is drawn in a few seconds, and when there were three or four places working their lifts at the same time one would interfere with another, as in Melbourne. There they are replacing the hydraulic lifts with steam and gas-engine lifts.

2696. Still, if your water supply were unlimited, do you not think that it would be a desirable thing to encourage the use of hydraulic lifts? I do; but in that case you would have to lay a second set of mains for them. At present we could supply a large number of lifts.

2697. Is it not advisable to make our water supply go as far as it can for that purpose? It would be if we could stop it at a convenient time hereafter; but when once these lifts began to be used it would be very difficult to stop them.

2698. Passing away from that aspect of the question. You referred to the people who are now draining into the Bondi sewer, and you said that you thought a rate ought to be levied upon them to defray the cost of that work. By doing that you would reduce the general rate to cover the sewerage system? I take it that the people who will drain into the Bondi sewer will be assessed for that work. According to Mr. Stayton's scheme, Balmain, Camperdown, part of Newtown, Darlington, and other suburbs will drain into that sewer, and it seems to me that when they come to use it, it would be fair to make them pay a portion of the cost. The point I wish to bring before you is that the rate will have to be increased to meet that, and instead of it being 6d. in the £, which I conceive is the amount put before the Committee, it will have to be 9d. or more than that. According to Mr. Stayton's last estimate, it will be over 9d., and in addition to that there will be the cost of the Bondi sewer.

2699. Mr. Stayton's estimate for a rate of 6d. was based upon a period of repayment of twenty-eight years? Yes.

2700. If that time were extended to fifty or sixty years the rate would be reduced? Yes.

2701. *Mr. Humphery.*] To 6½d.? It would be less than that with a longer period—5·22d. I think.

2702. *Mr. O'Sullivan.*] Have you had any experience of this separate system? No; and that is why I did not urge it upon the Committee before, because I was not backed up by the authority of people who have tried it, although I felt certain that the theory was a good one. Without authorities I felt that I should only be drawing a red herring across the trail, as it were, in urging the matter upon the consideration of the Committee and thereby delaying the present proposals, which, though in my opinion not quite equal to the separate system, are still excellent and much required. Some years ago I was called upon to advise Newcastle as to their sewerage system, and I placed before them the advantages of the separate system. I think that was in 1884 or 1885. I advised them then to adopt the separate system altogether, shutting out every drop of rain water, and I gave them what I considered to be a proof that it was the best. The aldermen, however, kept saying, "You will have to duplicate the pipes." I said, "The city is very hilly, and the water will follow its natural channels to the foreshores. Near the foreshores you can put drains to prevent it passing over the streets and carry it out into the river." Notwithstanding that, I did not convince them. Since then I have had several occasions to speak in favour of the system, but I was all the time speaking theoretically, my arguments not being strengthened by the experience of other people. A city like Newcastle would be an excellent place in which to try the experiment.

2703. Do you know of any places where the separate system has been a success in this part of the world? No. It has not been tried in this part of the world.

2704. Do you think it would be advisable for us to alter the proposed scheme so as to fit it in with the separate system? I am positive it would, and I can produce arguments to back up my opinion.

2705. I suppose you have read Mr. Stayton's reply to Mr. Henson's paper? Yes.

2706. I see that he quotes Sir Robert Rawlinson as an authority against the system, and also Mr. James Lemon, who, he says, stated, "that the opinion of Sir Joseph Bazelgelte, coming from so eminent an authority, was a heavy blow to the separate system"? Sir Joseph Bazelgelte is against the system, but I do not know that he struck a heavy blow at it.

2707. Do you take Mr. Stayton's reply as conclusive? Not with regard to this part of the system.

2708. *Dr. Garran.*] Your first impression was that Mr. Stayton had only charged upon the original estimate of £800,000 odd? Yes.
2709. You now see that he has based his rate upon an estimate of £1,817,896? Yes, I have found that out since.
2710. Then you withdraw the statement you made in your letter to the secretary, saying that the 6d. rate would have to be increased 50 per cent. to include the cost of reticulation? No, I do not. I see that Mr. Stayton has proved my statement to be correct in a report not yet available to me.
2711. Mr. Stayton's rate of 6½d. in the £, extending over a period of sixty years, is based upon the total outlay of £1,817,896? That is only another way of looking at it; that would come to the same thing as my increase of 50 per cent. upon the smaller sum.
2712. You led us to believe by your letter that you thought that 50 per cent. would have to be added to the rate—do you still hold to that opinion? I had not anything before me then to show me what the amount of the rates were; but supposing an expenditure of £833,000 had to be paid off, and that that amount would be met by charging a certain community a rate of 6½d. in the £, that community would have to pay a rate of 9d. in the £ if the expenditure were increased by 50 per cent.
2713. *Vice-Chairman.*] That is extending the period? No. Mr. Stayton has now included the cost of reticulation, and he now says that a rate of 6d. in the £ will pay for it. That I cannot gainsay, because the community may be large enough at the time he estimates to make a rate of 6d. in the pound pay for the work.
2714. *Dr. Garran.*] You see, as an engineer, that it is important that we should have extremely clear opinions upon the point? That is my idea.
2715. Mr. Stayton in the appendix to his report, pages 24 and 25, after stating that the main sewers and other works would come to £830,304, goes on to say that 300 miles of subsidiary sewers will be required, and 100 miles of subsequent subsidiary sewers, showing clearly that the reticulation is included in the additional sum? Yes; but it was not included in the report supplied to me.
2716. There could not be 400 miles of sewers unless the reticulation were included in the scheme? I said 300 miles.
2717. He allows for 400 miles? I had not the same means of measuring.
2718. This information is contained in the appendix to Mr. Stayton's report? I have not been furnished with the Appendix—it was not attached to the copy of the report which I had.
2719. In the appendix he has added to the £830,000 other expenses, bringing the cost of the work up to £1,817,896—that is the total cost which we have been considering? I am quite satisfied now that you have got the correct information.
2720. You see that in section C of the Appendix that the comparative annual rates for the western suburbs sewerage are calculated under the existing Act, with interest at 4 per cent., and repayment in twenty-eight years; under the proposed amended Act, with interest at 4 per cent., and repayment in sixty years; and under a further amended Act, as to reduced interest, with interest at 3½ per cent., and repayment in sixty years? I believe so.
2721. You see that during the last fifteen years Mr. Stayton brings the rate down to 6½d.? I believe so.
2722. Which will pay the interest upon the full amount of £1,817,896? Yes, I can clearly see that from the information now given; but I had not the information before me when I wrote my letter. Perhaps you will allow me to withdraw it.
2723. You will easily understand that your letter was rather alarming to the Committee? I only alarmed them in the same proportion as I was alarmed myself.
2724. You see now that Mr. Stayton estimated the rate upon the larger amount? Yes. I desire to insist on the fact that I was correct so far as I went; further reports have put a new complexion on the matter.
2725. And you wish to withdraw your former opinion? Entirely.
2726. Looking at the map, and speaking of the system, as, I suppose we should, from an engineering point of view, as separate in respect to their outfalls, the scheme provides for three systems—one opening into the sea at Bondi, one into the eastern side of Webb's Grant, and one into the western side of Webb's Grant? Yes; I look upon the last two as one.
2727. The Glebe, Balmain, and part of Camperdown are to be drained into the Bondi sewer? Yes.
2728. Is the Bondi outlet at work? Yes.
2729. The sewerage is running down it now? Yes.
2730. Then we may speak of it as the Bondi system? Yes.
2731. When the Glebe, Balmain, and Camperdown are drained into that sewer, will it be the view of the Water and Sewerage Board that the whole should be treated, financially, as one work, and that a common rate should be charged upon all who use the sewer, irrespective of the local expenditure? I think so.
2732. You would not say that because Balmain was more expensive to drain than the other municipalities, the residents of that municipality should pay a higher rate? That is my view, and I think it is the view which the members of the Board will take.
2733. What rate are you now charging the citizens? The Board is not yet in possession of the rates. A rate of 6d. in the £ is charged by the City Council.
2734. Is that adequate for the outlay at present? Yes; but then the Government reduced the debt very largely, and they have some debentures which they are not paying off yet, so they are making what may be called a profit.
2735. Then financially you are not in possession of the Bondi sewer at present? No.
2736. Perhaps that explains what was told to the Committee yesterday, that the residents of Redfern are using both the Bondi and the Shea's Creek sewer, without paying anything? Yes.
2737. They are specially favoured at the present time? They are specially favoured at the present time, because we cannot make any arrangements. I have tried for years to make arrangements with the City Council, but there has always been a difficulty.
2738. As soon as the whole thing gets into your hands that will be remedied? Yes.
2739. And every district, however remote, that makes use of the main trunk sewer will have to pay its quota towards the cost of the work? Yes.
2740. Has the matter been considered by the Board, whether you are going to keep separate accounts for each of the three separate outfall systems or put them altogether, and treat the metropolitan system financially

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financially as one work. Are you going to ask whether the Bondi or the Webb's Grant system is going to cost most, or will you treat them both as one? That is a very large question, and will have to be considered by the Board, but I am inclined to think that they will make two systems.
2741. Treating the two outfall sewers to Webb's Grant as one system? Yes.
2742. And the Bondi as another? Yes.
2743. Making the people who use them pay their own rates? Yes.
2744. Yo do not do that with regard to your water-rates? No.
2745. You do not charge the locality 4 miles out more than another which is nearer? No; but with regard to very distant places we do make a difference. Liverpool and Camden will not be assessed upon the city rate, unless it is found possible to do so without injustice.
2746. Simply because they should not be charged for the long length of pipes which they do not require for their own particular supply? No; but because it would make a heavy charge to so small a population.
2747. They are not on the main line? No.
2748. Will the Balmain work increase the rate, or keep it as it is? It will tend to lower it.
2749. You think by extending your business you can do more work for a smaller relative rate and expenditure? Yes.
2750. And that the extension of the scheme to the Glebe and Balmain will lighten the expense? Yes.
2751. You think that the inclusion of the Glebe and Balmain within the system will not increase the rate beyond 6d? 6d. will do. If the money can be had at 3½ per cent., and if 6d. will pay the interest upon that, the addition of those suburbs to the scheme will lighten the burden.
2752. The addition of those suburbs will be no grievance to the citizens, but rather a help? I think they will be rather a help. The cost of the sewers necessary for these boroughs bears no comparison to the cost of the large outfall sewers, and therefore the amount received will be increased by the larger number of houses, while the cost of making the sewers will be less.
2753. At the time the Bondi sewer was designed, it was not intended to include the Glebe and Balmain in the system? I think the Glebe was. I do not think that they intended to go beyond the Glebe, but I am not quite sure. Plans were very scarce until quite recently.
2754. So far as you know the Bondi sewer is quite capable of taking all that? Yes, more especially with the separate system.
2755. If we do not have the separate system, do you think they would still be large enough? For this sewage certainly, and it is proposed to include a portion of the rainfall, and to make overflows for the rest, so that they will be competent to carry it.
2756. With the partial system, in a storm the sewers will be quite full? I quite expect to see them full, although I have been informed that they never have been full.
2757. You think there is no fear of there being a bursting force? There will be safety-valves to prevent that.
2758. If we do not have the united system we shall have to get rid of the back-yard washings, and washings from the streets, by some other process? No; everything but rain water, and a proportion of that, would go into the sewers.
2759. Would you allow the drain waters from the back yards to go into them? Not necessarily. I should exclude a great deal of it unless where it flowed under the houses. That occurred at Surry Hills recently, but wherever the water could drain into the street it was made to do so.
2760. But looking at the bad way in which part of the suburbs are laid out, it is simply impossible to find an exit for water from the back yards? That may be so in some cases. There were cases in Surry Hills where the yards drained towards the houses, and then in some instances where it was quite easy, I made a drain under the house, and laid a new system to carry the sewage so as to exclude as much rain-water as possible, because the sewers there are rather small.
2761. There is another point about the separate system;—if all the surplus water is carried into the harbour, as you propose, will not an enormous quantity of clay and *debris* be washed into the harbour? That is the case now.
2762. But if the water went out to Bondi this sediment would be carried into the sea? The surface-gutters will not be done away with. When the sewage is carried out to Bondi the surface drains will not be done away with. The Bondi sewers certainly will carry away some of the surface mud, but a great part of the mud and dirt which now goes into the harbour will always do so.
2763. As long as the storm water goes into the harbour, that mud will do so, too? Yes. None of the systems will prevent the surface drainage from going into the harbour in heavy rains.
2764. So you think there is nothing to be gained by the partial system in that respect? I do not think there is.
2765. With regard to the western suburbs, and the area included, we have been told that, in order to take in that area, we must submit to large sewers and small inclinations, and that that increases the cost. Do you think anything would be gained by taking a smaller area and having a greater fall? That would be restricting the scheme.
2766. Multiplying the number of schemes, but making each one cheaper? Would that contemplate pumping from one to another?
2767. You might have to do that? It is within the bounds of possibility. I went into it once partly, with regard to Burwood, and I found that it was quite competent to have a series of small schemes, which afterwards could be combined into one large scheme.
2768. I mean that supposing we had the scheme marked out by red lines on the map, but extending over a smaller area, with a number of outfall sewers to the Parramatta River, and pumping arrangements, we should then have a steeper inclination to Webb's Grant? Yes.
2769. That would be cheaper? I am inclined to think it would. That is to say, you would have the steepest fall you could get without going very deeply underground, and you could give it a greater fall by raising its inland terminus. The sewage of the valleys you could pump up, and the sewer would then take a better grade. The subsidiary sewers would in that way be lessened, and they would carry less sediment.
2770. Then you think there is room for calculation for a scheme having small tributaries and a steeper fall? Without having made any calculations, I think it could be done.
2771. But you do not think there would be any gain which would justify the Committee in pausing in its recommendation? Unless the Committee is going to recommend that the work be carried out at once, I am inclined to think that there will be reason for pausing before recommending the construction of the large sewers.

2772. These detached pumping schemes would require large reservoirs at the head of each bay? Yes; they would require chambers.
2773. Would any nuisance arise from that? I do not think so. They would be all closed.
2774. Do you think such a scheme would be as effective as the one before us? More effective I fancy. It might turn out on calculation to be more expensive—that I will not answer for; but I think it will not.
2775. You know the configuration of the country near the Parramatta River? Fairly well.
2776. You see that there are a number of peninsulas there, many of which are not properly treated by this system? Yes.
2777. Then it becomes probable that we shall have to drain these peninsulars to some low flat, and there deal with the sewage either by electrolysis, or by pumping it up into the large sewers? Those are the two alternatives, one of which must inevitably be adopted.
2778. We call this the Western Suburbs scheme, but it really does not deal with the whole of the suburbs as far as it goes. How are we to deal with the peninsulas? In either of the two ways which you have suggested, either by pumping the sewage into the larger sewers, or by treating it by some process, and then allowing the clean water to pass into the bay.
2779. Both the Glebe and Balmain peninsulas are able to drain by gravitation into the Bondi sewer? A portion of them.
2780. As we go west the peninsulas cannot do that? No; the fall will not be enough.
2781. We cannot avail ourselves of gravitation and drain the peninsulas into the Western Suburbs sewerage scheme? No.
2782. In dealing with such places as Five Dock and Concord, we must either treat the sewage and then allow the water to go into the Parramatta River, or pump it up into the main sewers and allow it to flow to Webb's Grant? Precisely.
2783. Looking at that contingent, and the fact of the Webb's Grant sewers having to carry more sewage than is provided for, it would be a great mistake to make them smaller than they are designed? They would be ample to carry the sewage, because the quantity of sewage without the rainwater is very small.
2784. You think they are three times as large as is necessary to carry the sewage alone? Yes.
2785. And it is only because they have to carry rainwater as well that they need be so large? Yes. I should make them carry less water.
2786. Taking them at the size they are now, and looking to any contingency in the future, they are amply sufficient to take any quantity of sewage if we keep out storm waters? Yes.
2787. And has not Mr. Stayton a good reason for making them as large as he proposes, in view of the probabilities of the sewage from the lower levels being pumped up into them? They could be greatly reduced, because the sewage without the storm water is very much less.
2788. If we make the pipes unnecessarily large we shall have to use an unnecessarily large quantity of water for flushing purposes? Yes.
2789. How often in the interests of the public health should a sewer be flushed? That depends upon a great many circumstances. If the sewer is very steep, once a week will do very well. I should mention in connection with the flushing of sewers, that Sydney is a very good place to enable it to be done, because in the hot weather the people are great bathers, and if the bath water is caught near the top of the sewer, and is allowed to fill the sewer for a certain distance before being released, it provides a very effectual flushing without any additional water being taken from the water supply pipes.
2790. The mere trickling of bath water through the sewers if not collected would be of no value for flushing? No. It would have to be conserved by a valve in the main which would fill a certain part of the sewer, or it could be caught in a special chamber, and then used for flushing.
2791. Is not bath water more or less dirty? It does splendidly for flushing the sewers. In London they use very filthy water for flushing—they do not use clean water for it.
2792. Is it not undesirable to store this water? They do not store it for more than an hour.
2793. Do not the foul matters in the sewer begin to ferment and give off gases within twenty-four hours? If they are very foul; but with bath water added they would not begin to ferment in that time. If the bath water were stored for twenty-four hours it would not do much harm, because it is very nearly pure water. Of course other things would be mixed with it which would help to make it a nuisance; but I do not contemplate keeping the water for twenty-four hours.
2794. After a good storm the sewers are pretty sweet, and the foul air is all washed out? Yes.
2795. Have you had any opportunity of noticing how soon after that again the sewers begin to give off bad gases? In warm weather the next day.
2796. Then the offensiveness of the sewers depends upon the weather, to some extent? Yes.
2797. Does not that show that we must have more frequent flushings? The flushing will not carry away the sewer gas.
2798. Then we want a more thorough system of ventilation? Very badly.
2799. You look to that more than to the flushings to get rid of the bad smells? Yes.
2800. What is the flushing wanted for? To wash the sides. The sides of the sewers begin to get clogged, and the sewers give out more gas as they become more foul.
2801. Does not a good flushing wash away the greasy matter? It washes away that which is most soluble.
2802. And it is the greasy matter principally that sticks to the bricks? Yes.
2803. *Mr. Humphery.*] Do you know any part of England, or any place upon the Continent, where the separate system has been tried? I have been trying to think of the name of a place, but I cannot do so. My memory for names is very bad. The separate system has been tried in America, but I forget the name of the town. Mr. Henson will probably supply you with the names.
2804. I see a place called Abingdon mentioned in the report—are you aware what system is adopted there? I have not had the books necessary to make myself acquainted with it.
2805. You have no personal experience with regard to the matter? No.
2806. Neither in this Colony nor in Victoria? Not in any of the colonies. There has been no experience to be had upon the question. I do not profess to have had any experience with regard to the separate system.
2807. Or of any sewerage works? I have had charge of the Sydney Sewerage Works for ten years.
2808. With the exception of Sydney? No.

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2809. Your experience, with regard to sewerage works, has been wholly gained from you connection with the Sydney Sewerage Works? Yes, and from what I have read with regard to other sewerage systems, though I was an hydraulic engineer before.
2810. In the event of the separate system being adopted, would there have to be separate drains in the backyards of the various dwellings. Would there be a separate drain for the house-slops? No, they would go into the sewer.
2811. Into the main sewer? Yes.
2812. What would become of the ordinary kitchen-slops? Everything would go into the sewer;—every nuisance would go into the sewer.
2813. How would you dispose of the rainwater in the yards? Very easily. It is already disposed of in Surry Hills. In some places the fall of the land takes it towards the houses, while in other places it is drained into the street or lanes.
2814. By a separate drain? Yes.
2815. Have you two drains, one for the sewage, and another for the surface-water? In such cases we have two drains.
2816. How can you be sure that the slops from the houses are not cast into the surface water drains? The construction of the drains will make it inconvenient.
2817. It is simply a matter of inconvenience then? Yes, and people are very soon caught at that work. If there is a drain to carry the rainwater into the street gutter, the gutter is always dry when there is no rain. In dry weather, if there is any wet in the gutter, the inspector soon sees it, and, if it creates a nuisance, he proceeds against the parties for allowing their sewage to flow into the gutter. In wet weather, of course, the sewage is sufficiently diluted to make it clean enough for the street.
2818. Is there not much less danger of the surface drains becoming foul, with the combined system proposed by Mr. Stayton, than there is with the system you suggest? I do not see any danger of their becoming foul—they would have a better fall, owing to the sewers being smaller.
2819. There will be a great deal of surface drainage with the system which you recommend? There will be no surface drainage whatever. The flushing will be entirely artificial.
2820. If there is no separate system will it not be necessary to have a separate set of pipes? What for?
2821. If you have only one set of pipes for sewers, and you propose to get rid of the rainfall? Not underground.
2822. Then that would be a surface drainage? Yes, there would be no objection to it, because it would clean the streets.
2823. Does it not also carry away the filth from the yards? There is no filth in the yards unless the place is very badly managed. Horse dung, etc, is washed off the surface of the streets and carried into the harbour; but that would be the same under Mr. Stayton's system. The street filth will always go into the harbour, or wherever it goes now. Mr. Stayton does not propose to get rid of the street surface water.
2824. He does of a portion of it? Only a small portion of it.
2825. Have you been to Adelaide? Yes, but soon after I got there a telegram was sent to me asking me to come back as quickly as possible.
2826. You have not investigated the sewerage system there? Not thoroughly. I have seen their sewage farm.
2827. Have you made any estimate of the cost of the separate system which you suggest should be carried out? No.
2828. You have not gone into figures? No, but I conceive it would be cheaper because of the smallness of the sewers required.
2829. *Mr. Tonkin.*] What are the advantages of the separate system which you advocate over the combined system? In the first place the economy is first cost, and in the second place, as Dr. Garran remarked, the small quantity of water necessary to flush the sewage. It might be said that the rain water would fill any sewer and flush it, but I say that the rainfall in Sydney is so precarious that the flushing by that means would be very ineffectual, because of the dryness of our climate, we must flush sewers artificially, either by collecting a quantity of water by valves, or by using the water from the water supply pipes.
2830. What do you estimate would be the difference in size between the main sewers and the separate system, and those under the combined system? I have not made any estimate, and I do not care to mention any figures, because my estimate might not turn out to my own satisfaction afterwards.
2831. You said that one of the principal advantages of the system is the decrease in the first cost of construction? Yes.
2832. How do you know that there would be a decrease, if you have not made a calculation? There would be less excavation with the separate system, because you would not have to go to such a depth with the sewers as with the combined system. The brickwork would be less, and everything else would be less, so that the total cost of the works would be decreased.
2833. But have you no idea what the difference would be. What would be the difference in cost between a sewer 4 feet in diameter and one 5 or 6 feet in diameter? I have not estimated what amount would be saved, and I do not care, as an engineer, to give an estimate which I have not made a calculation for.
2834. You have not made any calculation? No.
2835. It is only a surmise of yours that the cost would be less? It is not a surmise; I am certain that there would be a saving, but I will not give an estimate of what it would amount to.
2836. I understand you to say that it would not be advisable to flush these sewers, or even the large sewers with the storm water? You might let the storm water run into the larger sewers at the outfall, but I am speaking now of what are called the sub-mains.
2837. But do you not think it would be advantageous now and then to have the sewers completely filled with water, gorged with water as it were, so long as they were not bursted? With the larger sewers you could do that.
2838. But you would never be able to do that with the whole system; you could not waste sufficient water to gorge all the sewers? I could give sufficient water to cleanse all the sewers that would come under the name of subsidiary sewers.
2839. I am speaking now of the large sewers? You might admit the rain into those so far as they would bear it.

2840. That would be the same as the combined system? Yes; but the combined system would carry these large sewers far a-field, where I should replace them with smaller sewers which could be artificially flushed.
2841. But I understood from your answers to Dr. Garran that you considered it a disadvantage to have the rain water going into the sewers? No. It is no disadvantage. What I meant to say was that I should not build the sewers so large as to carry the rain water.
2842. *Mr. Dowel.*] Is it not a fact that the surface water, the storm water, carries a large proportion of silt with it, and that if it went into the sewers it would be a means of filling them up to a large extent? They are generally designed so as to carry it away. It is calculated that the velocity of the water will carry it away.
2843. Is your system of water works designed to cover the highest point of the sewerage system now before the Committee? Not without pumping.
2844. Can you say what is the highest point in this scheme? There are two places with an altitude of 360 feet;—Waverley and part of Ashfield.
2845. What is the elevation of the Waverley reservoir? 360 feet.
2846. Paddington? 210 feet; 214 feet we sometimes call it, but 210 feet is the top of the water.
2847. Crown-street? 141 feet, and Woollahra 280 feet.
2848. The main portion of the scheme would be supplied by water by gravitation. The only two points you state which will not be served will be Ashfield and Waverley? We have to pump to everything above 141 feet.
2849. At the present time? At the present time.
2850. Yet you say that the elevation of the Waverley reservoir is 360 feet? Yes, by pumping.
2851. How is the pressure in London obtained? By pumping.
2852. And by water towers? And by water towers.
2853. I think I understood you to tell Mr. Copeland a short time back that although you had this large water supply you could not supply a few hydraulic lifts? I did not say a few; I said a great many.
2854. Is it not a fact that very high buildings are being erected in the City of Sydney? It is.
2855. And is it not absolutely necessary to provide a pressure which will convey the water to the top stories of those houses? We are doing the best we can for that, and when we get the new pipes laid we shall be able to supply the water freely to the tops of the highest houses.
2856. I understood you to say that you declined to grant the request of the proprietors of large hotels, and of other people who own high buildings for water for hydraulic lifts? Yes, and I think the two things are quite consistent. If I allowed the water for lifts it would not rise to the tops of houses where it would be required for domestic purposes.
2857. Is it not a fact that in London the water for hydraulics lifts for a large number of years was supplied by the ordinary system of pumping and water-towers? So far as they had hydraulic lifts; but I do not think they had a large number of them. They certainly allowed them water. I am among the first to oppose the application for water. Mr. Mestayer, who is now living in Sydney, told me that when he was in Adelaide, and the people applied for water for lifts, he said to them, "Well, you can have the water, but at your own risk. In summer time there will not be sufficient to supply the lifts, so I ask you whether it is worth while to use a power which you cannot depend upon." In Melbourne they constantly find themselves without water, and a lift at times cannot work for half a day at a time. There they have had to use gas-engine lifts, or supplement the hydraulic power in some way.
2858. Is it not a fact that they use more water for flushing the sewers in Melbourne than would supply all the water lifts likely to be established in the colonies? The water comes partly from the hydraulic lifts, but on the other hand the water supply scheme was designed to allow it. It is partly a domestic purpose. What I want is not to acknowledge that our water supply scheme has been designed to supply hydraulic lifts, because otherwise there might be a run upon it which would limit the supply for domestic purposes.
2859. Melbourne, I believe, depends upon one reservoir? Yes; but it is double the height of ours. It is 300 feet high, instead of 140 feet.
2860. Do you think our supply is equal to the Melbourne supply, although we have several reservoirs? I think it may be said to be superior for that reason, though it is a little costly, because every zone of levels is able to get a proper supply of water, and the supply is more constant.
2861. The Botany supply is held in reserve at the present time? Wholly in reserve.
2862. You are aware that the Borough of Darlington is at the present time connected with the main sewer? Yes.
2863 Have you given any attention to the matter, to ascertain whether or not the sewerage system is working well there? I have not had the means of ascertaining. They were out of the City, and I had not the right to interfere. I pointed out to the City Council that they were getting the benefit of the sewers which had been constructed at the public cost for nothing, and that some representation should be made to the Government in order to have a revenue collected from Darlington for the use of the main sewers, but that is the furthest I ever went. All these works were done under another department, and I had no means of investigating the matter, or finding out anything about it.
2864. You are still of opinion that although you cannot supply water for the hydraulic machinery in the City, you have an ample supply for all the requirements of the sewerage scheme for the next twenty years? I think so. The scheme was designed for the purpose. It was one of the recognized conditions that we should have to supply water for the scouring of the sewers.
2865. *Mr. Humphery.*] When you get the pipes duplicated? There is plenty of water, but the pipes would not carry it freely enough if there were a large number of lifts.
2866. *Vice-Chairman.*] You said something about an hydraulic-power company—is there such a company? Yes.
2867. Is there such a company in course of formation, or in existence? A Bill for the establishment of such a company was brought before Parliament, but what became of it, or why the matter has not been pushed on, I cannot understand. I wish it was in existence, to supply water for the lifts.
2868. From what source do the company expect to get their water? They propose to get it from Botany, I believe.
2869. Do you think that supply would meet the requirements? Yes. I have a scheme in preparation for the purpose, and for supplying other industries which do not require the most perfect water.

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2870. Is it the case that the demand for water for lifts has exceeded the anticipations of those who designed the present waterworks. Did they contemplate, when the present waterworks were being designed, that the demand for water for hydraulic lifts would be as great as it is? I am sure I don't know what Mr. Moriarty, in designing the scheme, had in view. He has laughed at and publicly ridiculed my proposal to supply hydraulic lifts with water from the pipes. He was certain then that hydraulic-power should be obtained at 700 lbs. to the square inch, and that there were no other means practical of providing for lifts. That was one of my arguments in trying to urge on a high-level scheme; but Mr. Moriarty objected to it, and gave me to understand that he did not intend to supply water for hydraulic-lifts, as it was such a low pressure.
2871. What is the high level—Kenny Hill? Yes.
2872. Of course you are aware that there were difficulties by reason of the uncertainty of that supply? I do not mean to say that Kenny Hill was a perfect scheme. What I advocated was a careful inquiry, to see whether it would not answer the purpose. It was only a branch of the Prospect scheme.
2873. Was not the scheme to convey the water to Sydney by pipes, which would have had to cross an occasionally flooded river? Yes.
2874. And there was a risk of the pipes being washed away? It was stated so, though there would have been no risk. What I wanted was a close investigation of the whole scheme.

J. B. Henson, Esq., Assistant Engineer, Water and Sewerage Board, sworn, and examined :—

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2875. *Vice-Chairman.*] You are Assistant Engineer of the Water and Sewerage Board? I am.
2876. How long have you been engaged in that capacity? Since the formation of the Board.
2877. How long ago is that? May, last year—fourteen months ago.
2878. Have you had considerable experience in your profession as an engineer? I was engaged in the City Engineers' Department, under the City Council, for a period of about thirteen years, from 1874, until I was transferred to the Water and Sewerage Board.
2879. You have given some attention to the drainage of the western suburbs? I have.
2880. I think you have written to the public press in reference to it, on several occasions? I think only to the Engineering Association.
2881. You understand the whole scope of the project before the Committee? I believe I do, so far as Mr. Stayton's published report goes. I know practically nothing about his supplementary report. It never came into my hands. I tried to get it, but failed to do so; so I cannot say anything about it.
2882. I suppose you know the localities which will be drained by the proposed scheme? I may say that I have a thorough knowledge of the whole of them.
2883. You know where it is proposed to empty the sewage? Yes.
2884. You are aware that some of it will be conveyed to the sea by the Bondi sewer? Yes.
2885. It is being done now to a certain extent, is it not? Yes. The main intercepting sewer to Bondi is already discharging the sewage emptied into it from some of the existing sewers of the city system.
2886. And by any of the suburban sewers? Yes; I think Darlington is at present draining into it.
2887. Any other? Redfern goes to Shea's Creek, I think? I think it does.
2888. And half of it into the Bondi sewer. Are you aware of the configuration of the country proposed to be drained by this new system? Yes.
2889. Have you given any attention to the pumping that it is said will be necessary? In a general sense I have.
2890. As far as you have investigated that portion of the project, do you think that it is likely to be a successful one? I think the proposal to deliver the sewage on to the sewage farm at Shea's Creek is practicable from the elevation proposed; but there is an area along the frontage to the Parramatta River, and to Cook's River, including Marrickville Valley, from which the sewerage will have to be raised by pumping. It is quite practicable to raise the sewage by pumping.
2891. Have you given any attention to the system of using sewage upon a farm, and making it reproductive? I have not given very much attention to it; but I am quite satisfied that it is a practicable and very desirable application of the sewage, and can be carried out effectively. I have not the slightest doubt about it.
2892. Have you given any attention to the cost of the drainage works generally; some correspondence has taken place in reference to it? In regard to Mr. Stayton's report, estimating the cost of the western suburbs sewerage scheme at £833,000, I saw at once, when the publication came into my hands, that the estimate was misleading, that it only referred to the main intercepting sewers, and took no notice whatever of the subsidiary sewers. My experience in the construction of these minor sewers led me to see at once that that part of the work would be very costly, and I thought that the statement that the scheme would only cost a rate of 6·68d. in the pound, or 5·12d. in the pound, if the period of repayment were extended to sixty years, was not putting the matter fairly before the ratepayers. The complete cost of the whole works should have been shown from beginning to end. I thought it was misleading to the residents of the western suburbs to give only the cost of the main sewers, and not to say anything about the subsidiary sewers. Then there is another thing. It is proposed by the scheme to drain Balmain, part of Leichhardt, I believe, the Glebe, and part of Newtown, into the main Bondi sewer. Mr. Clarke, in his report, recommended that provision should be made in the Bondi sewer for the accommodation of an additional area to that which it was first proposed to drain, at the Parramatta-street end. I believe that that provision has been made. In fact, I conclude that it has, seeing that it is proposed to drain these areas into it. As the Bondi sewer has cost an immense sum of money, it does not seem to me to be fair to saddle the citizens and the residents of the eastern suburbs with the total cost of the work, seeing that it will also be utilised by the residents of Balmain and the Glebe, &c.
2893. They should contribute their share? They should contribute their share, not of the total cost, but only of the cost of the main trunk sewer by which they are served.
2894. That would apply to any other sewers made use of? Yes; and the proportionate expense of that work added to Mr. Stayton's estimate, together with the cost of the subsidiary sewers, and the accumulated interest,—I believe no rates are being paid now—would amount to a large sum. I estimate roughly that it would double the amount of the rate for the areas referred to that Mr. Stayton gives in his report.
2895. That is extending the term of payment from thirty to sixty years? Whatever the term is it would apply equally.

2896.

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2896. Would it not be so much less for a longer term? If he said it would be 5·12d. for the sixty year period, and he did not take into consideration the Bondi sewer, and the subsidiary sewers, the amount would be doubled; and the same thing would be the case if he said 6·68d. for the twenty-eight year period.
2897. In the original estimate it was known that Mr. Stayton did not provide for the reticulation pipes? Yes; but Mr. Stayton has, in his report, put forth to the residents that the cost would be so much per head.
2898. Have you any means of knowing the wishes of the residents of the different suburbs—as to whether they are willing to incur the obligations which they will have to incur when their properties are drained into this system? I am afraid that they take little trouble about the matter.
2899. Some of these suburbs are thickly populated now, are they not? Yes, towards the city.
2900. How do they get rid of their night-soil fœcal matter? I am not intimately acquainted with the various methods. Some adopt the dry-earth system, and some still use the pit closets; but I believe the dry-earth or pan system is coming more and more into use.
2901. Have you had any personal experience of that system? Yes. I lived at Burwood for some time. There they had the dry-earth system.
2902. The night-soil is covered with dry earth? It is supposed to be so, but that is never done. It is really only a pan system.
2903. Do you not think it is an alarming state of things to exist among a thick population? It is to a certain degree unhealthy, but it is a long way in advance of the pit closet system.
2904. How often is the nightsoil removed? Once a week.
2905. Then the fœcal matter is allowed to accumulate for a week before it is removed? It is.
2906. Are people supposed to use any disinfectant or deodorant in the form of a liquid or powder? I am not quite certain; I believe that in some of the municipalities there are regulations in force respecting the management of the pans, but I am not aware what they are.
2907. Do the people complain of the inconvenience and the nuisance of having this matter removed from one place to another;—do you know whether it is taken out to sea or dug into the earth? Some of the municipalities dig it into the earth; I believe they do so at Burwood.
2908. From some places it is taken to sea, is it not? I believe it is taken from Balmain to sea.
2909. In punts? I believe so.
2910. *Mr. Trickett.*] You are an advocate of what is called the separate system? I am; I believe in that system—the absolutely separate system.
2911. Have you estimated the probable cost of the separate system for supplying these suburbs? It would certainly be an intricate matter to go into, and I have not had the time at my disposal to do it. Moreover, I have not had the information upon which I could base an estimate. Before the cost of any system can be estimated, the ground requires to be very carefullly surveyed, but I am not aware that a sufficiently accurate survey of the western suburbs has been made, for the purpose.
2912. Then you cannot give the Committee any idea of what the cost of the separate system would be? I can only give an approximate estimate in this way—that the size of the sewers necessary for removing the sewage alone would be much less than the size of the sewers required for removing the sewage and storm-waters. I think the proportion of sewage to storm-water is as 1 to 1·3—that is, the volume of the storm-water is nearly one and a half times the amount of sewage. Sewers, therefore, to remove sewage and storm-water would have to be greater than those required to remove the sewage only; but there is one matter to be considered, and that is the tunnelling. It costs as much to make a tunnel to carry a 6-inch pipe as it would to make a tunnel to carry a 12 or 15-inch pipe. That is the only point about which I am uncertain. I think by the separate system there would be a saving of one-third, if not more. In other places it has been carried out at a saving of two-thirds.
2913. What places are those? In some of the American cities. But that statement may be somewhat misleading if I do not supplement it with another—and that is, that in those places the rainfall admitted to the sewers may be much greater than is proposed here; so you can hardly make a fair comparison.
2914. With the separate system you have to construct drains or sewers for carrying off the surface-water have you not? No; that is one way in which a great saving is effected by the separate system—you have no need to construct a duplicate set of sewers or drains.
2915. The water runs away on the surface? On the surface.
2916. Entirely? Entirely.
2917. Is not the surface-water very apt to get into the other sewers—how can you prevent it from doing so? It can be prevented, and in a practical application it must be prevented by proper designs.
2918. Can you tell us any place where the separate system has been designed and successfully carried out? In England the separate system was not applied until recently; but in America they have made great advances. The drainage of Henley-on-Thames is carried out on the separate system. The largest sewer there, if I remember rightly, is 7 inches in diameter. They also apply the Shone system there; but it is a separate system notwithstanding. The rain-water is excluded. In America there are upwards of thirty towns drained by the separate system, and the aggregate length of the sewers is 200 miles. One of the earliest installations was that at Memphis, and another at the city of Pullman. I believe the city of Orange has recently been drained on the separate system; and the system has given such good results that James T. Gardiner, Director of the New York State Survey, and a member of the State Board of Health, investigated the matter. He condemned the combined system, and the result of his report to the State Board of Health was that they decided to recommend all applicants who came to them for information as to drainage to adopt the separate system.
2919. Do you know the date of that recommendation? The volume from which I gained the information only came into my hands yesterday. It arrived by the mail steamer, and was published in 1889. I really had not time to thoroughly peruse it.
2920. Do I understand you to say that, according to the book, the State Board of Health would be prepared to recommend a separate system without regard to locality or of the configuration of the country;—would the system be equally applicable to towns situated on hilly country and those situated on flat country? A separate system is capable of universal application, no matter what the gradients or how flat the country may be.
2921. Do you mean that it is capable of application, or that it is desirable above all others? It is above all other systems under any circumstances whatever. I know of no case in which the combined system will be preferable to the separate system. 2922.

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2922. With regard to the district which we are now considering, even with the separate system, pumping stations would be required in many places to get rid of the sewage in low-lying districts? Certainly.
2923. Have you thought how many pumping stations would be required? The pumping stations would be practically the same as those designed in Mr. Stayton's report. Mr. Stayton's gravitation sewers are above certain low-lying areas, and pumping stations would have to be constructed to elevate the sewage at these places. With the separate system only the sewage would have to be pumped up at these places, but under the combined, or partially separate system, the storm waters would have to be elevated as well, consequently the cost would be increased proportionately.
2924. Have you gone thoroughly into the question of separating the sewage from the surface water, or rather of preventing the surface water from going into the small sewers? A total separation of the storm waters is very easily effected, but this scheme proposes to take in a limited amount of storm water. That limitation is absolutely impossible of attainment by the scheme which is laid down in the report.
2925. How do you get the water from yards and places of that kind into the drains, and separate the rain water? With a separate system of sewage no inlet to the sewers should be on the ground level. It need not be on the ground level. The sewage or foul water removed from a dwelling practically equals the amount of water supplied to that dwelling. The quantity of sewage is proportionate to the quantity of water used. The only inlets to the sewers would be from the water-closet, from the bath, and from the kitchen sink, and you can easily see that rain water need not get into any of those openings. The house drain to discharge the surface-water would be of brick—an open brick drain, or, in many cases, simply the natural surface of the ground. The storm water is got rid of in this way in nearly every instance in the western suburbs. At the present time the people there have few underground drains, and I think the system might continue. There is no reason to make underground drains to carry off the storm water. I may say that I have studied this question for some considerable time. The necessity for putting in two drains at first seemed to have some foundation in fact, but I do not now see any necessity for it. I might also point out that the proposed scheme would not do away with the necessity for two drains where two drains would be necessary under the separate system. The rainfall, as you are aware in the metropolitan area, is very heavy at times. In Mr. Stayton's report you will find it stated that rain very unfrequently falls at the rate of 2 inches a day. Mr. Clarke in his report upon the drainage of Sydney says the same. But it is not the amount of water that falls in a day, but the quantity which falls in a shower that you want to know. I made some inquiries from the Government Astronomer upon this point, and I found that in 1887 rain fell at a rate of 2 inches and greater per diem in showers of upwards of a quarter of an hour in duration no less than 100 times. A rainfall at the rate of 2 inches per diem is the basis upon which Mr. Stayton calculates the size of his sewers, and he takes that basis because he says the rain falls very unfrequently at that or a greater rate, but, as I just said, that is a wrong basis upon which to calculate. When I say that this is thoroughly recognised in America I quote from a paper which I received from one of the institutes there a few days ago, in which this question is largely dealt with, and in it I find confirmation of my view that a calculation based upon the daily rate of rainfall is misleading, and should be abandoned. It is the actual length of the storm, and the rate of the fall during that period which should be taken into consideration. I just now referred to some information which I received from Mr. Russell, the Government Astronomer, which showed that rain often fell at a greater rate than 2 inches per diem. As Mr. Stayton's scheme can only carry away a fall of 2 inches a day, the back premises of the various houses would be flooded unless there were escapes for the surplus water; notwithstanding the large size of some of the sewers in the City, which have been calculated to carry away rain-water falling at the rate of 2 inches an hour, I have often had to advise the holders of property to put in safety-pipes to prevent water from rushing through their houses in heavy rains, and with this proposed scheme the necessity for similar pipes in the suburbs will not be done away with. They would have to be used if this scheme were adopted as much as they would if a separate system were adopted.
2926. Are you not aware that Mr. Stayton proposes to put in safety valves, or relieving drains, to get rid of the occasional surcharging of the sewers? Yes.
2927. Will not they be effective? No; for this reason. The pressure of water in the main sewers would be relieved, but a lot of filthy stuff would be brought down by the water and would lie about the ground. Since the water would be taken from the roofs into the sewers everything would tend to gorge the sewers at once, and there would be a vertical hydrostatic pressure, which, if the pipes were weak, might crack them and allow the sewage after the storm to leak out into the soil. In a rain storm there is a very large quantity of water running off the roofs.
2928. But the quality of the surface water which would flow down the streets under your system would be much the same as that discharged from overflow pipes by Mr. Stayton's system? It would be all comparatively clean water.
2929. What would become of the horse manure, urine, and stuff like that from the streets? That should be get rid of by a proper system of scavenging. It is the duty of the Municipal Councils to see that the street filth is got rid of, and that the householders look after the filth in the yards. It should not encumber the system of sewerage.
2930. Would that be practicable in a large city. Unless the streets could be sluiced and the water run quickly away would not the city be unhealthy? The bulk of the street refuse could be got rid of, and, in fact, is got rid of at the present time, by scavenging, but under Mr. Stayton's system the surface water from the streets is to be excluded.
2931. He proposes to exclude the storm water; but not the water used for washing down the streets? I think he proposes the total exclusion of rain water which falls on the streets.
2932. I understand that your first objection to Mr. Stayton's scheme is the expense? My main objection is that it provides for the inclusion of part of the storm water when the exclusion of that water would mean a reduction in the expense and increased efficiency.
2933. *Dr. Garran.*] Supposing we adopted the separate system for these western suburbs exclusively, would earthenware pipes be large enough to take away the whole of the sewage? No.
2934. What is the largest diameter of earthenware pipes which it would be safe to use? Very good earthenware pipes are made up to 2 feet in diameter. We possess clays of very superior properties; and pipes 2 feet in diameter, and of excellent quality, can be manufactured.
2935. Would it be safe to fill pipes 2 feet in diameter with sewage? Yes, but I should not submit them to pressure.
2936. But is the pressure of sewage like a water pressure—it is not laid on from any great height? There should be no pressure in a sewer—a sewer should not flow under pressure.

2937. Would a 2-foot pipe carry all the sewage which would be carried on the ordinary inclination of sewage pipes in this district? You must have a certain grade to get rid of your sewage with a velocity which will ensure its entire removal before putrifaction sets in, and if you have a known volume of sewage, there are only two sizes of pipe which will give the desired velocity—one flowing half full and another flowing about full.
2938. It would never do to have the pipes quite full? You might have them quite full; but not under pressure.
2939. As a rule they run half full? It depends entirely upon the design.
2940. None of the principle parts of this scheme could be made with earthenware pipes? Certainly not.
2941. How far would you have to go before the branch pipes become earthenware pipes? That is a matter that would require careful calculation. To adopt the separate system you would have to increase the grades, because the rain water would not be admitted. By admitting the rain water you get a combined flow of sewage and storm water which gives a greater velocity.
2942. Sewage proper is not so fluid as sewage plus water? Practically there is no difference.
2943. But during the dry seasons, when we get no storm water, the sewage has its own fluidity? Yes.
2944. The sewers are flushed either by storm waters or artificially? Artificial flushing should be adopted.
2945. It has not been yet? Mr. Stayton according to his report proposes to adopt the system of flushing.
2946. But the ordinary sewage has a certain degree of fluidity? Yes.
2947. With that fluidity would it pass along an earthenware pipe at the same level as these brick sewers would be? In ordinary dry weather you would have an inferior flow, but a superior flow to that designed by Mr. Stayton is required.
2948. You think that if, after having carried out the proposed system we apply the separate system, the result will be unsatisfactory? It would be a failure, and the attempt would bring discredit upon the separate system.
2949. If we are to have a separate system we must alter the design? Yes.
2950. You could not apply it to Mr. Stayton's design? Not very well, without increasing the grade.
2951. To make the separate system a success we must have a uniform system of flushing? Yes.
2952. Otherwise the sewage will not move fast enough? Yes.
2953. If we could use earthenware pipes, would it not be better to use them? It would be very much cheaper.
2954. The greater the extent to which we could use earthenware pipes the greater the economy? Yes.
2955. But to do that we must have steeper gradients? A smaller pipe requires a steeper gradient than a large pipe. To get a proper flow in a large pipe we must have volume. You may have great volume and small inclination, or a sharp inclination and a small volume.
2956. Then if we were to adopt the separate system to the western suburbs, we could not include so great an area? No; you could not carry the pipes so far before you reached the surface of the ground.
2957. Then with the separate system we should have to go a certain distance, and have some subsidiary system? Not necessarily.
2958. You would pump it up? Yes.
2959. We would still have to have the present system of a number of subsidiary sewers emptying into the main sewer? Yes.
2960. But with the separate system the main sewer would not be convenient for that? By pumping you can send the sewage any reasonable distance which you desire. The principal difference between Mr. Stayton's system and the separate system is, that with the separate system the main trunk sewers—shown on the plan—could not be extended quite so far as is now proposed, but they would be smaller in size. The pumping stations would be erected in the same places, but the area draining down to each pumping station would be greater than that proposed by this scheme, and consequently a greater volume of the sewage would have to be pumped. Mr. Stayton proposes to pump both the sewage and the storm water, but against the increased volume of sewage, the diminution of storm water under the separate system would be an ample set off.
2961. What is the relative cost of pumping sewage and pumping water? I have not gone into calculations, but to pump sewage I think would cost from 5 to 20 per cent. more than to pump clean water. The reason of this is, partly, that in pumping sewage there is a great slip in the pump. The pump also does not work under such favourable conditions as when it is pumping clean water. The grit and slimy matter causes great wear and tear.
2962. You see that Mr. Stayton requires a pumping station on every peninsular to deal with the sewage on the low-lying land? Yes.
2963. You also would require pumping stations,—but you would only pump sewage and he would pump sewage and rain water? Yes.
2964. Would the volume he pumped be very much less or greater than the volume which you would pump? I do not think there would be very much difference.
2965. You think that the sewage of one of these peninsulars would not amount to very much more than the sewage and water which Mr. Stayton would pump? I am under the impression that it would be less.
2966. When there was no rain he would have less to pump, unless he pumped the water used for flushing? He would have to pump that.
2967. And in rain-storms he would have an additional quantity? Yes.
2968. You would have to pump your sewage and your flushing-water? Yes.
2969. Then he would only have the rain-water more than you? He would have proportionately more flushing-water than I should have, because the large sewers would take more water to flush them than the smaller ones.
2970. Do I understand you to say that the pumping of your sewage would not amount to much less than the pumping under Mr. Stayton's scheme? I do not think there would be much difference.
2971. Do you think this answer is given with a degree of decision and accuracy with which you are satisfied? I have considered the matter, though I have made no actual calculations, and the conclusion I have come to is that there would be practically very little difference—that the larger area which I should take in would increase the quantity of sewage to be pumped; but, as a compensation for that, I should not have to pump so much flushing-water, and I should exclude the storm-water. I am inclined to think that I would occupy a much more favourable position than Mr. Stayton would. Only the same number of attendants to look after a large pumping station would be required as to look after a small station.
2972. Would not larger pumps be required? Not any.
2973. Would there not be more expense? I do not think so.

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2974. Take a peninsular like Balmain—that is a rocky promontory, and a very difficult place in which to construct sewers. Could you with the separate system, more nearly follow the contour of the ground and avoid deep cutting, than with Mr. Stayton's system? I am inclined to depart from Mr. Stayton's scheme altogether, because it will be enormously expensive. It will be all tunnelling. No tunnels can be made less than 4 ft. x 2 ft. 8 inches in diameter. You must have them that size to enable the men to work, and in many cases only a 9-inch pipe has to be put through them.
2975. With the separate system, would it be possible to drain half of the sewage of Balmain down to the western side of the peninsular, and half down to the eastern side, and have a pumping station for each side and so lift the sewage up? That would be practicable.
2976. Would you not then to a great extent avoid all this steep cutting? Certainly,—the tunnelling.
2977. Do you think it would be possible to carry out the separate system by drains comparatively near to the surface of the ground? That would be entirely a matter for calculation, to see where the outfalls could be put with a view to the greatest economy. I should not multiply the pumping stations more than I could help. There is a system by which one pumping station could serve the whole area.
2978. Suppose there were one pumping station on the eastern side towards the centre, to which all the sewage would converge, and another on the western side, would you then be able to follow the surface contour more than by the proposed system? Certainly.
2979. Could you economise in that way? I believe so.
2980. From such points you could pump into the main sewer to Bondi? Yes.
2981. Do you think that is feasible? Yes.
2982. Do you think it would be more economical? The economy would come in by excluding the storm water, and reducing the number of stations if possible.
2983. The economy would not come in by any diminution of the tunnelling? I think there would be a considerable saving on that point; but it is a matter upon which it would be impossible to give a precise answer, without a very careful examination of the levels.

WEDNESDAY, 14 *AUGUST*, 1889.

Present:—

The Honorable JOHN LACKEY (VICE-CHAIRMAN).

The Hon. ANDREW GARRAN.	JAMES EBENEZER TONKIN, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	WILLIAM SPRINGTHORPE DOWEL, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	EDWARD WILLIAM O'SULLIVAN, Esq.
JACOB GARRARD, Esq.	JOHN HURLEY, Esq.

The Committee further considered the proposed Drainage Works for the Western Suburbs.

J. B. Henson, Esq., Assistant Engineer, Water and Sewerage Board, sworn, and further examined:—

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2984. *Dr. Garran.*] When the Committee last adjourned we were discussing the separate system. I should like to put a few more questions to you about it. I understand that whether we adopt that system or the system Mr. Stayton proposes, we must have three things:—First, underground pipes; second, surface storm water channels; and third, pumps for lifting a certain portion of the sewage which cannot be otherwise disposed of? Yes; that is correct.
2985. We cannot dispense with any of these requisites in either system? No.
2986. Then it is simply a question of the relative cost of these three expedients under the two systems? Looking at it from a financial point of view, it is.
2987. If we adopt the separate system we shall allow the storm water to run off by surface channels as it has done since the Colony was founded? Yes.
2988. We shall leave the surface channels to carry the surface water? Yes.
2989. And simply make artificial arrangements underground for carrying off the artificial results of cities' sewage? Yes.
2990. The underground pipes will be devoted for that purpose exclusively? Yes.
2991. And there will always be a certain proportion of low-lying ground which will necessitate a system of pumping under any scheme? Yes.
2992. Applying these principles to the scheme you advocate; if we were to adopt the separate system for the Western Suburbs we should have to have smaller pipes? Yes.
2993. And therefore a steeper inclination? Yes.
2994. Therefore the red lines on the plan which indicate the full length of the underground sewers would not by a mile or half a mile be so long as they are shown? They would not be so long.
2995. We should practically come nearer to a scheme of following the contour of the surface of the ground by making the dividing ridge between Cook's River and Parramatta River the separation between the gravitation and the pumping area? In carrying out the separate system the course of the sewers would have to be closely considered. As you first said, it would simply mean a steeper grade and taking the drainage from a less area; but as to the exact limits of that area, I could not say.
2996. Still, in the main, the gravitation of the sewage would be all to the south? The bulk of it would be to the south.
2997. What we should have to lift would be the sewage flowing naturally towards the Parramatta River? Some of the sewage flowing towards the Parramatta River could be taken by gravitation; but the bulk of the sewage which would have to be lifted would be on the Parramatta River side of the dividing range.
2998. You think the red lines marking the gravitation sewers would go under the ridge and catch a certain portion of the sewage which would naturally fall to the north? It would be found advantageous to do so.
2999. And we should only have to pump the sewage which could not be put into the sewers by gravitation? Yes.
3000. Looking at the number of peninsulas that run into the Parramatta River, and to the impossibility of diverting their sewage by gravitation into the main outlet at Webb's Grant, is that not an additional reason why we should look forward to some pumping arrangement by which the sewage of all those peninsulas could be brought to some low-lying place and there pumped up? Yes; it will have to be concentrated.

3001. The red lines deal very slightly with the peninsulas? Very slightly indeed.
3002. Even if you carry out the scheme as proposed we shall have hereafter to provide for the drainage of these separate peninsulas? Yes. By the scheme I think ·29 of the entire area is to be pumped, that is, over ¼th will have to be dealt with by pumping.
3003. But that does not include all the land in Concord and Five Dock marked white on the plan? I do not think it does.
3004. That is not provided for at all? I think not.
3005. Supposing we had an adequate and efficient pumping scheme could we deal with Five Dock and Concord by bringing the sewage down to the head of one of the bays and then pumping it? It could all be dealt with by pumping, the sewage being transferred by means of pumps to some suitable locality such as Webb's Grant.
3006. Take Five Dock for example. Suppose that locality were populous enough to require a system of sewerage, would it not be possible by the separate system to draw the whole of the sewage of Five Dock to some low point at the head of the bay, from which it could be pumped into the sewers? That certainly could be done, but the question would be whether it was not cheaper to erect two or three minor pumping stations, and thus save the cost of large tunnels.
3007. But unless you are going to allow the sewage to flow into the river you must pump it? Yes.
3008. Is there any more convenient way of disposing of it than by pumping it into the sewers and allowing it to flow out to Webb's Grant? No. If the scheme were carried out as proposed the sewers would be very convenient to pump into.
3009. So far as the separate system is concerned you do not quarrel with the general outlet of the scheme? At the sewage farm?
3010. Yes? No.
3011. All you are inclined to dispute is that the pipes are unnecessarily large and made so for the purpose of taking away a certain quantity of storm water? Yes, that is one point—another is the sanitary efficiency of the scheme.
3012. You think that the small pipes should be kept clean more certainly than large sewers? Yes.
3013. If a sewer is larger than is necessary to carry away the sewage matter the waste space is injurious rather than beneficial? Yes.
3014. It gives room for the development of gases? Yes.
3015. Therefore for sanitary reasons the smaller the pipes as long as they are sufficient the better? Yes, because they can be better ventilated and better flushed.
3016. On the whole they are kept cleaner? Yes.
3017. If that is the case can you give us any estimate of what the saving will be on £1,800,000 by the separate system? I could not say without a very careful investigation of the whole scheme which would take a considerable time.
3018. How long would it take you? That would depend entirely upon the plans available. You could not work it out without an accurate survey of the contour of the whole area at every 5 feet of level. You could not make an accurate estimate without that.
3019. Without doing that you would not like to say whether the saving would be 10, 20 or 30 per cent? I should not like to say as to the saving or the expense of carrying out the scheme on the totally separate system without having very complete plans of the whole area.
3020. You see that the Committee is very anxious to make a speedy report upon this matter, but it materially does not wish to report favourably upon a more expensive scheme than is necessary. It is therefore extremely important that we should have reliable evidence as to whether the separate system would be cheaper and more efficient than that proposed? That is a matter that occurred to me, but I could see no way of arriving at an estimate that would be satisfactory to myself or the Committee unless the proper plans were available.
3021. You are an officer of the Water and Sewerage Board? I am.
3022. Do you know at all whether it is in contemplation to carry out the sewerage scheme by the Water and Sewerage Board or by the Public Works Department, and then hand it over complete to the Water and Sewerage Board? I do not think any decision has been come to, but I heard it mentioned that there is a probability of the Government carrying out the main works, leaving the minor works and the administration of the scheme to the Water and Sewerage Department.
3023. Do you know whether Mr. Stayton's calculations have been checked at all in your Department? No; not in the Department.
3024. Do you know whether they have been checked by anybody? I am not aware.
3025. Have you looked into them at all yourself? I did into a few of them.
3026. You will observe that Mr. Stayton makes the rate 5d. and a fraction upon the smaller amount of £800,000, and 6½d. upon the larger amount of £1,300,000;—do you know whether that small increase of rate with so very large an increase of the principal is due to the extension of the term for repaying the debentures? I am not familiar with the items to which you are referring.
3027. You have not studied the appendix? No; I have not seen it.
3028. So far as you have studied the question you are distinctly in favour of the separate system? Yes.
3029. Can you mention any place where that system is carried out? At Memphis and Pullman, in the United States. Thirty towns in America are drained on the separate system.
3030. Are there any places in England? Henley-on-Thames is drained by the separate principle.
3031. How many years has it been in operation at Henley? Not many; not more than three or four at the outside. The principle has not made so much headway in England as in America.
3032. Do you know whether it has given satisfaction in America? From the reports that I have seen I should say that it has given satisfaction.
3033. Have you seen any reports as to the working of the system at Henley? It has given satisfaction there.
3034. But the majority of English engineers at present do not favour it? I am not aware of that. From what I can learn they are in favour of it.
3035. Do the majority of American engineers favour it? They did not favour the principle of separation at first. They were against it until it was tried; but now it is making great headway.
3036. You think it is growing in favour in America? Yes.

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3037. Is there any recent authority upon the subject? I have a work here upon the separate system written by Staley and Pierson, American engineers, and another by Mr. Waring, one of the leading, if not the leading, sanitary engineer in America.
3038. You think the system is growing in favour in America? Yes.
3039. And that the American experience of it justifies us in looking into the matter carefully? Decidedly.
3040. *Mr. Humphery.*] Do you know if any of the towns in America to which you have referred are near the sea coast? I could not say but I think they are chiefly inland towns.
3041. You do not know that their conditions are in any respect similar to the conditions of Sydney and its suburbs? I am not aware.
3042. *Mr. Trickett.*] Do you know the population of any of them? I do not think that the principle has been applied to any of the very large cities, but only to cities of 20,000, 40,000, or 60,000 inhabitants.
3043. *Mr. Humphery.*] Have you had any experience out of Sydney with sewerage systems? I have only been connected with the existing sewers of the city.
3044. You have not been at Adelaide? Yes, I have been there.
3045. What system is adopted there—is it the water carriage system? The water carriage system, and I believe they admit a portion of storm-water into the sewers. It is somewhat similar to what is proposed for the Western suburbs.
3046. You do not know what system is adopted in the various towns in England? No, I do not, except that at London they have the combined system.
3047. That is similar to the system proposed for the Western suburbs? No, it is similar to the existing sewers in the older portions of the city, such as the Tank-stream sewer, Hay-street sewer, and the sewers emptying into Woolloomooloo Bay.
3048. Have you any reason for saying that the separate system would be superior to the system now in use in Sydney? Decidedly.
3049. In what way would the separate system be superior to the combined system as applied to the City of Sydney? The separate system would secure the complete removal of the sewage within a few hours, and the city sewers do not do that. The Tank-stream sewer is 5 feet 6 inches in height, by about 10 feet in width, and you can walk along the floor on one side while the sewage trickles along the centre. It is the totally combimed system. It was a creek originally, and is simply a huge gas-holder—matter sticks to the sides, and in summer putrifies and gives off gases which find their way through the smaller sewers to the highest parts of the city.
3050. You think that from a sanitary point of view the separate system would be superior to the present system? It would. The separate system, from a sanitary point of view, is superior to any other.
3051. How do you propose to get rid of the storm-water from the roofs of houses? It would to a great extent have to go the way which it does now in the Western suburbs.
3052. It would not enter the pipes provided for the carrying away of refuse and excreta? No, it would not. It would run into the street gutters, and follow them down to the nearest creek or watercourse.
3053. It will be necessary to have separate drains from the houses in order to carry away the water falling from the roofs? It would not be necessary in many cases—in many instances the water would flow over the surface.
3054. Over the back yards? Yes.
3055. Would not that be very inconvenient to householders? No. In some instances it might be inconvenient; but I do not think it would be so to any large extent.
3056. But in many of the suburbs would it not be impossible to get the water away? That water could only be got away by a system of drains constructed to deal with the storm-waters exclusively.
3057. The water falling from roofs of houses could not be conveyed by the combined system? It could not be conveyed by the proposed system—not the whole of it.
3058. *Mr. Garrard.*] Have you given any attention to Liernur's system? Yes.
3059. That is a separate system? Yes, but the term separate has a different signification in that instance.
3060. Instead of gravitation a pneumatic force is brought into operation? Yes.
3061. Are you favourable to that system of dealing with the sewage from closets, &c? No.
3062. Do you believe in the water carriage system? Yes.
3063. Although in favour of a separate system you are not in favour of Liernur's system? No. That system deals only with the solid matter, and leaves the slop and dish-water to go into a system of sewer-pipes.
3064. You spoke just now of the Tank-stream being a huge gas-holder. Are there any means of ventilating it? Yes, it could be ventilated.
3065. Is it ventilated at the present time? Not that I am aware of.
3066. The whole of the storm-water of the city falling within a certain area goes into that sewer? The bulk of it does.
3067. Is that one of the reasons for making it such a large size? Yes.
3068. Could we improve it so far as the matter of gas is concerned by proper ventilation? Very little improvement to that sewer could be effected by ventilation.
3069. None of the main lines of sewers projected in the Western Suburbs Scheme approach this sewer in magnitude? No; but they will not be under similar conditions to the Tank-stream. The amount of sewage flowing into the Tank-stream is very small.
3070. Then it is more a storm-water channel? Yes, with a trickle of sewage along the bottom of it.
3071. *Mr. Tonkin.*] Do you know Mr. Stayton? Yes.
3072. What position does he hold as a sewerage engineer? I am only acquainted with him through having met him in the Colony.
3073. You do not know what position he holds as an engineer? No, I do not.
3074. Do you know that he has a preference for the combined system over the separate system? I do not know that he has a preference for the combined system. His scheme for the drainage of the Western suburbs is a partially separate system. It is between a totally separate system and a combined system.
3075. Do you not think that if we had the separate system entirely, the water running along the gutters after a heavy storm would at times be dangerous to foot psssengers? I do not think it would in the majority of cases. In places where it would be dangerous, it would be necessary to provide storm-water channels

channels or culverts to deal with the flood water; but those channels would have to be provided under the proposed scheme.

3076. You know that the forming of streets concentrates the water, so that it collects more rapidly than it would do if the streets were not formed? Yes, the formation of streets and the building of houses contentrates the water very rapidly on to the low-lying part.

3077. There would be a certain amount of danger if the storm-water were carried on the surface instead of under ground? There would be danger in certain places from the water flowing along the street.

3078. What are the principal advantages which you claim for the separate system. I think I understood you to say, that one of the principal advantages was, the saving of expense? There would be a less expenditure, and there would also be a greater sanitary efficiency. The health of the residents should be the first consideration—the cost of the scheme is in a measure a secondary consideration. The work if carried out under the separate sytem would be cheaper, and from a sanitary point of view more efficient.

3079. I suppose you have no idea as to what the difference in cost would be between the separate system and the system proposed by Mr. Stayton? It is so large a matter to go into, that I could not give any estimate.

3080. The tunnelling required for the main sewers is nearly all through solid rock? Nearly all of it.

3081. Do you know what difference there would be, if any, between the cost of a tunnel through solid rock, 3 feet 6 inches in diameter, and that of of a tunnel 5 feet in diameter? The difference would not vary according to the diameters, because the smaller a tunnel is, the more difficult it is to work in it.

3082. Then it would cost as much to drive a 3-feet 6-inch tunnel through rock as a 5 feet tunnel? I should not undertake to say that it would.

3083. It would cost very nearly as much—there would be very little difference in the cost? I could not say for certain. The difference would certainly be in favour of the smaller sewer.

3084. Then the principal advantage which you advocate for the separate system is the sanitary advantage, because if there were no difference in the cost of the tunnelling, there would be very little difference as far as the cost of construction altogether was concerned. The real advantage would be from a sanitary point of view? There would also be an advantage with regard to the expenditure. The expenditure would be less, because it does not follow that the whole of the work under the separate system would be tunnelling. If it were a mere question of large and small tunnels, I do not suppose there would be a great difference; but it is possible that under the separate system there may not be as great a length of tunnelling as under the partial system.

3085. But with the separate system which you advocate, you could not follow the contour of the ground, you would have to take sewage away by gravitation? As much as possible by gravitation.

3086. You could not follow the contour of the ground as a pneumatic system would. The sewage would have to be conveyed by gravitation? As much as possible by gravitation.

3087. *Mr. O'Sullivan.*] You appear to hold very decided views as to the superiority of the separate system, although they are in conflict with the opinions of some of the leading sewerage engineers. Has your attention ever been drawn to this opinion of Sir Robert Rawlinson, who was for many years Engineer-in-Chief to the Local Government Board in England, and who was invited on behalf of the Government of this Colony, in 1875, to advise on the question of the water supply and drainage. "Two sets of main sewers with two sets of house drains will be costly to construct; and, if constructed, would often lead to complications tending to defeat the proposed uses"? I have heard statements made similar to that, but they are very misleading.

3088. But do you not think that Sir Robert Rawlinson would be cautious before giving an opinion on this matter? It depends upon the date upon which he gave that opinion.

3089. In 1875. Further on he says "The so-called clean water sewer cannot in many cases be large enough to receive storm-water, and in dry weather it should of course be dry. The sewer proper would thus be without the flushing and cleansing given by roof water during falls of rain and the washings off yards, &c., during the first falls of heavy rain would in many cases be as polluted and as polluting as sewage in the true sewer." He there suggests a danger that might possibly exist in a warm climate like this? In regard to Sir Robert Rawlinson's remarks I would refer you to the second and final report of the Royal Commission upon metropolitan sewage discharge in 1884. The question of separation was there referred to by Sir Robert Rawlinson in answer to question 17102.

3090. Will you kindly quote his remarks? "If you had to begin at the beginning and sewer London *de novo* the Fleet ditch should not be a sewer; the Ranelagh River should not be a sewer; all the valley lines should not be sewers; they should have been surface water channels alone and the sewage should have been intercepted on both sides and carried into the main outlets which are now provided."

3091. But that does not imply that he has changed his opinion in favour of the separate system? That, I take to refer to the separation of the sewage from the storm-water.

3092. I will direct your attention now to the opinion of Sir Joseph Bazelgette who says "How to dispose of the rainfall is a question of considerable difficulty and has given rise to much diversity of opinion. This arises from the fact that whilst in itself harmless, it sometimes falls suddenly in large quantities. These considerations have induced theorists to advocate that the rainfall should not be allowed to flow off with the sewage, but should be dealt with by a separate system of sewage. The theory is however, most impracticable," how do you get over that? In the report to which I have already referred, paragraph 182, and question 19372, Sir Joseph Bazelgette says "To carry out such a scheme as I am suggesting, or any scheme suitable for those districts, it would be necessary to separate the sewage from the rain fall. The areas are so large, and the quantity of sewage is so small, that it would be impossible to take them together; they must be taken separately.'

3093. *Mr. Garrard.*] Upon what was he speaking then? The drainage of London.

3094. *Mr. O'Sullivan.*] Will you allow me to direct your attention to this paragraph of Mr. Stayton's report "It would be undoubtedly misleading to assert that any one special system of disposal is the best for adoption. Everything depends upon local conditions, or, in other words, every place must be dependent upon its own physical circumstances and requirements. Irrigation is not the universal mode of sewage purification, but where favourable conditions exist it is the cheapest and most efficient process, especially where sewage can be delivered by gravitation." So that Mr. Stayton makes it a matter of circumstance and condition, that this system should be adopted here? I have considered that point in the light of the condemnation of the present system of drainage in London, where we have the union of the storm-water and the sewage in one

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set of channels. The proportion of rain water allowed for in London is at the rate of ¼ inch in 24 hours; but the admixture of rain and sewage there has been condemned. Mr. Stayton's scheme for the western suburbs is to carry a rainfall at the rate of ·31 inches in 24 hours, which is greater than that allowed for in London, so if the London sewerage system be condemned, that condemnation would apply to the system which the Committee are considering.

3095. I notice in the paper which you read before the Engineering Association that you say that the English principle of a maximum sewage-flow will not apply here;—what are the reasons for that? Mr. Stayton, in his report, page 10, near the bottom, says:—"The rule adopted for town areas in England by Mr. T. Hawksley, one of the foremost hydraulic engineers in the world, is to allow one square of roofing and one square of paved yard as the contributing area of each head of the population;" but then the rainfall in England is generally only half what it is here. I think our average rainfall is double the average rainfall in England, or at any rate is very much larger than it. Therefore, if the same principle were applied here, double the amount of rainfall would be admitted into the sewers, so that the rule cannot possibly hold good under these circumstances.

3096. Supposing the separate system is applied here, is there not a danger that it may be found ineffective through the carelessness of servants, who may throw slops into the street channel? Yes; there would be that danger, but it would be a breach of the regulations to do so, and would be followed by punishment. It is a matter of detail which is of no importance.

3097. Do you think the separate system could be safely applied to a small area like Balmain? I think so. with great advantage.

3098. Supposing that we recommend that the scheme shown on the map, with the exception of that portion draining Balmain, should be carried out, as designed by Mr. Stayton, and we applied the separate system to Balmain alone, it would very likely prove a success? You cannot very well pick out a piece and deal with it like that; you may upset the whole arrangements.

3099. It seems to me that if there is any efficacy in the separate system it might be applied to a small place? Supposing the proposed scheme were carried out to the boundary of Balmain, it would be worth while considering how the separate system could be applied to the whole of the sewage of that municipality. This scheme (Mr. Stayton's) will provide for the removal by gravitation of the sewage of a little better than half the area of Balmain, which contains altogether about 900 acres.

3100. *Mr. Garrard.*] Six hundred? Well, the proposed sewerage scheme will provide for a little over half that area, leaving the portions near the margin of the water to be dealt with in some other way, by a system of pumping. If the rainwater is combined with the sewage the pumps will have to lift both the rainwater and the sewage, but if it is separated from the sewage, and the sewage only is dealt with, it will be possible to concentrate the whole of it near the water's edge, and pump it up into the nearest sewer. I think this could be done at the same cost as it would take to put in the intercepting sewers; but then the whole of the area will be dealt with instead of only the better half.

3101. *Mr. O'Sullivan.*] Mr. Garrard questioned you about Liernur's system, has not that system been adopted by the German Government in their barracks at Prague, and in other large cities? It has been adopted in some of the towns in Europe.

3102. And found to be a success? I cannot speak on that point.

3103. Have you not heard or read that it has proved successful in many of the smaller cities and towns in Germany? I have read so.

3104. *Mr. Dowel.*] You stated that you have given considerable attention to the sewerage and water supply in various parts of the world? I have read as many accounts of the various systems as came to my hand.

3105. Have you any knowledge of the sewerage and water supply system adopted in any of the towns in England under the Board of Health? I suppose London is such a town.

3106. Any of the towns in England; you are aware that most of the towns in England have a sewerage and water supply system which is carried out under the Board of Health? I believe there is a central authority.

3107. And local boards have control of works in the various towns? I believe that is the system carried out.

3108. You have no knowledge of the nature of their works? No particular knowledge of them.

3109. Not of any one town in England? Only by the reports which I have read; and I have read so many that I really could not undertake to describe the works of any particular town.

3110. Can you refer to any one town of which you have a knowledge, either through reading or in other ways? I am aware of the system of drainage in London, and that is a representative of the system of drainage adopted in England.

3111. I think you will find that it is vastly different from the system adopted at such towns as Chelmford, Watsford, and other places similar in surroundings and population to Balmain. I understand that you have no knowledge of the system which is in vogue at those places? No.

3112. In reference to the scheme which you are advocating, can you state on the score of economy, whether you think your system would be cheaper than the system now under the consideration of the Committee? I believe it would be cheaper.

3113. You are aware that to carry out this scheme a very large quantity of water will be required? There will be a large quantity of water to be removed.

3114. A large quantity of water will be required for the purpose of flushing drains and water-closets? There will be a certain quantity of water required for flushing the drains, but that quantity will depend upon the system adopted. You may adopt a system which will require a large quantity, and you may adopt a system which will require a minimum quantity.

3115. Are you not aware that all the water-closets will be connected with this system of sewerage? That is the object of it.

3116. And a large quantity of water will be required for the purpose? Yes.

3116½. Do you consider the quantity of water which you have ample for the requirements, supposing the population were to increase considerably during the next ten or twelve years? The present water supply is one which is expansive to meet the requirements, just as the sewerage scheme is expansive. When more water is wanted it can be obtained.

3117. Knowing that a very large quantity of water will be required to make this system effective, do you think, from your knowledge of your resources, that you will have sufficient water to meet all the requirements of the system? That is a question which I can only answer by saying that the water supply is expansive, and that water can be obtained as required

3118. Are you quite certain that the rainfall of New South Wales is double that of England? I do not think that the rainfall here is as heavy as it is on some parts of the west coast of England, where I believe, it is very heavy, though it is very heavy in some parts of New South Wales. I am referring to the average rainfall.

3119. The average rainfall in New South Wales is double that of England? Not of the whole of New South Wales, but of the coast district. The average rainfall on our metropolitan area is double that of the metropolitan area of London.

3120–21. Comparing the metropolitan area of England with the coast district here, do you think that the average rainfall in New South Wales is double that of England? I believe I am correct in making that statement.

3122. *Dr. Garran.*] I want to put to you in another form a question which Mr. O'Sullivan asked you. Would it not be quite possible to make an experiment with the separate system upon some branch area of the proposed system. For instance, take the red line that marks the sewer draining Macdonaldtown—could not an experiment be made of the separate system there, and the sewage be shot into the main sewer that goes out to the Sewage Farm? It could.

3123. It does not matter whether the outlet is into a river or into a big sewer? It does not matter where the point of discharge is.

3124. Could not a similar experiment be made with regard to Camperdown? It could, but in neither case could it be a fair one. In the latter case most of the work would be tunnelling, and the minimum size of a tunnel is 4 feet by 2 feet 8 inches. No matter how small the pipe is which has to go through a tunnel, a man must have working room.

3125. And you mean to say that wherever the country is rocky the cost of tunnels under one system is much the same as that under another? Where there is a minimum size of tunnel.

3126. You said in answer to Mr. Tonkin that the greater part of the work of the proposed scheme will be through rock—would not the greater part of it be through shale? I think you would be below the shale towards Cook's River, and where the sewers dip there is rock.

3127. Taking Ashfield, Burwood, and Strathfield, how deep had you to go for rock? Some considerable depth on the top of the hills, but near the hollows the rock crops out on to the surface. At Iron Cove and Long Cove Creek it crops up.

3128. But the bulk of the sewers would not be so low as to touch that rock? I think they would be very near the rock, and if they did not go through it they would have to go through the shale, which is nearly as compact and perhaps worse to get out.

3129. Is it not true that the rainfall in England is much more distributed than it is here, but does not come in such heavy storms? Yes.

3130. Then it would be much more reasonable to provide a sewer to carry off the rainfall when it came every week than when it did not come once in two months? Yes, that is an important consideration.

3131. If we, in this country, where the rainfall is irregular and broken by long intervals of dry weather, make a sewer to carry off a certain proportion of the rainfall, we are providing for an exigency which perhaps only occurs once a month? Yes.

3132. And during the intervening periods, for twenty-nine days out of thirty, that sewer is simply a reservoir for bad gas? Yes.

3133. Do I understand that you rest one of your arguments in favour of the scheme on that view of the case? Yes? On what I consider the sanitary view of the case.

3134. Your argument is that the separate system is cheaper and more beneficial from a sanitary point of view than the proposed scheme? Those are the two chief points.

3135. Wherever you drain a manufacturing area you must carry off the refuse by sewers; you could not let it go down the gutters? No.

3136. If these suburbs could at any time become manufacturing suburbs you would want a larger capacity of sewers to carry off the refuse than you would do if you were merely providing for a residential suburb? It will be necessary to consider that, but I do not think the increase will be very much. Taking the water supply to the inhabitants at 70 gallons per head, as in the report, which is very liberal, I think that we could provide for any such contingency.

3137. If a district did become a manufacturing suburb, I suppose the value of property there would increase greatly? Yes.

3138. And an extra pipe might be laid without the increased rate being severely felt? I think so.

3139. You were asked by Mr. Tonkin about the water from the water-closets. Have you in the separate system made allowance for the full quantity of water required for the water-closets of the whole district? It would be based on a rate of about 70 gallons per head per day, which I think is very liberal.

3140. You calculate to carry away as much from each house as the water supply department delivers? Yes; but practically it would be less, excluding rainfall, because you would not take in the water used for gardens, or that used for steam engines and other purposes.

3141. Then if your pipes can carry as much as the water delivered they will be large enough for all sewerage purposes? Quite.

3142. *Mr. Humphery.*] You referred I think to the system of sewerage adopted in London having been condemned? The combination of the rainfall with the sewage.

3143. Do you know the reason why that system was condemned by the Royal Commissioners on the Metropolitan Sewerage Discharge? I tried to get their report, but was not able to do so. I gathered that the reason was that it gave them an unwieldy quantity of sewage to be dealt with at the outfall.

3144. Do you know that the difficulty in dealing with the rainfalls as well as the sewage in London is owing to the large quantity of sewage matter, caused by the enormous population there? I am not aware. If the rainfall were excluded the quantity would be reduced.

3145. There is an article upon the question in the Encyclopædia Britannica, written by Professor Ewing—is he an authority? I could not say. I have not met with his name.

3146. He discusses the two systems, separate and combined, and he seems to be of opinion that what is called the water carriage system is best adapted to meet the requirements of the present day? Certainly it is.

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3147. *Mr. Trickett.*] What was the American authority which you mentioned in the early part of your examination? A work written by Staley and Pierson.
3148. That is an American work written on American sewerage systems? Yes.
3149. Judging from two paragraphs in that work does it not appear that the separate system is only in force in America, in cities having a very limited population? One paragraph says, "We see from an inspection of the table that about seven-eighths of the cities of the United States have less than 25,000 inhabitants, and about two-thirds less than 10,000 inhabitants. It is probable that most of these do not require a system of sub-surface removal for storm water, and that in the few remaining the system of conduits for sub-surface removal may be very limited." (The table referred to is a "Comparison of Cities in the United States by Population.")
3150. Reading that paragraph with another further on, does it not appear that the system has only been tried in America in places having a comparatively small population? I am not quite certain of the population of the cities to which it has been applied, but the principle is not affected whether the population is 20,000 or more.
3151. Surely the principle is affected if the city is closely built, or not closely built, beeause in a closely built city it would be a great inconvenience to have the surface water running about the streets and accumulating in the gutters? There is no other way for it to escape except along the street gutters, unless you construct an underground system of drainage, which will remove the whole of the water from the surface. Mr. Stayton's report is certainly against the taking in of the whole of the storm-water.
3152. He takes in the ordinary storm-water? Only from the roofs and the yards. I go further and say exclude that, and have none of it. In his report he recognizes the difficulty there would be in dealing with the whole of the storm-water, so that if his scheme were carried out, wherever the storm-water was inconvenient on the surface, separate channels would have to be constructed to remove it. The question is the degree of separation which should be adopted.

Robert Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers, sworn, and examined:—

R. Hickson, Esq. 14 Aug., 1889.

3153. *Vice-Chairman.*] You are Engineer-in-Chief for Roads and Bridges as well as Sewers? Yes.
3154. The sewerage works in Sydney are being carried out under your supervision? Yes.
3155. Together with the scheme under the consideration of the Committee? It will be.
3156. The designs have been made by officers in your Department? Yes.
3157. You, of course, have given your concurrence to the scheme for draining the Western suburbs which is now before us? As far as I have been able to attend to it in the short time during which I have been in the Department. I think it is the best system.
3158. I suppose you have officers whose duty it is specially to look after this particular work? Yes.
3159. Who has been in charge of it? Mr. Stayton was the officer who worked out the whole scheme. Unfortunately he is not here now; but we have two officers who have given great attention to it, and I suggest that they be examined.
3160. What is the name of the officer in charge of the work now? The sewerage branch is divided into two districts; Mr. Smail has one district, and Mr. M'Mordie the other; but the officer in charge of the sewerage generally, Mr. Baggie, together with Mr. Smail, worked out the scheme with Mr. Stayton, so that they are well up in all the details, more so than I am.
3161. Their evidence is available? Yes, I have sent for them.
3162. Have you, since the matter has been under consideration, given any attention to the system of electrolysis? Yes; I went into it.
3163. Have you made any estimate of the probable cost of the work under the electric system? Yes, I had an estimate made. [*Vide Appendix* K.]
3164. Does that show that the cost would be very much greater? Yes, considerably.
3165. Is it your opinion that a system of electrolysis would be successful—I mean that it is practicable to carry it out? I think it is quite practicable to carry it out.
3166. But it will be more expensive than the proposed system? Yes, very much more expensive. I think it will cost something like £300,000 more.
3167. Have you given any attention to what is called the separate system? Yes, as far as reading engineering works in connection with it goes.
3168. Do you think it would be advisable to adopt in any measure the separate system in carrying out the scheme? I think it would be a great mistake to make any alteration in the scheme proposed by Mr. Stayton.
3169. Then after mature consideration you consider this scheme to be the best? I do.
3170. Have you ever heard of Lienur's system? I have heard of it, but I cannot say that I have given any attention to it.
3171. So far as your information goes, has the system been regarded a success in any way? I could not say.
3172. Has it ever been tried in the Colonies? That I could not say.
3173. *Mr. Trickett.*] Have you checked the estimated expense of the scheme at all? No; it was designed before I came to the Department.
3174. Does the actual expense connected with the system of electrolysis provide for a system dealing with the sewage at more than one place, or only near the outfall at Webb's Grant? It only deals with it at one place, not at Webb's Grant at all. This plan shows where it is proposed to treat it. I should divide the city into two districts—a northern and a southern district. The whole of the drainage from the southern portion would go out to Webb's Grant, while that from the northern portion, including Leichhardt, Camperdown, and Ashfield, would go to a point between Iron Cove and Long Cove. We thought that the most suitable point at which to concentrate it. It would there be treated, and the sludge removed by water.
3175. If that system were adopted you would get rid of the stuff at two localities instead of one, as at present proposed? Yes.
3176. In what way would the expense come to the extra sum of £300,000? I have the details here. The engine and the working expenses connected with the dynamos would probably run the expenditure up to that amount.
3177. The cost of machinery and electric appliances would be the chief cause of the extra expense? And the working capitalised; that is the main expense.
3178. You have inspected Webb's Grant sewage farm? Yes.

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3179. More than once? Yes.
3180. What is your opinion as to its efficiency? I think there could only be one opinion, and that is that you could not get a better place for it.
3181. But as to the result; do you think that the manner of dealing with the sewage is satisfactory? I do not think that you could get a better place for dealing with it.
3182. Do you think that it is better, apart from the expense, than electrolysis? I think it is.
3183. Do you think that the area that is available at the present time will be ample for dealing with the sewage for some time to come? Yes.
3184. As far as you have been able to think over the matter, I understand that you endorse Mr. Stayton's system? I do.
3185. Have you had much experience in sewerage works? Not very much.
3186. *Dr. Garran.*] Mr. Stayton has now left the Public Service? Yes, he has gone home.
3187. You are not prepared, individually, at the present moment, to endorse his calculations, I presume? No.
3188. Could you, without much difficulty, get those calculations re-examined by some competent officer still in the Service—some responsible man? Yes.
3189. The Committee at present have only Mr. Stayton's calculations to depend upon? We can have the whole thing calculated. We have all the plans. It would take some time to do.
3190. Do you think it would be advisable, before committing ourselves to the scheme, to make sure that there is no mistake? I think you are perfectly safe in depending upon Mr. Stayton. He is a most careful man, and this is a specialty of his. I should be perfectly satisfied in taking his figures as correct.
3191. You, as an engineer, would rest your confidence upon him? I would.
3192. Do you know whether it is contemplated that your Department should carry out the work, or whether it is to be left to the Water and Sewerage Board? We contemplate carrying out the work shown on the plan. All the reticulation is to be carried out by the Water and Sewerage Board.
3193. It is not intended to put the whole work on them? No.
3194. If you become responsible for carrying out the main portion of the work you will be anxious that it will not cost more than is estimated? Yes.
3195. And in Mr. Stayton's absence you are responsible in trusting to his figures? Yes.
3196. Then we may take it that your Department endorses his figures? Yes.
3197. The rain-water which Mr. Stayton proposes to take is only from the roofs and yards? Yes.
3198. That would not be one-tenth of the whole of the rain-water—would it? About one-tenth.
3199. So that although this is a combined system it is only so to a moderate degree? Yes.
3200. You are of opinion that it would be best to deal with that portion of the rain-water in that way? I am.
3201. It is the quickest and best way of getting the yards clean? Yes.
3202. And prevents them from becoming sloppy by the water from the roofs draining upon them. You have no hesitation in recommending the system to the Committee in preference to the wholly separate system? None whatever.
3203. *Mr. Humphery.*] Are you prepared to accept the responsibility of Mr. Stayton's calculations? Yes; I am.
3204. *Mr. O'Sullivan.*] Have you given any attention to the system of electrolysis? Do you mean as a system or as applied to this scheme?
3205. As a system? As a system I believe it can be made perfect.
3206. It is perfect? Practically, I think it is.
3207. You think that it is past the experimental stage? Yes; that is the opinion I have formed.
3208. Do you think it would be wise for the Committee to recommend its adaptation to any portion of the scheme? I do not. I do not think it would be wise from a pecuniary point of view, and I think it would be very unwise to cut the scheme up into different systems.
3209. You will be the responsible officer for it? Yes.
3210. You prefer it to be carried out as designed by Mr. Stayton? Decidedly.
3211. Without any modification or alteration whatever to fit in other schemes with it? Yes.
3212. *Mr. Garrard.*] When Mr. Stayton was last before us he spoke of an alternative system for Balmain, making it all a low-level system, and pumping the whole of the sewage up into one main receiving sewer. Has anything more been done in that respect? Nothing more has been done.
3213. Supposing Balmain was made an entirely low-level area, what would be the difference between pumping the whole of the sewage up into the Bondi Sewer, and the cost of treating it locally by electrolysis;—have you given any attention to it? I did not take that part by itself, and cannot say what the difference would be; but it would be considerable, because the Committee should understand that if a system of electrolysis were adopted it would not get rid of the pumping. You must pump the sewage to a certain height to allow it to gravitate to the tanks.
3214. It would not have to be pumped more than 10 or 12 feet at the outside? Rather more than that—between 15 and 20 feet.
3215. Are you aware that under the present system only about two-thirds of Balmain is served, and that the remainder will have to be pumped? Yes.
3216. Do you know whether anything has been done in the Department with reference to the alternate scheme for Balmain? Nothing has been done.

C. H. Ohlfsen Bagge, Esq., Chief Assistant Engineer, Sewerage Branch, Department of Roads and Bridges, sworn, and examined:—

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3217. *Vice-Chairman.*] You are a civil engineer? Yes.
3218. And you have been engaged in the design of the scheme before the Committee for the sewerage of the Western Suburbs? I have not been engaged upon it myself.
3219. Not in any way? I have been checking the sewers in various ways. All the calculations were based upon our prices, and I supplied them to Mr. Stayton.
3220. You were engaged during Mr. Stayton's time in making these calculations? I assisted him by giving him all the information in my power.

3221.

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3221. To form the general estimate? Mr. Stayton's estimates are based upon the contracts let at the time for similar works.
3222. You took measurements, diameters, lengths, and all that sort of thing? Yes.
3223. You are of opinion that Mr. Stayton's estimate is approximately correct? I think it is a very fair estimate.
3224. You say that it is based upon a contract price being paid for work at the time you made the calculations? Yes.
3225. On the Government contracts? On the Government contracts.
3226. Did you consider the price of the brickwork and stonework—I suppose you did? Yes.
3227. Were you guided in that by the prices being paid then? Yes.
3228. Did you base any of the estimates upon the prices paid by private individuals? They would hardly bear comparison, since our work is totally different from private work. I think that since the sewerage works started the contractors have gradually cut down the prices to such an extent that there are scarcely any profits left, rather the reverse at times.
3229. The competition has been so keen that they have done the work at a loss in some instances? Yes.
3230. Has your particular branch of the engineering profession brought you into contact with the construction of works of that sort? I am one of the oldest living hydraulic engineers in Victoria? I have had forty-eight reservoirs under my charge there.
3231. Before you came to this Colony? Yes; reservoirs, aqueducts, and so on.
3232. Had you anything to do with the Yan Yean reservoir? I was connected with that office for eighteen months. I was at one time engineer of Goldfields Reservoirs.
3233. Have you given any attention to what is called the separate system? Yes.
3234. Do you approve of this system in preference to what is called the separate system? It is a matter of opinion; but as far as the broad principle is concerned, it is the opinion of leading authorities at home that the system here proposed is the only practicable system that can be carried out for the public benefit.
3235. That is, that this is the only system? Yes.
3236. You have also heard of Liernur's system? Yes.
3237. Have you seen it in operation? No, I know it only from books.
3238. Do you know whether it was tried in Victoria on a small scale? I am not aware.
3239. However you are clear in your opinion that this is by far the best system to adopt? I am positive that you will find it the cheapest system to carry out. There is no cheaper system than a water carriage system.
3240. Have you any misgivings as to the water supply being insufficient for working the system? Not at all; we have plenty at present, and the water-works here could be augmented if it were necessary to do so. In a large progressive town it is necessary to use plenty of water, and to provide it, and I have no doubt that it will be provided when required.
3241. Had electricity been used in your time at home as a means of separating the solid portion of the sewage from the liquid? The electric system, so far as I know, is based upon the celebrated Faraday's system, first made known in 1850. Then in 1885 lectures were given upon the same thing in Bohemia—I have forgotten the name of the university—but the water used there was manufactured for the purpose of being decomposed, whereas in this case sewage is to be experimented upon on a large scale. The theory has been known since 1850; lectures were given upon it in 1885, but it has only been turned to a practical use lately by Mr. Webster in London for dealing with the London sewage. The other waters treated were composed for the purpose. Mr. Webster's invention consists in the apparatus, and the manner and mode of using the principle for sewage.
3242. Do you think it has been found practicable to treat sewage by electrolysis? I believe it is thoroughly practicable to do so.
3243. Having regard to economy as well? I think you will find it very expensive.
3244. More expensive than these systems? Far more. I am sure there is nothing cheaper than the plain water carriage system.
3245. The use of electricity is generally found to be very expensive for other purposes besides the purification of sewage? I have prepared certain estimates from Professor Threlfall's paper, and upon Mr. Webster's estimate, and I find that this system is much more expensive than that proposed. With the best knowledge that we possess it would only be after long experiments that we could arrive at a conclusive estimate. The thing is thoroughly unknown, and has to be tried, but from what we know of what Mr. Webster has done the system must be a very expensive mode of treating sewage.
3246. *Mr. Trickett.*] The system Mr. Stayton proposes to adopt we must call, I suppose, a modified separate system? Mr. Stayton has adopted a system now in vogue in all the large towns of England. It is a modified system.
3247. It does not carry off all the surface water from the streets—it simply takes the roof water and the sewage? Just so.
3248. Have you sufficiently studied Mr. Stayton's scheme to know whether the pipes and sewers that he proposes would be large enough to carry off the sewage and the water collected from the roofs of houses and so on? Yes. I think you will find them ample.
3249. There is no fear of the water and sewage bursting up the sewers and destroying them? I think not.
3250. You are quite sure of it? In a large scheme like that which Mr. Stayton has proposed some slight alterations in details may have to be made when the working plans are designed; but I think on the whole that it is a very fair proposal.
3251. And ample allowance is made for the sewage? Yes; there is nothing to cavil at.
3252. You have read the appendix to Mr. Stayton's report? I have studied it here and there.
3253. Page 21 of that appendix gives the estimated cost of the proposed works? Yes, it is £830,304.
3254. Have you checked the figures in the preceding items which make up that amount? I have not checked every item here; but we had occasion to go through the work when we made a report upon the electrical system. We had to take Mr. Stayton's report and reverse it, and cut a trial line through it, as a surveyor would say. We came to about the same figures.
3255. But you will see that in arriving at the amount of £830,304 Mr. Stayton has divided the sewers into various parts. Have you gone sufficiently into the details of the scheme to be able to check the cost of the various sewers. He talks of the northern system, the southern system, and the western system? We have gone piece-meal through it; but not through the identical figures.
3256. You have gone through it sufficiently to check it? Yes.

3257.

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3257. On pages 24 and 25 Mr. Stayton gives estimate of the cost of the subsidiary sewers; have you checked those figures, or have you made calculations which would enable you to say that they would be about the cost of the subsidiary sewers. Mr. Stayton adds this foot-note, "The above sum is believed to be ample to provide for every contingency, and is inclusive of all works that can possibly be foreseen at the present time." Does that foot-note agree with your idea of what the expense would be? I think that as far as a man can foresee, without making full details, Mr. Stayton's estimate is a very fair one.
3258. Do you think that it is desirable to treat the sewage by electrolysis, or to adopt the sewage farm system, which is in partial working order at the present time? I should never adopt electrolysis unless I could help it.
3259. You therefore think that the sewage farm treatment is desirable? I think so.
3260. Have you seen the working of that farm? Yes.
3261. Do you think it is satisfactory? I do not think you could have a better site for a sewage farm.
3262. Do you think that 400 acres would be sufficient for a long time to come? I think so. We are only using 2½ acres now, and dealing with the sewage of a population of 10,000, which is hardly sufficient to supply the requirements of that area.
3263. So you approve of that treatment? Yes. When the Melbourne Sanitary Board were here, after they had gone through the whole of the Colonies they saw that farm and said, "it is the very thing we want."
3264. *Dr. Garran.*] I understand that you furnished a large portion of the material for Mr. Stayton's calculations? Yes.
3265. Was any other engineer working with you? Yes; there is a large office.
3266. Several people furnished figures for Mr. Stayton? Yes. When Mr. Stayton was preparing this scheme Mr. Bennett sent him to me with a message asking that I would give him every information, and I gave him the prices of all our contracts.
3267. You gave him the prices as far as you were concerned, but did you estimate the area of all the cuttings which you would have to make? They harmonize exactly with the sewers which we have done.
3268. But have you worked out the quantity of work to be done? Not the exact quantity.
3269. Who besides Mr. Stayton worked out the quantity of work to be done? Mr. Hammer.
3270. He worked out all the figures of Mr. Stayton? Yes.
3271. And no one else? I think Mr. Hammer was his principal assistant.
3272. Was he with Mr. Stayton all through? Yes.
3273. Will you look at page 22 of the appendix. You will see that Mr. Stayton there lowers the rate from 6d. to 5d. in the £ on the gross capital of £830,000? Yes.
3274. Now look at page 25. You will see there that with a reduced estimate for a longer term, and a lower rate of interest brings the rate down to 6½d. in the £ on the larger capital of £1,817,000? Yes.
3275. You do not know anything about these calculations? I did not check them.
3276. Did this other gentleman, Mr. Hammer, check them? It is very likely.
3277. You do not know? I could not say.
3278. *Mr. O'Sullivan.*] From your knowledge of the system of sewerage carried out in large centres of population in Europe you consider the system recommended by Mr. Stayton as the one best suited for the requirements of Sydney? I do honestly.
3279. Could you suggest how it could be improved in any direction? No. At present I do not think it is possible for any person to improve it, even with more knowledge than I have with regard to it, and I have a good deal. Even with my knowledge and cognizance of the whole scheme, it is very difficult to suggest at this moment any modifications. That cannot be done until the detailed plans are prepared.
3280. Did I understand you to say that you had assisted to supply the figures for the estimated cost? I merely said that I supplied Mr. Stayton with the cost of similar works being carried out at the time he prepared his design.
3281. I suppose in your opinion the cost of the work would be something near the estimated cost? They were the prices for which we got similar work done. I know that they were carefully checked through at the time, and that the figures put down were thought reasonable.
3282. Did you make any allowance for probable extras or variations? You cannot go in for those things in a large scheme of this kind. You allow a certain percentage and that I think Mr. Stayton has calculated for.
3283. I suppose another £100,000 would any way cover the probable extras? That is difficult to say because the population is increasing so rapidly that although Mr. Stayton's estimate may cover everything for the next ten or twenty years, by the end of that time the suburbs may have increased to such an extent that you would not know them. I have seen the most extraordinary changes during the nine years I have been here. You can understand that it is extremely difficult to say that these figures will cover everything.
3284. But did not Mr. Stayton take into account the rapid increase of the population? He did, but you have no laws of increase. The increase of population has not been calculated here as in the case of a town where during the last fifty years it has only varied from 2½ to 2⅝ths. We have not got such data here, and we can only guess the increase as near as possible.
3285. *Mr. Tonkin.*] Are we to understand that Mr. Stayton's estimate is founded on the information which he received from your office? Yes, naturally. We were the constructive office at the time, and we had all the prices in our possession showing the cost of work. We provided him with all those prices, as he was a stranger here and did not know the Colonial prices.
3286. Mr. Stayton furnished you with certain work required to be done, say tunnels to be driven, and you gave him an estimate of the cost? We gave him the cost of similar works and checked them through.
3287. Supposing he wanted half-a-mile of a certain sized tunnel driven, and wished to know what it would cost, you gave him the figures? Yes.
3288. *Mr. Dowel.*] Were you engaged on any of the surveys for this scheme? No. I was engaged all this time in getting out large contracts for the city.
3289. Did you take out a principal portion of the quantities in this scheme? No.
3290. You have only furnished the prices upon which the estimate is based? Yes.
3291. That is all you know of the scheme? Yes, and the check calculations made, when we revised a large portion of the scheme so as to adapt it for electrical treatment.*

THURSDAY,

*NOTE (*on revision*):—See reply to question 3254.

THURSDAY, 15 *AUGUST*, 1889.

Present:—

The Honorable JOHN LACKEY (VICE-CHAIRMAN).

The Hon. ANDREW GARRAN.	JACOB GARRARD, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	HENRY COPELAND, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	EDWARD WILLIAM O'SULLIVAN, Esq.

JOHN HURLEY, Esq.

The Committee further considered the proposed Drainage Works for the Western Suburbs.

John More Smail, Esq., M. Inst. C.E., Assistant Engineer, Sewerage Branch, Department of Roads and Bridges, sworn, and examined :—

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3292. *Vice-Chairman.*] You are assistant engineer in the Sewerage Branch of the Roads and Bridges Department? Yes.
3293. You have had something to do with the scheme before the Committee? Yes; with the preliminary part of it before Mr. Stayton's appointment.
3293½. With the survey? Yes.
3294. You understand the design which it is proposed should be carried out? I do.
3295. Other than the experience which you have had in the commencement of the work, have you had anything to do with it. Has your attention been called to the work in any way as far as it has proceeded? That portion of the design which includes Macdonaldtown I am dealing with now.
3296. You are the surveyor in charge of it? Yes; and of Alexandria, which is shown green on Mr Stayton's plan.
3296½. That would not be very far from the main tunnel going to the sewage farm? No.
3297. What do you call that tunnel? The southern main outfall sewer.
3298. How far does the work extend which you are now superintending? As far as the dividing ridge between the Marrickville valley and the Shea's Creek valley.
3299. And it consists of three branches? Yes; of a main branch and two subsidiary branches.
3300. Have you completed the survey of this work? All the surveys have been completed. We are just waiting for instructions from the Minister to go on.
3301. Have you made any approximate estimate of the cost? We have taken Mr. Stayton's estimate. I have checked it; I have found that he is well within the mark.
3302. Taking the part of the work upon which you are now engaged, or the gross work? Taking the work as a whole.
3303. You think that as a whole his estimate is within fair bounds? Yes.
3304. I suppose it is usual to leave a margin in cases of this kind? Yes; to provide against contingencies.
3305. For fluctuations in prices and other circumstances? Yes. The principal item is the resumption of land. Land which has to be resumed may increase in value by the time the work is carried out.
3306. Whose duty has it been to check or correct the estimates for the proposed work all through? Mr. Hammer has taken out the whole of the quantities for the scheme, and they have been estimated at the ruling contract prices.
3307. What office does Mr. Hammer hold? He is a draftsman. He was attached to Mr. Stayton's staff, and carried out the work then.
3308. Has he been engaged in other works of a similar character? Prior to going to Mr. Stayton he was engaged on the Bondi scheme.
3309. Had he to do with the making out of the prices? No; Mr. Bagge did that.
3310. Who checked the estimate of cost in the Bondi scheme? They were made by Mr. Bagge and checked by one of the draftsmen.
3311. Has Mr. Hammer had any special experience in this kind of work; this is a large work and the Committee are very anxious to be assured that the estimates are correct, or approximately correct, and we want to know whether they have been checked in such a way as to give us a guarantee that they are satisactory? They are, as far as I know. Mr. Corbett was the other assistant to Mr. Stayton. Mr. Stayton would have had them checked before he decided on the matter finally.
3312. They have been checked practically by Mr. Corbett and Mr. Hammer? Yes.
3313. You have not gone into the matter yourself? I have checked them more as a matter of curiosity.
3314. As far as you have examined the estimates you think that they are correct? I think so.
3315. In your own mind, as far as you have gone, have you any doubt of the accuracy of the estimates? I think everything has been liberally provided for.
3316. Provision has been made for fluctuations in the price of materials? Yes.
3317. I suppose the material consists principally of brick, cement, concrete, and other things of that kind? Yes; the prices of those articles might fluctuate.
3318. *Dr. Garran.*] I understand that you have not taken out the quantities yourself at all? Yes.
3319. You have simply checked the prices? We have taken out the quantities partly, sufficiently to enable us to form a gross estimate.
3320. Have you taken out half of the quantites? No.
3321. Have you taken out a quarter? I have taken out one or two of the main lines—the western branch and the eastern branch—and I find that they are well within the mark.
3322. You found the calculations correct as far as you did check them? Not the calculation of quantities, but the estimate.
3323. You have not taken any quantities? Just sufficient quantities to get at the estimate.
3324. You have assumed that their quantities are correct? Yes.
3325. And you have compared their quantities with the prices? With the prices ruling at present.
3326. Your calculation simply amounts to this, that assuming the quantities to be correctly taken out, the prices are correct? Just so.
3327. You have not otherwise checked the scheme as a whole? No.

3328. Have you checked the ratio of rates that would pay the interest? No; there is one part which I have checked, and that is the part in reference to the reticulation. I see that Mr. Stayton, in the appendix to his report, has given £200,000 as the amount which it will cost to carry out the reticulation. Taking the ratio of the gross amount and what we have already carried out, I think he is within bounds there.
3329. Has Mr. Stayton's estimate for the reticulation been as exact as that for the whole work? I think so.
3330. We have been given to understand that the Public Works Department will only undertake the main tunnels, leaving the reticulation to the Water and Sewerage Board. I thought therefore that the reticulation might have been a mere general calculation? As a rule they go into detail more with the reticulation, because it is a more detailed work.
3331. As far as you have glanced at it, you think the estimate for reticulation is trustworthy? I think so.
3332. You know that this is called the combined system—that it is a separate system, including the water from the roofs and back yards? The partially separate system.
3333. Do you think that on the whole that system is the best for the district? Yes, and for any district.
3334. Have you given any attention to the relative merits of the two systems? I served my articles in the City Engineer's office, Town Hall, where the combined system was carried out—that is the present system.
3335. The system that at present exists in the city? Yes. That system takes the whole of the street-water and the sewage. What we are carrying out at present is the partially separate system, which excludes all the rainwater, with the exception of that from roofs and back yards.
3336. You think the sewage of Sydney would have been got rid of better by having a partly separate system, in the first instance? I think so.
3337. Are the additions to it—the Bondi Sewer extensions being made on the partially separate system? Yes.
3338. All of them? Yes; we exclude as much rain water as practicable.
3339. Can you tell me any parts which have been added on the partially separated system? Yes, Redfern. I am carrying that out now. We take no water from the streets.
3340. Only from the roofs and back yards? Yes.
3341. Has that sewer been at work? Yes.
3342. Do the pipes keep themselves clean? We have had no complaints. At one place over 1,000 people have been connected with it for nine months, and the system was fully tested by the late heavy rains. We take the water from the roofs and yards as natural flushing agents. If we did not do so the drains would become very bad.
3343. But do you not think that it is very undesirable to trust to the rain storms in a climate like this? We do not do so altogether; we trust to the water supply.
3344. Have you any artificial system of flushing? Yes. We flush by hoses; and turn each length of sewer into a tank. It is filled by the water-hoses, the plug is drawn, and the water washes out the sewer below.
3345. You use a certain length of sewer as a flushing tank? As a flushing section, to flush the section immediately below.
3346. You hold back the flow of water, and suddenly let it go? Yes. The head gives the velocity.
3347. Do you find that system satisfactory? Yes.
3348. There is no necessity for flushing tanks? There is no necessity at all, in fact I object to them.
3349. There is no danger of overfilling the small supply pipes? No.
3350. In fact during the heaviest rain storms which we had recently the water was easily carried off? Yes. Even the storm water was carried off by the storm-water sewers.
3351. Do you think the pipes are being made needlessly large? I think not; you take all the water supplied from the water mains. If we adopted the totally separate system perhaps a 9-inch pipe would do where we now use a 12-inch; but then we would have to have a duplicate set of sewers.
3352. Not if we let the rain water off by surface channels? You have to carry it out to the nearest water-course. That is an objection to the separate system, that it necessitates two sets of pipes.
3353. Allowing for the rain water which you carry off, how much of the capacity of your pipes is really occupied by the sewage proper, and how much do you allow for the occasional rain discharges? On the south we have taken 3 feet of rain water and 1 foot of sewage per head per acre, so we allow $\frac{1}{4}$ for the sewage.
3354. The pipes are four times as large as is necessary to take the sewage proper? Not necessarily. The pipes have to flow not full but about two-thirds full; according to the scientific way of designing them.
3355. But I understood you to say that the sewage proper only occupies $\frac{1}{4}$ of the pipe? Yes.
3356. Then three-fourths is ready to be filled up by air and gas as a rule? As a rule.
3357. Do you think that is a desirable space to allow for the accumulation of gases? The more gas space you have the more chance there is for its dilution, if the sewer is properly ventilated.
3358. Have you ventilated the sewers? Yes.
3359. By upright pipes? In some cases I have induced people to allow me to erect upcast pipes alongside their houses, and in the streets I have placed downcast pipes.
3360. Do you get any foul smells from the gratings in the streets? Yes; but very few.
3361. The gratings would be upcast ventilators if you got smells from them? Yes. They would be upcasts until we got ventilators at a higher level.
3362. Have you a sufficient number of high buildings to carry the ventilation to a great height? Yes. Redfern is well suited in that respect. There are many high places.
3363. Do you think there would be any means of ventilating the sewers in the district like the Western Suburbs—where there are few private houses more than two stories high? I think so. You can run the ventilating pipes up through the trees in the parks. You are not restricted to houses. In a mile of street you might only want twenty ventilator-pipes.
3364. Have you formed any kind of estimate as to the number of pipes which you want for a 4-foot sewer? That depends upon the size. If you reduce their number you must make them larger. You cannot lay down a hard and fast rule. You must act according to circumstances.
3365. Have you made any experiments in the district with which you are now dealing, to satisfy yourself that there is no great quantity of foul air imprisoned in the sewers? We have. We have tested the question

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question in every case where we have erected an upcast pipe. We have tested the current with an anonometer and have found that there is a decided current. In the street ventilators the fresh air is drawn in.

3366. Have you tested at the top of the ventilators to find whether there was a draught? Yes, and have found that there was a decided draught.

3367. I ask you these questions, because you are now making an experiment of Redfern as it were of the whole scheme? Yes.

3368. I am trying to find out if the experiments have been satisfactory enough to justify us in recommending the expenditure? They have. The aldermen of Redfern are perfectly satisfied with the system. In the borough of Darlington they have carried out a system of their own and the sewers are totally unventilated. When the man-hole cover there was lifted, the Mayor admitted that the smell was certainly abominable; but when I took him to Redfern he said he would not know that there were any sewer ventilators unless his attention was drawn to them.

3369. You have no complaints from people getting the foul air in their bed-rooms? We have had one or two complaints, but I think it is mere sentiment.

3370. Have you ever seen the Adelaide system? No; but I have heard a great deal about it. We have two or three men in the Department now that came from there.

3371. The ventilators there are very numerous, and not very tall? Yes. Every house has to be ventilated as well as the sewers. The more you oxidise the gas the less dangerous it becomes.

3372. Except the flaps to hold back the water there are no impediments to the flow of the sewage? We divide each system into zones. Supposing we have a low flat and a rise and wish to prevent the accumulated gas from passing into the higher regions, we cut it off by means of a gas flap and cause it to rise, so that each district is shut off to itself.

3373. You never block off a district so as to prevent the gas from getting out? Never.

3374. You do not imprison it? Never.

3375. The only object of the flap is to prevent the gas from rising to the higher parts of the sewers and becoming obnoxious to the people residing in the higher districts? Yes.

3376. You leave plenty of escapes? Yes. Each district consumes its own gas.

3377. You have had something to do with the Bondi sewer? No; only with the southern sewer.

3378. You do not consider that that sewer is too large? The main outfall sewer?

3379. Yes? No.

3380. It will not have any great tributaries? It will have the whole of the subsidiary sewers, as far as the rise to Newtown and Strathfield.

3381. But not beyond that—it is comparatively limited? It is.

3382. It is not too big for the work; the sewer will not become a great gas-holder? No; but you could spoil the best system of sewers by not attending to it. These sewers will have to be properly attended to.

3383. You have no hesitation in saying that you prefer the partially separate system to the absolutely separate system? I do on sanitary grounds. I think it should be the only system adopted in hot climates.

3384. You do not think the gain through the smallness of the pipes under the separate system is worth considering? It is not, because you have to put down large storm-water sewers as well as duplicate pipes.

3385. So that one expense compensates the other? Yes; and under the separate system you have to have two sets of pipes for each house, one to carry away the water from the roofs and yards, and the other to take away the slops. In nine cases out of ten the slops go into the street gutter instead of into the sewer. I judge that from the report of the inspector which I received this morning. We can see the faults of the system by the work carried out at Surry Hills. Instead of the slops going into the sewer they flow into the gutters.

3386. But as far as I understand all the closet discharge and the kitchen discharge are connected with the sewer proper? Yes. But if you have servants they will generally put the slops down the nearest sink. A proof of that is seen at Surry Hills, where the system is now in operation.

3387. But would it not be safe to calculate that a girl would always go to the nearest sink? Yes.

3388. Would not the difficulty be met by putting the yard drain as far as possible from the house drain? Yes, but if you laid down a hard and fast rule like that you would put people to the trouble of altering their yards to suit it.

3389. You think that as the yards are built at present the people naturally throw their slops into the gutters? They naturally go to the nearest point.

3390. Still that is a matter of detail that could be obviated? It could be obviated; but with the partially separate system it would not occur at all.

3391. You think that on the score of economy the completely separate system is no gain? Most decidedly.

3392. And secondly from a sanitary point of view that there is no risk under the partially separate system of the sewers becoming dangerous gas-holders? I am sure of it.

3393. You think the ventilation you provide will be a perfect check on that? I do.

3394. *Mr. Garrard.*] Have you carried out any of the works already in operation? Yes, the whole of that sewer coloured dark green on the map which goes to the sewage farm.

3395. The main southern outfall sewer? Yes.

3396. You have carried out the whole of that? Yes, and I am dealing with the sewerage of Redfern, Waterloo, and Alexandria now.

3397. I understand that you have dealt with the whole of the reticulation of Redfern, which now falls into the Bondi and southern outfall sewers? Yes.

3398. Your work is in connection with the surveying in the first instance and then with the carrying out of the scheme? I am designing the whole of the reticulation work myself. I made all the previous surveys and helped in the designing of the original works, and carried them out eventually.

3399. Have you had anything to do with the laying out of the proposed extension of sewers shown by the red lines? I am dealing with the portion which falls into the southern outfall sewer now.

3400. In Macdonaldtown and Redfern? Yes.

3401. Have you had anything to do with the proposed sewers? Only that portion draining into the southern outfall sewer.

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3402. I suppose the sewers that fall into the main sewer are made on the partially separate system? That is the system carried out.
3403. This is an extension of an already agreed upon principle of sewerage? Just so, and it is the principle carried out by engineers of experience.
3404. Do you know how the scheme came to be designed, and whether it was reported upon? The Western Suburbs scheme?
3405. Yes, and the Bondi sewer? That was the outcome of the report of the Sewerage and Health Board in 1877.
3406. Was it reported upon by anybody? Yes, Mr. Clarke was brought out to report upon it, and upon the Nepean water supply.
3407. It was on his recommendation that the Bondi and main outfall sewers were adopted? Yes.
3408. In other words the partially separate system? Yes. I do not believe there is a place in the world where there is what they call the absolutely separate system existing in its entirety.
3409. Except the Liernur system—that is absolutely separate? Yes.
3410. Have you given any attention to it? Just by mere reading.
3411. You do not think there is sufficient in it to warrant our considering it? I should not waste time over it.
3412. You know that it has been successful in some of the continental towns? In one or two places where it has been adopted; but it has never been adopted since.
3413. What is your objection to it? I consider that water carriage is the best.
3414. Do you object to anything but the water carriage system? Yes, because there is no gain in the Liernur system; it is only adapted to towns or flat country. It is on the exhaust principle.
3415. There is a concentration of the sewage and it has to be taken away from the depôt? Yes. What gave a start to the system was that people thought that they could get so much for the Poudrette made from it; but that idea is exploded now. It has no commercial value whatever.
3416. Have you read Mr. Henson's paper on Mr. Stayton's proposed scheme? I have. I discussed that question at the Engineering Association and I defended this scheme.
3417. Have you read Mr. Stayton's reply to Mr. Henson's paper? I have.
3418. Do you think that what he says there is perfectly correct? Perfectly correct.
3419. I suppose Mr. Stayton has been dependent upon various officers in the Department for information as to quantities and prices in designing his scheme? He has had assistance to take them out, and he has supervised the whole thing himself.
3420. Then he has corrected the whole and has based his report upon these sub-reports and other data? Yes, he has had reliable information as to the prices. The prices given to him have been those at which we have actually carried works out. There is only a question as to the quantities, and I believe that they are correct. For my part I should be quite prepared to start the work, and take them as they stand.
3421. You spoke just now of a probable increase in the price of land which would have to be resumed. Will much land have to be resumed? Land was resumed on the sewage farm.
3422. Independently of that—I mean for the main sewer? Possibly we may have to go through some market gardens to make a direct line of sewer, and it is probable that that land in five or ten years time may increase in value.
3423. That is the only part of the estimate which you think may be exceeded? Yes; but it is a contingency which no engineer can foresee.
3424. Is the tendency for the price of work to increase or decrease? To decrease, because competition is getting more keen.
3425. So that you have every confidence in believing that Mr. Stayton's estimate will not be exceeded in any way? I am quite confident on that point.
3426. You have had a good deal to do with the Cook's River sewage farm, have you not? Yes.
3427. You are perfectly satisfied with the way in which it is working? I am perfectly satisfied that from a sanitary point of view it is a perfect success. It has been proved by the chemical analysis of the effluent water which has been made.
3428. Have you had anything to do with the electrolysis experiments? Yes; it was at my suggestion that Mr. Bennett allowed Mr. Roberts to go to Botany. We had the sewage there with which to deal, and we erected the requisite apparatus. I think some of the Board saw it. We tested it on several occasions, and got a splendid result from it.
3429. Who is Mr. Roberts;—is he a gentleman employed in the office? He is a draftsman in the office. He patented the system in Sydney.
3430. He was not aware of the fact that Mr. Webster was making experiments of a similar nature? He patented his a month or so before we heard of Mr. Webster's experiments.
3431. Have your experiments been discontinued? The matter was put into Professor Threlfall's hands first; but as he waited so long we took it up ourselves. He then returned from England, where he had witnessed Mr. Webster's experiments, and we thought that we were not justified in expending any more money till the Minister had given his decision.
3432. Do you know anything about the proposed alternative scheme for Balmain? I believe that there is some alternative scheme for dealing with the sewage of Balmain by electrolysis, and turning the water into the harbour, instead of pumping it up into the northern outfall sewer.
3433. If Balmain is to be a low-lying area, do you think it would be a good place to make an experiment of the electrolysis system or to deal with the sewage by some other means, instead of pumping it up into the out-fall sewer? All down to the 30-feet contour will flow by gravitation into the main outfall sewer, and there is very little below that in Balmain. If it is intended to make an experiment, that will be a very good place to make it.
3434. Do I understand that you would favour the proposed system being carried out, or the dealing with the lower levels by a system of local purification? If you did not wish to bring the sewage on to the sewage farm, then, of course, electrolysis would supersede any other system of purification. It is by far the best.
3435. *Mr. Humphery.*] We have been told that two sets of drain pipes or sewerage pipes would be necessary in the separate system;—is that the case? I am positively sure that if the absolutely separate system is carried out two sets of pipes must be used. That is the opinion of all the engineers in England.

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3436. We have evidence here to the effect that one set only is necessary, and that the storm-waters would run away on the surface? In some places it is possible that they might do that, but you cannot lay down any hard and fast rule. You will find even now that we have to construct storm-water sewers to carry away heavy rainfall.

3437. You think that it is a mistake to say that the whole of the rainfall could be carried away by surface gutters? Yes. As I said before I do not believe that there is a place in the world where the absolutely separate system is carried out in its entirety—it is a misnomer altogether.

3438. Have you made any estimate of the cost of the application of electrolysis to sewage? An estimate was made of the cost of treating 1,000,000 gallons from the experiments at Botany, and it showed that that process was half as cheap again as treating it with chemicals; but I would never substitute treatment by electrolysis where suitable land could be obtained upon which to deposit the sewage as at Webb's Grant.

3439. You think Webb's Grant is suitable in every way to receive the sewage and purify it? I am sure of it.

3440. And that it would be quite unnecessary to apply electrolysis? In this shape; but in detached places I certainly would apply it—in places where you would otherwise have to treat it chemically.

3441. *Mr. O'Sullivan.*] You appear to think that the separate system will not be a success in Sydney? As I understand the separate system, it would not. There are two kinds—the absolutely separate system, and the partial separate system.

3442. I am talking now of the absolutely separate system as advocated by Mr. Henson. You appear to think that that would not be a success in Sydney? I am positive that if it were introduced the whole thing would prove a failure in a few years.

3443. I suppose to work it throughly we should require a large quantity of water? That is one of the objections against it. In summer-time you would require a larger quantity of water to flush the drains and wash out the sewer gases than you would if you used the rainfall.

3444. Would there not also be another danger that damage might be caused through the streets being flooded owing to the convergence of a number of drains into one particular street? Having a duplicate set of pipes?

3445. Yes? There would not be a danger from that, because the storm-water sewers would be made large enough. There would be a danger in this way, that if there were two sets of pipes a man might connect with the one nearest to him, which might be the storm-water sewer, and then his sewage instead of going on to the sewage farm would go into the harbour. From my experience at the inlet house, Cook's River, the first rush of water is foul enough to go into any sewer, and in fact should not be allowed to go into the water-courses. I can say this without fear of contradiction. One morning at two o'clock, when I was in the house, and there was no sewage coming down the sewers, a shower of rain occurred and I can assure the Committee that the water coming down the sewer was as bad as the sewage. After a time the organic matter was washed out, and the water was pure enough to go into the river. The first shedding should not go into a storm-water sewer.

3446. You also apprehend a danger from the ignorance of servants who might allow the slops to go down the wrong channel? That is one fatal objection.

3447. Mr. Henson imagines that that could be prevented by the regulations of the Water and Sewerage Board;—do you think that in spite of those regulations there would be that danger? I think so. In England they have the best system of by-laws possible and yet their engineers find that their work cannot be carried out because of this difficulty. I think the system also puts the public to an unnecessary expense.

3448. *Mr. Trickett.*] I presume that, with the absolutely separate system, it would either be necessary to have a second pipe for the purpose of carrying off the storm waters, or to have very wide water-channels through the streets? Yes; you must have one or the other.

3449. A second sewer, or wide water-channels in the streets, similar to those which they had in Melbourne? Just so.

3450. In Melbourne after heavy rains the streets are frequently flooded, and loss of life has taken place? Just so.

3451. You have made a number of subsidiary sewers in Redfern? Miles of them.

3452. What size have you made them? They vary. The largest sewer would be 24 inches in diameter.

3453. What length of street would that be? Probably on a very flat grade. A steep grade reduces the size of the pipes. The 24-inch pipes would be in the main branch. The subsidiary sewers are, with few exceptions, not larger than 9 inches.

3454. Has experience in Redfern proved that the 9-inch pipes are quite sufficient to carry off the excreta and house slops? Yes, and the rainwater from the roofs.

3455. In a street half a mile long with a fair incline, would a 9-inch pipe be sufficient to carry off the sewage from a pretty thick population? Yes, provided a suitable grade is obtainable.

3456. Has experience proved that in Redfern? Yes.

3457. There have been no cases of the pipes being blocked up? No, and we have had them pretty well tested.

3458. Even during the last heavy rainfall the pipes were not blocked up? A 9-inch pipe that drained quite 600 houses was not even half-full. My calculations in many instances give a 6-inch pipe as ample, but it is not advisable for practical purposes to put down less than a 9-inch pipe, because there are many things to be considered, such as stoppages.

3459. In Redfern are there many manufactories that discharge their water into the sewers? Yes; Redfern and Alexandria are almost a city of manufactories.

3460. What kind of manufactories are there? Jam manufactories, boot and bedding manufactories, and others.

3461. Using steam power, and a large quantity of water? Yes.

3462. Notwithstanding that, these pipes have proved sufficient? Ample.

3463. Mr. Stayton, when examined, was asked this question—

> 665. What is the estimated cost of the subsidiary sewers? £1,000 a mile is the average. I have taken it at that rate, which makes a total of £300,000 for the first section.

What I wish to ask you is this. In constructing the subsidiary sewers in Redfern are you able to state whether that is a fair average cost for such work? Yes, for the sort of ground we shall have there, I think Mr. Stayton is well within the mark. It is a very fair estimate.

3464. It is not likely to cost more than that? I think not. There is a probability of the work being done much more cheaply.

3465.

3465. Did you come across very much rock at Redfern? Yes. The nature of the excavation of course will rule the price of the work.
3466. Judging from the other localities which have to be treated under Mr. Stayton's system, do you think the cost is likely to exceed an average of £1,000 a mile? I think not, because out there there is very little rock, except where the main ducts go. The reticulation pipes are not required to be very deep. They will probably not have to be more than 7 or 8 feet deep. That is the reason why I am sure that this is a fair estimate.
3467. *Dr. Garran.*] All the reticulation pipes will be stoneware pipes? Yes.
3468. Will any part of the main ducts be stoneware pipes? No; except the top part near Strathfield, where 24 and 18 inch pipes can be used.
3469. Stoneware would not be safe for a main sewer? No. They never make stoneware pipes larger than 24 inches, and you might want a 3-foot sewer. It is cheaper to work with concrete.
3470. Will these sewers be made of concrete and brickwork? Yes.
3471. What is the smallest? 3 feet 6 inches.
3472. What is the difference in price? ——
3473. Do you intend to use concrete? Yes. Concrete is replacing brickwork altogether. All sewers which we are making now are of concrete.
3474. Is the Bondi sewer of concrete? Yes.
3475. Is it found to be more satisfactory than brick? Yes.
3476. Taking that as a guide, the bulk of the main ducts would be in concrete? Yes. We can reckon it at so much a chain.
3477. What makes you think that the price of work may be cheaper? Competition, and the prices going down.
3478. Is cement at a moderate price now? At a very fair price. In England it costs 6s. to 8s. a cask, while out here it costs 15s. There is no doubt that when the supply increases the price will decrease.
3479. Have you considered the Balmain portion of this scheme? Not in detail.
3480. You could not say whether it is better to take what we can by gravitation or make the whole a low-level system? As a general principle, I say take all you can by gravitation.
3481. That will be expensive because of the rock tunnelling? Yes; the tunnelling is expensive.
3482. But you think it is cheaper to take one main sewer than two side contour pipes? I think so. The whole of the low-level sewage could be worked up by a Shone ejector. If you turn the whole of it into one pumping-station you have the whole cost of the lifting.
3483. You do not think there will be any serious difficulty with the two syphons between Balmain and the Bondi sewer? I do not think so. The Cook's River syphon is working so well that it justifies me in saying so.
3484. The bottom of the syphon is always full? Yes.
3485. You can blow it out whenever you wish? By impounding the water at the top end you can get an extra head of 6 feet.
3486. That is enough to scour it? Three feet would scour it out.
3487. Is the syphon under the Parramatta Road, near Newtown, at work? No; it is awaiting the consideration of this scheme. Directly the Committee report upon it we shall commence on the Balmain and the Glebe portions.
3488. The Prince Alfred Hospital sewer goes the other side of the syphon? Yes.
3489. There is no sewage going down on the Newtown side? No.
3490. So you have not tested the syphon? Not with sewage.
3491. In case of a stoppage you have a valve by which you could discharge the drainage into the bay? Yes.
3492. The other syphons are constructed in the same way? Yes. Whenever we cross a creek we have a chamber into which to discharge the sewage while repairs are being effected.
3493. So that the syphons can never be blocked up? They can never be blocked up.
3494. *Mr. Copeland.*] Are the sewage pipes which you laid down made of earthenware? They are stoneware pipes.
3495. Where are they manufactured? At Fowler's, Goodlet and Smith's, and other places.
3496. All locally? All locally. We test all the pipes that we get.
3497. Are they set in cement? If the ground is very bad we make a foundation of concrete. The pipes are laid upon that, and jointed up with a ring of gaskit; the joint is then filled up with cement.
3498. So that the pipes are made perfectly water-tight? Yes.
3499. And gas-tight? Yes. I may say that we put a length of pipe through a swamp, and when it was filled in there was no water in the pipe.
3500. With reference to the sewer-gas that generates in the pipes, is it of a greater or less specific gravity than air? It would be heavier—it is carbonic acid and other gases. There is, however, a difference between sewer-gas and sewer-air. The sewer-gas is a totally different thing, and if it does generate it has no right to.
3501. The gas will be generated in the sewers? Possibly in the outfall sewer, but not in the subsidiary sewers. It takes from twenty-four hours for matter to decompose, and in that time it should have been conveyed out to the ocean, or on to the sewage farm.
3502. But supposing there should be a stoppage. You were speaking just now about the escape of this gas. If the gas is of a greater specific gravity than the atmosphere, how can you get a current to remove it? That is one of the anomalies of sewage-gas, that the heaviest gas rises. It is according to the law of diffusion of gases.
3503. Is there not a possibility that it is forced up out of the sewers by the air below it, but that when it leaves the shaft its greater specific gravity causes it to sink? Although it is heavier than the air, it ascends, according to the theory of diffusion.
3504. Assuming that you have ventilating shafts, after the gas has left those shafts, would it not be liable to sink down to the earth again? It gets oxidized and diffused, and diluted, and is not dangerous.
3505. It would be diffused as I understand if it were lighter and rose; but as soon as the gas gets away from the current of air in the upcast shaft, if there is no other current, as on a frosty night, will it not come down again? If it came down, it would be diluted, and would be harmless.
3506. You do not anticipate any bad smells from the gas? No. 3507.

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3507. Have you ever experimented with the ventilator popularly known as the Smelling Bottles for a mean Mr. Thornton's; I think that is more use as a monument than anything else. It is usele sewer-gas shaft. It does not affect the sewers beyond 300 feet away from it.
3508. You are not aware of any bad smells emanating from that shaft? No.
3509. You do not think there is any danger to be anticipated from the descent of the sewer gas? No. I think it would be perfectly safe to put shafts above the roofs of houses.
3510. How high? The Act says that the top of the ventilating shaft must be 6 feet above the highest point of the roof.
3511. That is where they are attached to houses; but what height must they be when they are separate? That would be according to circumstances. In a locality where the ground was high and open you would not be required to take the ventilating shafts up so much.
3512. You said it would be necessary to resume some land for the main sewers? I said that that was possible.
3513. Do you not think that it is desirable that these lands should be resumed as soon as possible? I think so. Eight years ago I recommended to Mr. Bennett that extra land for a sewage farm should be resumed, which we want now for the Western Suburbs. It was then so much an acre; it is now so much a foot.
3514. The longer it is left the more you will have to pay for it? Yes; but I must say that the public are meeting the Department very well by giving us permission to go through their land without paying compensation.
3515. You are not aware whether the Government have taken any steps towards resuming the whole of the land along the course of the drains? No.
3516. Is it your opinion that steps should be taken to resume that land as soon as it is decided to carry out the work? Yes; I should resume it.

Frederick Hammer, Esq., Surveyor and Draughtsman, Sewerage Branch, Department of Roads and Bridges, sworn, and examined:—

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3517. *Dr. Garran.*] Are you engaged in the Sewerage Department? Yes, at the head office.
3518. Were you engaged under Mr. Stayton at the time he made these plans? Yes.
3519. What service did you render to him? I prepared the plans and estimates.
3520. Were you engaged on the ground in surveying? No.
3521. Your work has all been in the office? Yes.
3522. Have you taken out all the quantities as to the depths of all the cuttings and all the work in the tunnels? Yes.
3523. You have estimated all the brickwork? Yes.
3524. And all the stonework? Yes.
3525. And all the earthenware pipe work? No, only partially.
3526. Did Mr. Stayton make his calculations on the basis of the figures you gave him? Yes, he approved of them.
3527. Did he check any of your calculations? All my calculations.
3528. Did any one else besides Mr. Stayton check your calculations? No.
3529. Did you go over your own calculations yourself more than once? Twice, and sometimes thrice.
3530. You are reasonably sure that the estimate of expenditure is a correct one? Yes.
3531. Did you also calculate the rate that would have to be paid to cover the expenditure? I simply checked Mr. Stayton's figures.
3532. You are familiar with his report? Yes.
3533. You will observe on page 22, when he was dealing only with the main works, and fixed them at £830,000, he reckoned that the rate would be from 6d. down to 5d. in the £ per annum? Yes.
3534. I now draw your attention to C 3 in the Appendix, where he estimates that by taking sixty years to repay the debt the rate will be 6½d. in the £ on the larger sum of £1,817,896? Yes.
3535. So that you see the estimate is 5d. in the £ on £830,000? Yes.
3536. And only 6½d. in the £ on an estimate of nearly £1,000,000 more? Yes.
3537. Have you checked both those calculations? I checked the calculations; but I cannot remember whether it was exactly on that sum, though I think it was.
3538. You see that the larger sum is the amount that the work will cost when all the reticulation is included? Yes.
3539. Therefore we have to make the rate on the larger amount? Yes.
3540. Do I understand that you are clear in your own mind that 6½d. in the £ will pay the rate, interest, and principal in sixty years on the large amount, or would you like to recalculate it? I think Mr. Stayton's calculation ought to show it, but I should like to check it.
3541. Have you his calculation? Yes.
3542. Could you look it through and send to the Committee a statement as to whether it works out this result? Yes.
3543. What the Committee wants is some check on Mr. Stayton's calculation to satisfy them that 6½d. is the correct estimate, and that it will pay off the principal and interest on the outlay.
3544. There are three estimates in the Appendix;—one calculated under the existing Act for a rate of 9¼d.; another, under the Amending Act, for a rate of 7d.; and a third, with interest at 3½ per cent. and repayment in sixty years, for the rate of 6½d. The Committee want to know whether that last amount will be the rate necessary to pay off £1,817,000? Yes.
3545. Your work is solely in the office? Yes.
3546. You have no particular business with the contractors? No.
3547. You took the current prices paid from the gentlemen who have charge of that part of the work? Yes.
3548. So far as you have noticed the prices given to you, they are the prices paid by contract? Yes.
3549. You have been able to check that? Yes.
3550. So that you are able to say that at present prices of the material and labour this work could be done for £1,817,000? It depends upon the market prices.
3551. Taking the present prices? I think it ought to be.

3552. You have worked all this out at these prices? Yes; I took the average of three or four contracts.
3553. Assuming that these contracts would not cost more than current contracts, the work could be done for this amount? Certainly.
3554. And if the Committee were to say £2,000,000 for this, you feel reasonably sure that that amount would be within the margin? It should be within the margin.
3555. What is the plan which you produce? It shows the low-level system.
3556. The blue patches show where the sewage will have to be raised to get it into the main sewers? Yes.
3557. What are the pink patches? They show part of the low-level system.
3558. What is the marking in Balmain? Also low-level, and will have to be pumped.
3559. Roughly speaking, one-fifth of the whole area dealt with by the scheme will have to be pumped? About one-fifth.
3560. *Mr. Trickett.*] How long have you been in the Department? Since 1881.
3561. Where were you before that? In Germany.
3562. Has this been your business all your life? No; I have been connected with various engineering establishments.
3563. In what capacity? As constructing engineer. I was three years at locomotive works, and some years in a shipbuilding yard.
3564. You have had considerable experience in calculating works of this kind? Yes.
3565. Has this been your chief work since you have been here? Yes, principally.
3566. How did you get the information to enable you to arrive at the cost? I made cross sections of the sewers, and calculated therefrom the various quantities, such as excavation, concrete, brickwork, &c., appertaining to an estimate.
3567. But the length of the sewers and all that kind of thing was supplied to you by someone else;—you did not make the actual survey? No; the length was taken from the map.
3568. Did you take those tunnels? Mr. Stayton and I took the various lengths of tunnels and cuttings from the plan.
3569. You went into all the details—the length of the streets and the sewers—and so on, and worked them out by scale to get at the estimate? Yes.
3570. And went into the matter carefully? Yes.
3571. Have you had experience of drainage works on a large scale elsewhere? No.
3572. Have you read much about the subject? Yes.
3573. What do you think of the scheme generally? I think generally it is a very good scheme. Probably a few improvements might be made.
3574. Only in matters of detail? Yes.
3575. Taking this as a whole, you think it is the most advisable of all the modern schemes for draining a large area like the western suburbs? Yes.
3576. *Mr. Humphery.*] How did you arrive at the cost of the subsidiary sewers; Mr. Stayton provides for about 400 miles? Mr. Stayton made the calculations; I made no estimates for subsidiary sewers.
3577. You do not know how he arrived at his estimate of cost? No; but the probability is he calculated the cost of miles in various localities and averaged it.
3578. Did he know what he would have to average, what depth? The excavation will be very little, and would not exceed the usual depth in pipe laying.
3579. Have you ascertained how he fixed the depth for these subsidiary sewers? No.
3580. It is only an approximate estimate at best? I do not know. Mr. Stayton did his own calculation; I was otherwise engaged.
3581. You do not know whether anyone checked the calculation? No; but I think it is reliable.
3582. You think the estimate for the first portion;—for the main drains is ample? Yes.
3583. You speak from your knowledge of the cost of work which you have gained in the Department? Yes.
3584. You think ample provision has been made in Mr. Stayton's estimate? Yes.
3585. *Mr. Garrard.*] The plan you produce dealing with the low levels only embraces a very small portion of some districts, such as Five Dock, and Concord, for example? Yes.
3586. What is it proposed to do in future with the remaining portions. The area you bring under the map is very small? The remaining portions are excluded, and will have to be specially considered afterwards.
3587. They are excluded because there is no population there? I think that was Mr. Stayton's main reason. He pointed that out to the Council.
3588. Much of it could be brought in by gravitation to the main sewers? The levels are too low.
3589. Valleys intervene between the present system and that cut off, necessitating either an aqueduct or a pumping station? Yes, valleys intervene, and I believe it was intended to deal with the excluded area by a separate system, as the proposed mains are not calculated to carry this sewage.
3590. Do you know anything of an alternative scheme for dealing with Balmain as a low-level system? Yes; the low-level system is shown on a special map.
3591. But we have been told that this system will not serve a great deal of Balmain, and Mr. Stayton said that he had an alternative scheme to make the whole of Balmain, and a portion of Leichhardt a low-level system, and raise the drainage by pumping? The alternative scheme referred to is that shown on the special map.
3592. Do you think it would be better to make the whole of that district—namely, Balmain and the low-lying portions of Leichhardt part of this scheme and pump the sewage into the main outfall sewers, or to deal with it locally? I would bring it into the Bondi sewer.
3593. By pumping? By gravitation, and by pumping the low-levels.
3594. You do not favour the idea of making the whole of Balmain part of a pumping system? No.
3595. Have you given any attention to the purification of sewage by electricity, or in any other way? I have only heard of it from Professor Threlfall's report.
3596. Your work has been confined to making calculations in the office from data supplied by yourself, or someone else? Yes.
3597. Who has taken Mr. Stayton's place in the Department? Nobody.
3598. Has not somebody been recently gazetted as Assistant Engineer for Sewerage? No.
3599. Was not Mr. Stayton classed as Assistant Sewerage Engineer? He was. He was specially appointed to get out the Western Suburbs scheme.

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3600. And was he next in command to Mr. Bennett in sewerage matters? Yes, as regards the Western Suburbs sewerage scheme.
3601. What position did Mr. Bagge occupy during that time? Mr. Bagge was and still is Chief Assistant Engineer for Sewerage. He had to do with the construction of the Bondi sewer.
3602. He was in charge of the construction? Yes.
3603. Is Mr. Bagge in charge now not only of construction, but also of general designs? Yes.
3604. Were you next in position to Mr. Stayton in preparing this scheme? We were the only two.
3605. Had you no assistants? No.
3606. Excepting the surveyors in the field, I suppose? Yes.
3607. You were furnished too with the prices of current contracts? I obtained the prices from the head office.
3608. From the office records? Yes.
3609. I understand that you do not anticipate any increase in those prices in carrying out the work? I think not.
3610. I think you have told Mr. Trickett that you have read extensively on the subject of dealing with sewage? I have read something of it.
3611. Have you given any attention to what is called the separate system? Yes.
3612. Do you favour that system as against the partially separated system? I prefer the partial system.
3613. Do you know anything about Captain Liernur's system? I have read something about it, but it is not much favoured on the continent.
3614. You have not seen it in actual operation? No.

William Dugald Campbell, Esq., Assoc. M. Inst. C.E., Surveyor and Draftsman, Sewerage Branch, Department of Roads and Bridges, sworn, and examined :—

W. D. Campbell, Esq., Assoc. M. Inst. C.E. 15 Aug., 1889.

3615. *Dr. Garran.*] Are you in the Government Service? Yes, in the Sewerage Department.
3616. Under whom? Under Mr. Smail, immediately.
3617. What experience have you had in sewerage works? I have had experience in London under Mr. Louis Angell, who is the engineer to the West Ham Local Board. We did a good deal of sewerage work in the district, and I subsequently made out the drawings for the drainage at Maidstone, on the separate system for him. I afterwards obtained a premium for one of the best designs for the drainage of Seven Oaks, in public competition. I have reported upon two towns in New Zealand since.
3618. *Mr. Garrard.*] Where are they? Hamilton and Hokitika. Altogether I have had sixteen years experience as a qualified engineer. I have examined Mr. Stayton's design, and I think it is suitable, more particularly so, as the configuration of the ground is such that it facilitates the rapid discharge of storm-water. The system that Mr. Stayton advocates is, I think, the best that can be adopted.
3619. *Dr. Garran.*] You would not change his system from one of partial separation to one of complete separation? No. I think that his is the only workable system owing to the heavy rainfall. Indeed there is no precedent for the absolutely separate system, with two sets of pipes for house connections.
3620. You said just now that you had dealt with Maidstone on the separate system? Yes, on what is known as the separate system. What is generally known as the separate system is that which Mr. Stayton calls the partially separate system. I looked through a number of accounts specially to refresh my memory upon the subject. The writers repeatedly describe instances where they have carried out the separate system, and they say that they have admitted the roof and yard water. I know of no instance, unless perhaps it is at Henley, where the absolutely separate system is carried out, but I do not think the system there could be considered as an absolutely separate system.
3621. Have you checked Mr. Stayton's calculations at all? I have looked into his figures of the population and rainfall, and such matters pertaining to construction, but I have not gone into the prices at all.
3622. Did you make calculations as to the rate that was necessary? The interest.
3623. Yes? No, I have not. I should like to say that the rate Mr. Stayton intends to adopt in taking the rainfall of the yards and roofs is about ·22 of an inch rainfall over the entire area, and that is almost equal to what the London sewers are calculated for, which is $\frac{1}{4}$ inch per day, but there all excess is discharged into the Thames by storm over-flows, after it has been contaminated by the sewerage.
3624. Have you made any estimate as to what the yard and roof area is as compared with the whole area? Yes, taking Mr. Stayton's figures at 34·11, it comes out at 15·66 per cent.—that gives ·22 of an inch over the entire area.
3625. We shall have 15 per cent. of the rainfall in these pipes? No. 15 per cent. of the entire area.
3626. The yard catchment is rather greater than the roof catchment? Mr. Stayton takes it at the same.
3627. In a place like the Western suburbs, where there are so many gardens, it surely would be greater A great deal is absorbed into the ground. I think Mr. Stayton is quite correct in taking that proportion, because where there is a large area there will be absorption, and the water will not reach the sewers at all.
3628. On the whole he takes the size of the yard as equal to the size of the roof? Yes.
3629. *Mr. Trickett.*] I understand that with the separate system if a place becomes more thickly populated the inconvenience of getting rid of the storm-waters would become greater, the greater the number of houses and the more the yards are paved the sooner the water is collected? It varies according to the nature of the ground.
3630. Supposing the place were thickly built upon the storm-water would flow along the streets in much greater quantities than if there were only a few houses, and the water was absorbed into the earth Provision is always made for a future population in laying down a sewer.
3631. Has that provision been made here? Yes.
3632. Looking at the requirements of the future as well as the requirements of to day, does this scheme sufficiently provide for getting rid of the water from roofs without a probability of the sewers becoming too small for the purpose. Do you think this matter has been well considered? I think the provision s sufficient. The reticulation is a matter which is not minutely described in Mr. Stayton's report however.
3633. Did you say just now that to your knowledge the house-water did not go into the sewers by the separate system, or that it did? No towns with which I am acquainted have adopted a separate system of sewerage in which the rain-water from the roofs and the yards does not go into the sewage.

W. D. Campbell, Esq., Assoc. M. Inst. C.E. 15 Aug., 1889.

3634. The same pipe is used for both purposes? Yes.
3635. Have you read of the separate system in America? No, I have not.
3636. You do not know anything of its working there? No; I have been acquainted with it in England, where it has been used for a great number of years. Tottenham was the first town that was drained under the separate system—in 1851. The system was similar to the one Mr. Stayton proposes here. Halstead was similarly sewered in 1863; and Canterbury, in 1868, partly. Since then a number of towns have been sewered on this principle.
3637. It is not really the separate system but the partially separate system? Yes, what Mr. Stayton calls a partially separated system.
3638. *Mr. O'Sullivan.*] Then the system which we are given to understand is a separate system exists only in theory? I think so.
3639. You know of no instance where the totally separate system has been applied in Great Britain? Henley is the only place I know of.
3640. Even there it is not an absolutely separate system? No, they take the back-yard water I understand.
3641. From your experience and knowledge you think we are perfectly safe in adopting the system proposed by Mr. Stayton as the best for the City of Sydney and the Suburbs? I think so taking everything into consideration.

WEDNESDAY, 21 *AUGUST*, 1889.

Present:—

The Honorable JOHN LACKEY (VICE-CHAIRMAN).

The Hon. ANDREW GARRAN.	JAMES EBENEZER TONKIN, ESQ.
The Hon. FREDERICK THOMAS HUMPHERY.	WILLIAM SPRINGTHORPE DOWEL, ESQ.
The Hon. WILLIAM JOSEPH TRICKETT.	EDWARD WILLIAM O'SULLIVAN, ESQ.
JACOB GARRARD, ESQ.	JOHN HURLEY, ESQ.

CHARLES ALFRED LEE, ESQ.

The Committee further considered the proposed Drainage Works for the Western Suburbs.

Frederick Hammer, Esq., Surveyor and Draftsman, Sewerage Branch, Department of Roads and Bridges, sworn, and further examined:—

F. Hammer, Esq. 21 Aug., 1889.

3642. *Vice-Chairman.*] You were examined before this Committee upon the Western Suburbs Sewerage scheme at our last meeting, and you now produce a statement supplementing the evidence which you then gave? Yes. [*Vide Appendix* L.]
3643. You now state upon oath that to the best of your belief the contents of this paper are true? Yes.
3644. Are there any further observations which you would like to make? I must state that the £2,200,000 in 1894, and the £3,300,000 in about seventeen years' time, is a fair estimate. The £2,200,000 in 1894 is about 5 per cent. of the ratable value in 1887, and the amount in about seventeen years' time is about 4½ per cent. of the ratable value in the same year.
3645. Those figures are contained in the statement you produce? No, but they are the results of calculations made after the completion of the statement I produced.
3646. *Mr. Humphery.*] £3,300,000 will be the ratable value of the property at the time when it is estimated that the work will be completed? Yes.
3647. The rate will have to be paid upon £3,300,000? Yes. It will be about 3 per cent. under the amended Act.

APPENDIX.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

(Drainage Works for the Western Suburbs.)

APPENDIX.

[*To Evidence of J. Barling, Esq.*]

A.

SEWERAGE AND DRAINAGE OF THE WESTERN SUBURBS.

Meeting of Representatives of Municipalities.

Sir, Department of Public Works, Sydney, 9 January, 1889.

Referring to the evidence given by me before your honorable Committee on the subject of the Sewerage of the Western Suburbs, in which I referred to a meeting of representatives of the various municipalities interested which had taken place, I have now the honor to request permission to have the enclosed report of the proceedings at the meeting referred to added as an appendix to my evidence.

I have, &c.,

The Honorable John Lackey, M.L.C., Chairman of the Parliamentary Standing Committee on Public Works.

J. BARLING. Under Secretary.

A MEETING of representatives of the various municipalities concerned in the Western Suburbs Sewerage Scheme was held in the Board Room of the Public Works Department, on the 6th December, 1888. The following is a copy of the letter convening the meeting, which was addressed to the several Mayors :—

Dear Sir, Department of Public Works, Sydney, 30 November, 1888.

As the proposals of the Government respecting the sewerage of the Western Suburbs will probably come before the Parliamentary Standing Committee on Public Works some time during the latter part of next week, Mr. Sutherland suggests that it would be as well for those immediately interested to have an informal meeting with the Government Engineers who have prepared the plans, &c., so that all the witnesses who will be called will have the advantage of becoming thoroughly acquainted with the scheme in all its details.

I am therefore to invite you, and any of your Aldermen who may desire to come, to meet Messrs. Bennett and Stayton at this office on Thursday next, the 6th December, at 10 a.m. If you could bring with you any statistics as to cost of the removal of night-soil, &c., by the system at present in operation in your borough, it would be of great assistance.

I have, &c.,
J. BARLING,
Under Secretary.

The following gentlemen amongst others attended :—Joseph Abbott, Esq., M.P. ; J. H. Carruthers, Esq., M.P. ; W. L. Davis, Esq., M.P. ; N. Hawken, Esq., M.P. ; J. S. Hawthorne, Esq., M.P. ; W. Henson, Esq., M.P. ; A. Hutchison, Esq., M.P. Ashfield—Alderman T. Dean (Mayor), Alderman J. Mills, Alderman J. A. Lyttle. Alexandria—Alderman J. R. Dacey (Mayor), Alderman John Turner, Alderman John Harden. Burwood—Alderman H. Lipscomb (Mayor), Alderman R. W. Hardie. Camperdown—Alderman Sparkes, J.P. (Mayor), Alderman Abigail, J.P. Canterbury—Alderman J. Quigg, Alderman P. J. Scahill, Alderman A. Brown. Leichhardt—Alderman Sadler, Alderman Moore, Alderman Walsh, Alderman Neale, Alderman Winkle. Macdonaldtown—Alderman John Baldwin (Mayor), Alderman J. Peake, Alderman H. Knight, Alderman J. Jacobson. Marrickville—Alderman Charles Moyes (Mayor). Strathfield—Council Clerk, Mr. J. H. Balmain.

The Chair was taken by the Hon. John Sutherland, Secretary for Public Works, who, in opening the meeting, stated that its object was—First, to elicit the opinions of the Municipal representatives on the scheme prepared by the Government ; secondly, to hear any objections which any of the gentlemen might have to urge against the scheme, and answer any questions which the meeting might desire to put ; and thirdly, to obtain the names of witnesses who were prepared to give evidence in favour of the Government proposals.

With regard to the first matter, the Chairman pointed out that the scheme prepared by the Government provided for the sewerage of nineteen municipalities, viz :—Alexandria, Ashfield, Balmain, Burwood, Camperdown, Darlington, Glebe, Macdonaldtown, Marrickville, Newtown, Petersham, Redfern and Waterloo, Canterbury, Concord, Five Dock, Leichhardt, St. Peters, and Strathfield ; but that three of those municipalities, viz., Darlington, Redfern, and Waterloo, were not immediately affected, as works for outfall sewers had already been provided. He further stated that copies of the report and sketch-plan referring to the scheme were sent to the boroughs concerned early this year, and up to the present time the following municipalities had expressed approval, viz. :—Ashfield, Burwood, Camperdown, Macdonaldtown, Marrickville, Newtown, St. Peters, and Strathfield.

With regard to the second matter, as the question involved was of the utmost importance to the welfare of the citizens, and affected both the sanitary conditions of their neighbourhood and also intimately concerned their pockets, Mr. Sutherland said he should be glad to have the fullest discussion on the subject. The Government engineers were present and would be prepared to give any information, and answer any

 questions ;

questions; and should any gentleman have objections to offer against the scheme, it would be the most favourable opportunity for ventilating them, and the Department would endeavour, as far as possible, to meet objections. Whatever took place, the fullest discussion, whether for or against, was, he said, invited.

With regard to the third matter, Mr. Sutherland stated that, while it would be one of the objects of the meeting to obtain the names of those gentlemen who were prepared to give evidence in favour of the scheme, and these need not be confined to those of the gentlemen present, or who were members of Municipal Councils, the Government did not for one moment wish it to be understood that they wanted to burke discussion, and it would of course be within the province of anyone who wished to give evidence against the scheme to appear before the Committee for the purpose.

He then stated he would call upon Dr. MacLaurin, the Government Medical Adviser, to give his opinion as to the urgent necessity for the sanitary measures proposed, and afterwards call upon Messrs. Bennett and Stayton to fully explain the scheme, and answer any questions which the meeting wished to put, and then obtain the names of the witnesses.

Dr. MacLaurin said: The question of the disposal of night-soil from the western suburbs has received great attention for sometime past, and he, himself, had taken an interest in the matter for more than three years, as Medical Adviser to the Government. At present, the principal way of disposing of night-soil in many parts of these suburbs was by burying, and it was now hardly possible to find any place sufficiently isolated and accessible to be suitable for this purpose. Hence it was clear that some measure must be introduced, embracing a scheme which should be general and comprehensive, for the whole of the western municipalities. It was impossible to go on as we are doing at present, as the population was increasing so rapidly that the present state of matters could not continue without causing great inconvenience. It was scarcely necessary to bring forward any arguments in this connection from a sanitary point of view as it was well known what injury would arise from an accumulation of foul matters in many ways, and particularly by contaminating the water-supply. The evil results of the accumulation of fæcal matters show themselves in two ways—first, by the existence of typhoid fever, and, secondly, by the high rate of mortality of young children under 5 years of age. With respect to both of these matters, it is very clear that the health of the suburbs is not what it might naturally be expected to be. There was a table prepared some time ago by the Board of Health which gave the relative mortality from typhoid fever between the city and suburbs, and although they would not be justified in taking these statistics as giving the absolute sickness from typhoid fever, still they might be assumed to convey a good general idea of the relative health of the different places. It would be seen from this table that whereas the death-rate in Sydney from typhoid and other infectious fevers was at the rate of 4·38 per 10,000 of the population, in the north-western suburbs it amounted to 9·48, and in the west central suburbs—that is to say, Newtown, St. Peters, Camperdown, and Macdonaldtown,—it amounted to 12·44.

Now, one would have expected that in these suburbs, where the population was not so dense as in the city, and where the allotments were larger, the death-rate, instead of being higher, would not have been so high as in the city, and the fact of the present high death-rate of the suburbs was therefore strong evidence as to the necessity for the adoption of improved sanitary measures.

The other point which he mentioned was with regard to the high rate of mortality of children under 5 years of age. According to Mr. Stayton's report the death-rate of children in the suburbs has exceeded that of the city since 1880. It might have been expected that the suburbs would have been more healthy than the city, yet the result has proved to be quite the other way.

When we considered, therefore, that the death-rate from typhoid fever in the western suburbs and the death-rate from infantile complaints were both of them excessive, and when we considered further that these were the natural results of an improper accumulation of fæcal matter, he thought there could be no doubt that the Government were justified in bringing forward a scheme which should be suitable as a general provision for the removal of night-soil from the whole of the western part of the metropolitan district. Such a scheme as that proposed by Mr. Stayton would in all likelihood reduce the excessive death-rate of the suburbs, and he thought it was one with which they should all agree.

Dr. Ashburton Thompson then spoke as follows in support of the Government scheme:—"Mr. Secretary Sutherland, your Worships, and gentlemen,—None of you, I am sure, have come here to-day prepared to argue that sewerage is unnecessary in any of the districts over which you preside. The convenient and cheap disposal of slop-water is the question which probably has given you most trouble to answer during the past few years; and although the matter has been earnestly debated from time to time, nothing practical has resulted. This has happened, I believe, not from want of earnest good will, but because it has gradually come to be seen that nothing but a scheme of water-carried sewage would meet the case. But to regard this matter from the standpoint of convenience alone is to take a superficial and therefore inadequate view of it. It is true that, with the steady and rapid increase of population, it has become more and more plain that the present unsystematised methods of nuisance removal could not much longer be followed; but in the prevalence of fevers—and this prevalence has been steadily kept before you—there is evidence that not comfort alone is being sacrificed, but life itself. I say that this has become clearer as the population has increased in density, and that is a phenomenon which has been observed everywhere. Sanitation is very fitly described as the art of living in towns. Inhabitants of isolated country dwellings can with small trouble keep their houses free from sources of illness; but as soon as houses begin to accumulate in towns, and in proportion as they so accumulate, the problem of cleanliness becomes more complicated, and cannot be solved without carefully organized co-oporation. Well, you have seen this, and you have co-operated to the best of your powers, and you have done very much valuable work. I am onxious to take this opportunity of acknowledging it, for the course of my duty has obliged me sometimes to find fault; and yet I am very well aware of the restrictions under which you labour, both in respect of powers and in respect of revenues heavily weighted with various charges. But, with your very best endeavours, what is the result? Are you not, after all, obliged to make the best of a number of intollerable nuisances—of open sewers, of garbage heaps, of night-carts? And, with that, what is the net effect of your efforts on the public health? Why, after doing the best you can do under the circumstances, I can tell you that the city and suburbs together, upon an average of ten years past, have an

an infantile death-rate of 173 per 1,000; and that that is a rate no less than 13 in the 1,000 above the rate for London. Now I must explain that I choose this infantile rate for several reasons which I need not enlarge upon now. I need only say that it is generally regarded as the best available test of the public health, in default of very elaborate calculations; for the delicate organisms of the very young respond readily to the influence of their surroundings, and succumb readily when that is unfavourable. And then I choose London for the standard of comparison for several reasons again, but among others, because in fact it is a very low standard for us, and one which we ought to excel so far that for purposes of comparison it would be useless to us, for London is a large town, and death-rates are observed to bear a constant ratio to the density of populations; the larger a town becomes the more unfavourable to infant life are many of its conditions. We, on the other hand, have a thousand advantages over the people of London, besides that inestimable advantage of a greatly lower rate of density. This being so, it may be said that London should have a much higher death-rate than we have, or rather that we should have a much lower one; and yet, in fact, notwithstanding the density of the population, the position is reversed—in truth, the London rate is lower than ours. What then has intervened to bring about this result—to counteract the bad effects of a very large city? Why I repeat that what we refer to as sanitation is in fact the art of living in towns, and the difference between us and London is that that art has been cultivated there so that that city surpasses ours. We must admit that we have thrown away our natural advantages. Now this art of living in towns is merely the art of providing the unwieldy population with the means of decent cleanliness, of which, after pure water, good sewers are the most important by far. Water, by the wise liberality and foresight of the Government—water of excellent quality—is in course of extension to the most distant corners of your very large districts, and the same authority, careful of the best interests of the country, now asks you to accept its aid to get that other essential of healthy town life, good sewers. Given these in addition to the water, and I do not for a moment doubt that our infantile mortality-rate will be reduced, not to London's 160, but perhaps to something not very distantly approaching the same rate for our own country districts, which is about 98. Now I have mentioned the mortality, the death-rate—and that of infants only. You know how prevalent typhoid has been for many years; but you may not perhaps have sufficiently observed that the importance of this disease is not to be measured by the number of deaths alone, but also by the number of non-fatal attacks of sickness, and best of all by the ages of the persons seized with it. I can tell you that here this prevalent and fatal disease attacks by preference, roughly speaking, persons between the ages of 15 and 35; persons, that is to say, at ages when their usefulness is highest, their ordinary liability to death lowest, and when their sickness causes the greatest pecuniary loss to the community. But this is not the only disease of this kind from which we suffer very heavy losses; diptheria, diarrhæa, cholera, and dysentery are others of the same kind; and all of them are preventable diseases which, under the most favourable conditions might undoubtedly be almost abolished. Now, you are asked to join in spending money; and many things in the world have to be brought to the test of the pocket. Even in matters of life and death we have to consider profit and loss, ways and means. I am afraid I cannot show that the money you are now asked to spend on behalf of your individual municipalities will clearly return a profit to your individual coffers; but I think you must be ready to admit that a life saved is in reality money saved, and above that, that a diminution in the average annual number of days of sickness (such as sewerage will undoubtedly result in) is a real and great pecuniary saving. You see, a saving of seven days sickness per annum per head upon 52,000 males means in fact a saving to the community in one year of all the profit and advantage derivable from 1,000 years of toil, for every single year that that reduction is effected in that population. Now the prosperity of nations is correlative with the prosperity of its parts—say of its municipalities. I do not wish to push this argument too far, but if you spend money in reducing sickness—and you will spend it to that end if you spend it on sewers—I think you will on reflection see that this expenditure—this bread cast upon the waters—will at last be returned to you. There is another branch of this argument which it may be well just to mention. You are, each in his district, doing with nineteen seperate and independent establishments a certain work, and you know the advantages of co-operation; you know that work is better done under it, and with that more cheaply done. Now in point of fact you have, by the exertions of the Minister, an opportunity offered of co-operating for your purposes in the very best way; these sewers will render unnecessary all your expensive separate establishments. They may or may not cost a little more—I am not sure that on a careful review it would be found that they would cost more—but it may be so; against this however is to be set the fact that they will do at least twice as much work, all of it necessary to be done; and the greater part of it, the removal of slop-waters, you have found you cannot possibly do effectually for yourselves. As to the actual scheme before you it would ill become me to attempt to criticise in detail the finished work of the accomplished engineer who has prepared it. But there are many general points on which it is my duty to express an opinion, even if I may not mention the details of grades, dimensions, and velocities. With that limitation then, I beg leave to express very high approbation of it, and to recommend it to you very earnestly. I need say no more on that point at this time."

Mr. Bennett, Commissioner for Roads, said that the details of the scheme were fully stated by Mr. Stayton in his report, which had been prepared under his instructions and in accordance with the directions of the Minister for Works. The co-operation of Mr. Stayton was very valuable, because it was advisable to have the latest information from England in such matters; he had, therefore, recommended the Government to secure the services of Mr. Stayton. This was the second work of the kind he was now connected with, and he entirely concurred in all the recommendations made with regard to the proposed scheme. He had been dealing with these matters for over forty-five years, so that he was no novice. He was prepared to answer any questions. Mr. Stayton's Report, at his request and by direction of the Minister, had been forwarded to all the municipalities, and otherwise spread as widely as possible to give the necessary information. They had been fortunate in securing the approval of municipal authorities.

Mr. Stayton said he did not think he could add much to what had been stated by Mr. Bennett. He thought that from the information regarding the proposed scheme which had been supplied, and a glance at the large map or cartoon which was exhibited in the room, they would be enabled to form a very good idea of what was contemplated. If any further explanation were needed he should be happy to give it, in order that all those present might be thoroughly acquainted with the work proposed.

The

The Chairman at this stage called for questions.

1.—*The Mayor of Ashfield* asked how long it would take to bring the scheme into operation? *Mr. Bennett*, in reply, said that the date of the completion of the works would be 1894. It was proposed, however, to bring into operation parts of the works as completed before that time.

2.—*Mayor of Ashfield*: Referring to page 17 of the report, what provision would be made by the proposed scheme for the sewerage and drainage of the places mentioned when the population had increased? *Mr. Bennett*: At present the resident population was very sparse, and there was very little sewage to be disposed of. When it ultimately became necessary the sewage could be lifted into the main sewer.

3.—*Mayor of Ashfield*: Was it the intention of the Government to construct branch sewers? Would the work connected therewith have to be done by the Municipalities? *Mr. Bennett*: The estimate provided for the construction of the works as indicated on the plan. The minor sewers would be provided for afterwards as may be determined by the local bodies.

4.—*Mayor of Ashfield*: If the sewerage works of Adelaide cost £3 per head, and London £2 per head, how will this scheme be brought into operation within the limits of the estimated cost when the higher rates of our labour are taken into consideration? *Mr. Bennett*: There are two reasons for the low price estimated for the works, compared with the cost of those in Adelaide and London. In Adelaide the sum mentioned includes the whole of the works from the sewerage farm to the ventilating pipes. The scheme proposed is not so comprehensive. In London the sewers were made 30 years ago when things were not so economically managed as now. This experiment has enabled us to reduce the amount very considerably.

5.—*Mayor of Ashfield*: The greatest difficulty was with regard to the disposal of the slop-water, and not the night-soil. That they could deal with. But a large amount of slop-water flows into the creeks, which are a source of danger to the public health. Is the Government prepared to deal with this question? *Mr. Bennett*: The Government consider that provision is made by the scheme. When the storm-waters are separated from the sewage there will be nothing to be apprehended from them.

6.—*Mayor of Ashfield*: Will the cost of dealing with the storm-waters have to be borne by the municipalities? *Mr. Bennett*: Yes. It will not be provided for by the Government.

Mr. Fred. Walsh, one of the aldermen of Leichhardt, apologised on behalf of the Mayor for not having before the present time sent in the approval of the scheme by the Council; but their Mayor had thought it best to get the fullest information possible before seeking approval of the scheme. It was acknowledged, so far as his borough was concerned, that the proposed scheme would not subject the ratepayers to more taxation than they at present paid for the removal of night-soil. Or at any rate, taking the necessity of scavenging into consideration, the increased taxation in connection with the proposed scheme would be little or none. One great obstacle was the sewerage of the low-lying portions of Leichhardt. It was found that there were 6½ miles of streets which would not be served by the scheme. This area contained 332 houses, representing a population of about 1,500, who were now suffering. There was an urgent necessity for steps being taken to apply a remedy so far as the low-lying portions were concerned. He urged, therefore, that some temporary measure should be placed before the Works Committee for consideration. He suggested that the sewage to be thus dealt with might, as a temporary measure be taken into the Parramatta River, even though it had to be dredged away afterwards. It was necessary, he said, that something should be done immediately. This aspect of the question was not touched upon in Mr. Stayton's report.

Mr. Bennett said, in reference to what Mr. Walsh stated, that a great deal of the nuisance caused to the inhabitants of the low levels arose from the sewage from the higher parts flowing down. When the proposed scheme, therefore, was brought into operation, the nuisance, it would be found, will decrease very considerably. He thought he might say that the Government did not contemplate leaving such places as those referred to exposed to the evils described when the scheme was brought into operation. He thought, therefore, that the objections pointed out would be met to some extent.

Mr. Walsh desired to add that what he had remarked was not urged as an objection. They were told that the scheme would be ready in 1894; but he thought something should be done immediately to remedy the evil complained of.

Mr. Bennett said he thought the remedy in question could be applied in very much less time than that, and thanked Mr. Walsh for supporting the scheme.

Mr. Carruthers, M.P., said he wished to know which of the alternative schemes for repayment of cost it was intended to submit to the Public Works Committee, and whether the term of such would be twenty-eight years or sixty years. He considered it only fair that it should be sixty years, as it was only just that posterity should contribute towards permanently beneficial works. He also desired to know whether it was intended to make early provision for the drainage of the low waters, as referred to in Mr. Stayton's report. It would be unjust to the people concerned to allow the present state of things to continue. Another thing he wished to know something about was whether any precedent had been established for having sewerage pumping stations in the midst of a large population. It seemed to him that the effect of furnishing such information would be to allay a certain amount of suspicion and distrust. It being intended to convey the sewage to a place known as Webb's Grant, he thought it was only reasonable to inquire whether any nuisance would be caused to the municipalities in which this depôt existed.

Mr. Bennett replied that the first matter alluded to was one for the Minister and Parliament to deal with. With regard to the storm-water arrangement at Marrickville, he thought the present one was complicated by the water being defiled by the sewage. He thought the difficulty could be met by having the dam a little higher up Cook's River. With regard to the position of the pumping station, he should be happy if some one would accompany him on a visit with a view to a suitable site being adopted.

Mr. Abbott, M.P., suggested that a return showing the actual cost of removing the night-soil should be obtained from each of the municipalities. It should, he thought, also show the cost they are put to by providing for the slop-water drainage. He considered, however, that the scheme now proposed should be brought into operation. If it were so expensive as to become a burden there should, he considered, be some expression of opinion as to whether the term of repayment would be extended to a period

period within which the rates could be paid, so as to minimise the present cost. He thought posterity should be called upon to bear a share of the burden which would be imposed. He would undertake, on behalf of the municipalities in his electorate, to get the figures to which he had referred, and he hoped all the mayors and aldermen would co-operate to the same end. He would support the suggestion advanced by Mr. Carruthers as to extending the time of repayment to sixty years. On behalf of Macdonaldtown it was stated by one of the aldermen present that the Council was prepared to come forward in support of the proposed scheme. It was not, he urged, a question of cost, but of health. Whatever the cost might be, he hoped the measures proposed would be brought into operation as expeditiously as possible. What the municipalities desired was that the work should be commenced at once. He knew, as had been explained, that the people in the low land suffered from the flow of sewage from the high levels. No one Council could undertake to bring a temporary scheme into operation, as this was a question which concerned other municipalities. The difficulty, he added, was not connected so much with the disposal of the night-soil as with the drainage of the slops. The Councils in his electorate were, he understood, ready heartily to support the scheme.

Mr. Hawken, M.P., who represented Darlington, said he concurred entirely in what had been said by the last speaker. The work, he thought, should be undertaken at once. The sewerage scheme was a necessity. He suggested, that if possible, the scheme might be carried out simultaneously. He considered the cost a matter for the Treasury and the Water and Sewerage Board. They had had enough of cesspits, and the removal of night soil in the way it had been removed. He thought the Government scheme should be accepted. He quite concurred in the view that if the sewage of the upper levels was properly dealt with the evils complained in the low lying parts would be very much less than at present. The point raised by Mr. Carruthers, with regard to the pumping machinery used in the low lying parts, was an important one, as he considered there should be no nuisance created amidst the people. It made no difference whatever how long they were allowed to make repayment for the outlay. They always had the fatherly government to fall back upon. They might safely leave the matter in the hands of the Government so far as the money was concerned. He would have liked a scheme which did not necessitate pumping machinery or a sewage farm. He had seen some of these farms, and they were an intolerable nuisance for miles around. The sewage farm at Adelaide he regarded as a nuisance. He felt satisfied, however, that the whole of the engineering ability of the Colony had been brought to bear upon the scheme under review. He hoped the work would be taken in hand simultaneously in all the municipalities.

Mr. Stayton stated, with regard to pumping-stations, that his experience in London and other parts of England where they had been established, enabled him to assure them that the operations were carried on without any nuisance whatever.

Mr. Henson, M.P., said: Taking it for granted that the proposed scheme is the most efficient and the cheapest, he thought there was some mistake in the answer given to the question put by the Mayor of Ashfield, viz., that the municipalities would have to deal with the storm-water apart from the sewage. If he was correct, it was proposed to provide overflows along the line of sewers to let off the storm-waters. This being so, the above storm-water would be let from one valley to another, which, he thought, would be illegal, and, if carried out, would lead to litigation. He also asked whether the rate of 8d. in the £ applied to all the suburban municipalities as well as Balmain and Leichhardt, and whether there would be any higher rate.

Mr. Alderman Hardie, of Burwood, said he thought the whole of the aldermen would thoroughly support the scheme proposed by the Government. He thought the work should be pushed on at once, without delay being caused by collecting statistics. There was quite sufficient information on the subject already. The Secretary for Public Works was to be commended for urging the scheme on. He did not agree with what had been said by a speaker representing Darlington with regard to money matters. He thought the Government should have a voice in the matter. He thought the Government should be asked to extend the time within which repayment was to be made to sixty years. He understood that for similar works elsewhere 100 years had been allowed. He would like to ask what arrangements it was proposed should be made financially where sewers had already been laid down by Councils.

Mr. Bennett replied that the cost of any well-constructed sewer suitable to the circumstances of the scheme would be credited to the municipality concerned.

The Chairman then spoke on the subject of the length of time within which repayment is to be made. He stated that the law did not empower engineers to alter enactments. The present law provides twenty-eight years, and therefore that was the position of the matter which had been seriously discussed in the Cabinet. The Government, he stated, intended to extend the time under the proposed Local Government Bill, but until this became law the existing provisions must be carried out.

Mr. Hardie, of Burwood, asked whether any danger to health was to be apprehended in connection with the sewers.

Mr. Bennett replied that the question had been dealt with in a paper by Mr. Stayton to be laid before the Committee on Public Works.

Mr. Hardie further asked whether, in view of the mistakes which were at first made at Adelaide with regard to the ventilation of sewers and drains, the Government would take the necessary steps to amend the law in this Colony in order to ensure ample ventilation and efficient house drainage.

Mr. Sutherland replied that he was aware that the powers in this respect given by the Metropolitan Water and Sewerage Act were insufficient, but that the Government had decided to introduce a Bill to amend that Act at the earliest possible opportunity.

One of the speakers asked, with regard to the proposed rate of 8d. in the £, what guarantee there was that the amount would not be largely increased to cover the cost of carrying out the scheme. If it should afterwards happen that the estimate was doubled or trebled it would be a very serious item, and some reasonable assurance should be given. He would therefore be glad to hear what there was to be said regarding the point.

The Chairman stated that this was a question for the engineers to deal with. They were responsible to Parliament for the estimates given.

Mr.

Mr. Stayton then read the following statement, which he had prepared after much consideration, with a view to giving a definite idea as to the ultimate outlay to be incurred, and its effect on the necessary drainage rates to be hereafter levied :—

SEWERAGE OF WESTERN SUBURBS.

STATEMENT showing the estimated ultimate cost of works for a complete system of sewerage throughout the Western Suburbs ; prepared 20th September, 1888—

		£	£
(1.)	*Works already executed or nearing completion.*		
	Northern outfall (proportionate part)	88,000	
	Southern outfall and sewage farm (proportionate part) ...	186,000	
			274,000
	NOTE.—These may be regarded as maximum proportionate amounts for the Western Suburbs.		
(2.)	*Present Scheme.*		
	Main sewers and other works, as per report		830,304
(3.)	*First Section of Additional Works.*		
	Subsidiary sewers (300 miles)	300,000	
	Canterbury and Enfield main sewer (first part)	20,741	
	Marrickville storm-water drainage	20,000	
			340,741
			£1,445,045
(4.)	*Subsequent Works.*		
	Subsidiary sewers (100 miles)	100,000	
	Completion of Canterbury and Enfield main sewer	65,410	
	Low-level systems (Shone's)	119,650	
	Completion of Western outfall sewer	48,374	
	Do. Marrickville pumping station	6,817	
	Do. sewage farm	32,600	
			372,851
	Total		£1,817,896

The above sum is believed to be ample to provide for every contingency, and is inclusive of all works which can possibly be foreseen at the present time.

Statement showing the annual ratable value of the nineteen boroughs and districts comprising the Western Suburbs of Sydney :—

In 1884	£1,116,000
„ 1886	1,437,000
„ 1887	1,571,000
„ 1888 (estimated)	1,700,000

On the completion of the first three sections of the scheme in 1894, it is estimated that the annual ratable value will have increased to £2,200,000, in which case a rate of 1d. in the £ would probably produce £8,900 net.

At the final completion of the entire scheme, in (say) from fifteen to twenty years' time or upwards, when the population would be double or nearly treble what it was in 1887, the ratable value may be fairly estimated at £3,300,000, in which case a 1d. rate would produce £13,400 net.

As to possible lower rate of interest.

The magnitude of the work and its importance to the ratepayers is such that special consideration will doubtless be necessary with regard to the financial part of the question. Under the "Metropolitan Water and Sewerage Act" the rate of interest chargeable on cost of works is fixed at 4 per cent., and the term of repayment twenty-eight years. This rate was doubtless in accordance with current rates in 1880, when the Act was framed.

It is now proved that the Government of this Colony can effect loans in London for 3½ per cent. From my knowledge of the London market I feel sure that there would be no difficulty experienced in obtaining a loan for such reproductive works as sewerage and water at 3½ per cent., especially as the money will not be wanted for two or three years, and the security would be on the rate of the whole district.

The London Metropolitan Board of Works 3½ per cent. stock is now at about 112. The Birmingham, Liverpool, Nottingham, and other corporation stock is practically as good. In all these cases the security for interest and repayment is upon the rates and for long periods.

Comparative

Comparative annual rates for Western Suburbs sewerage, including interest on outlay, repayment, and working expenses. (Prepared December 3, 1888.)

If under existing Act, with interest at 4 per cent. and repayment in twenty-eight years.

If under proposed amended Act, with interest at 4 per cent. and repayment in sixty years.

If under further amended Act as to reduced interest at 3½ per cent. and repayment in sixty years.

	Existing Act.	Proposed amended Act.	Proposed amended Act if interest be taken at 3½ per cent. per annum.
In 1894 (sections 1 to 3)...	10d½.	8d.	7¼d.
In 15 to 20 years (being final completion of entire scheme)	9¼d.	7d.	6½d.

Particulars showing the estimated annual cost of disposal of night-soil throughout the Western Suburbs under existing systems.

In the Western Suburbs the charge varies from 3d. to 6d. per week per house for emptying dry-earth pans. The charge for cesspits is probably not quite so much.

3d. per week	=	0	13	0	per annum.
4d. „	=	0	17	4	„
5d. „	=	1	1	8	„
6d. „	=	1	6	0	„

For the purpose of comparison I have taken the low average of 15s. per house as the annual cost.

In 1887 the occupied houses numbered about 34,000; in 1894 the number of houses is estimated at 44,000; 34,000 houses, at 15s. = £25,500 per annum in 1887; 44,000 houses, at 15s. = £33,000 per annum in 1894.

A sum of £33,000 per annum would be equivalent to a rate of 3·70d. in the £ throughout the suburbs; or, in other words, a house assessed at £50 would, at 8d. in the £, be rated at £1 13s. 4d. for sewerage purposes, *less* the present cost; which, if put at 15s., would merely involve an extra outlay of 18s. 4d. per annum.

With regard to the estimated cost it was pointed out by Mr. Stayton that it must he distinctly understood that it was simply an estimate based upon the present and future requirements of the districts and also upon past experience. It was therefore an approximate idea as to what the cost of the works would be.

Mr. Alderman Abigail, of Camperdown, said he had nothing to urge in opposition to the scheme. It was only about a fortnight ago that the Camperdown Council were engaged in the consideration of this question all day to see what could be done for the municipality. As to cost, it was nothing beside the importance of saving life. His own family had suffered through typhoid fever, and was, therefore, anxious so far as he was concerned, to see improved sanitary measures promptly adopted. There was a considerable quantity of filth which came down to Camperdown and Marrickville, which were low-lying districts, and it was necessary that a remedy should be applied at once. He trusted that the question would not be dealt with in a slow jog-trot sort of way, and that everything would be done without unnecessary delay in order that blooming health and prosperity might result.

One of the aldermen of Leichhardt (*Mr. Fred. Walsh*) suggested that the meeting would be more effective if some resolution could be passed on the question. He therefore moved as follows:—

"That this Conference of Mayors and Aldermen of the Western Metropolitan Districts, after considering and discussing the proposed sewerage scheme of Messrs. Bennett and Stayton, approves of the same, and respectfully urges upon the Minister for Works the necessity of obtaining legislative powers for the early and simultaneous commencement of the work at different points."

Mr. Barling, the Under Secretary for Public Works, then read the foregoing resolution, which was seconded by *Mr. Dean*, the Mayor of Ashfield, and carried unanimously.

Alderman Moore, of Leichhardt, then moved, that a vote of thanks be extended to the Chairman for the deep interest taken by him in the matter.

Mr. R. W. Hardie, ex Mayor of Burwood, said it afforded him much pleasure to second the motion. Instead of its having been necessary for the Municipal bodies to urge on the consideration of the matter the reverse had been the case. They had been urged on by the Chairman, who had afforded every facility to enable the question to be properly dealt with. The thanks of all were due to him for the deep interest he was taking in their welfare, which, he was pleased to recognize, was in safe keeping so far as this question was concerned. The motion was carried with acclamation.

The

The Chairman, in reply, said he had done no more than his duty in furthering this matter, which was of such great importance to all. The present proceedings were only of a preliminary character, and there was yet the race to win. He said he had done his best to bring the question to the present stage, and he would certainly not allow it to remain unsettled; everything he could do would be done to bring the scheme into operation. He was pleased to recognize their unanimity, and it might be reasonably expected that the matter would soon be got through Committee quickly. He hoped that every effort would be made by the Municipal bodies to render assistance by giving evidence before the Committee. Having thanked the gentlemen for their attendance in response to the invitation the proceedings terminated.

The following is a list of the names of the gentlemen who expressed their willingness to adduce evidence in support of the Government scheme before the Parliamentary Standing Committee:—

Mr. Dean, Mayor, Ashfield.
Mr. Mills, Alderman, Ashfield.
Mr. Lyttle, Alderman, Ashfield.
Mr. R. W. Hardie, Alderman, Burwood.
Mr. E. A. Redman, Alderman, Burwood.
Mr. J. H. Wright, Alderman, Burwood.
Mr. John Baldwin, Mayor, Macdonaldtown.
Mr Brown, Alderman, Canterbury.
Mr. Scahill, Alderman, Canterbury.
Mr. Quigg, Alderman, Canterbury.
Mr. B. R. Moore, Alderman, Leichhardt.
Mr. N. C. Neal, Alderman, Leichhardt.
Mr. W. H. Sadler, Alderman, Leichhardt.
Mr. Fred. Walsh, Alderman, Leichhardt.
Mr. T. Winkle, Alderman, Leichhardt.

[*To Evidence of J. Barling, Esq.*]

A 1.

Minute by The Secretary for Public Works.

SUBURBAN SEWERAGE.

Department of Public Works, Sydney, 26 June, 1888.

My attention has for some time past been directed to the very serious condition into which things are drifting with respect to sewerage matters affecting the large population which inhabit the suburbs outside the metropolitan area. To enable me to more clearly grasp the question I should feel much obliged if my Honorable colleague, the Colonial Secretary, will instruct the Statistician to place himself in communication with this office with the view of affording me more information on the vital statistics.

It is well known that the averages dealing with this subject are taken out in connection with the population of large areas, the consequence being that the really unhealthy spots almost escape attention, while a character of apparent unhealthiness is given to districts which, if the particulars were taken out as affecting smaller areas, would be found to be really healthy.

For some months past I have been considering how I could get more definite information on the point I have referred to, and I think, after conference with Mr. Coghlan, I shall be able to obtain from him such information as will unerringly point out the plague spots of the city and suburbs.

My impression is that when this is done a startling revelation will be made on the subject which will clearly show the Department where the first efforts of amelioration should be made.

JOHN SUTHERLAND.

Principal Under Secretary.—J.B., 26/6/88. Perhaps an expression of opinion should be obtained from the Medical Adviser in the first instance.—C.W., 12/7/88. Medical Adviser.—H.P., 14/7/88. The Medical Adviser to the Government.—B.C., 16/7/88. C.W., P.U.S.

Report by Medical Adviser.

Board of Health Office, 127 Macquarie-street, Sydney, 16 July, 1888.

There are two distinct questions involved in this matter—first, the localization of the cases of typhoid fever or other infectious diseases occurring in the city and suburbs; and second, the localization of the deaths from typhoid fever or other infectious diseases in the same area.

For the first of these, as there is no provision for the compulsory registration of infectious diseases, it is at present impossible to obtain the requisite information; but it is within the power of this Department to furnish an approximate idea of the unhealthiness of the different areas from a statement of the number of cases admitted to the hospitals from particular localities.

The second question could be answered partly by the Registrar-General and partly by this Department, the former officer giving a statement of the deaths which occurred in private dwellings, and this Department furnishing a list of the places from which the patients were taken who died in the hospitals.

I may state that I have already requested the Registrar-General to be good enough to furnish me with the information above referred to in connection with an inquiry already in hand.

B.C., 16 July, 1888. H.N.M.

Inform Works Dept.—C.W., B.C., 28/7/88. The Under Secretary for Public Works. Submitted.—J.B., 31/7/88.

I am very pleased the Medical Adviser is taking this matter up, and shall be much obliged if he will kindly furnish me with the result of his inquiries at an early a date as possible. I intend to strain every nerve to grapple with the serious difficulties which the defective sanitary arrangements of our city and suburbs present.—John Sutherland, 2/8/88.

B.C., Principal Under Secretary.—J.B., 3/8/88. Retd., C.S.O., 6/8/88. The Medical Adviser.—B.C., 14/8/88, C.W. Read and considered at meetings of the Board of Health, held on the 22nd and 29th inst.—E.S., 30/8/88.

The

The Secretary to the Board of Health to The Under Secretary for Public Works.

Board of Health Office, 127 Macquarie-street, Sydney, 30 August, 1888

Sir,

In returning the enclosed minutes of the Hon. the Secretary for Public Works respecting suburban sewerage, I have the honor, by direction of the Board of Health, to forward enclosed returns showing (*a*) the localization of persons suffering from typhoid fever who have been admitted to the metropolitan hospitals; (*b*) the deaths amongst those cases; and (*c*) the distribution of persons dying from typhoid fever, measles, and scarlet fever in the metropolis of Sydney.

I have, &c.,
EDMUND SAGER,
Secretary.

The Secretary to the Board of Health to The Colonial Secretary.

Sydney, 29 August, 1888.

THE attached Returns prepared by the Board of Health, are forwarded for the information of the Colonial Secretary.

No. 1 shows the number of persons suffering from typhoid fever who were admitted to the metropolitan hospitals during the *seven* months ending July 31st, 1888, arranged according to the localities from which they were removed, together with a calculation of the ratio of cases per each 10,000 of the population. From this return it appears that the Eastern and West Central Districts have supplied by far the largest proportion of typhoid fever patients to the hospitals.

In No. 2 are shown the deaths which took place in the hospitals among the cases mentioned in the Return No. 1; in this return it has not been deemed necessary to calculate the ratio per 10,000.

In No. 3, which is based upon information supplied by the Registrar-General, as well as that obtained from the metropolitan hospitals, there is shown a statement of the mortality from typhoid fever, measles, and scarlet fever, in the city and suburbs during the *six* months ending June 30th, 1888, distributed according to the districts in which the deaths took place—those deaths which occurred in the hospitals being, however, referred to the districts from which the patients were removed to hospital. It is further to be stated that no deaths from scarlet fever or measles occurred in the hospitals, only fifty-one cases having been treated at the Coast Hospital during the first half of the present year.

It would have been more satisfactory if a return could have been given of the cases of zymotic disease actually occurring in the city and suburbs during the period in question; but, owing to the absence of any provision for the registration of infectious disease no data exist on which such a return could be founded.

By order,
EDMUND SAGER,
Secretary to the Board of Health.

No. 1.

RETURN showing the number of persons suffering from Typhoid Fever, who were removed to the Metropolitan Hospitals for treatment, from each district of the metropolis, during the seven months ending 31st July, 1888.

Districts.		Estimated Population, 30 June, 1888.	Coast Hospital.	Prince Alfred Hospital.	Sydney Hospital.	Saint Vincent's Hospital.	Children's Hospital.	Total.	Total of District	Cases per 10,000 of population.
SYDNEY		125,896	43	14	22	27	6	112	112	8·90
	SUBURBS.									
North-western.	BALMAIN	49,803	2	3	1	.....	.....	6	57	11·44
	LEICHHARDT		7	19	4	2	.....	32		
	GLEBE		10	5	3	.....	1	19		
West Central	NEWTOWN	33,845	19	24	4	4	1	52	80	23·64
	ST. PETERS		.....	3	1	.....	.....	4		
	CAMPERDOWN		1	4	.....	.....	1	6		
	MACDONALDTOWN		6	10	1	.....	1	18		
East Central.	REDFERN	44,081	5	7	2	2	1	17	64	14·52
	DARLINGTON		3	2	1	1	.....	7		
	ALEXANDRIA		7	5	.....	2	.....	14		
	WATERLOO		10	5	1	4	1	21		
	BOTANY		4	.....	1	.....	.....	5		
Eastern	PADDINGTON	37,520	6	1	2	3	1	13	98	26·12
	RANDWICK		3	2	2	3	1	11		
	WAVERLEY		17	4	9	19	.....	49		
	WOOLLAHRA		16	5	2	2	.....	25		
Western and Southern.	ASHFIELD	46,641	.....	2	1	.....	.....	3	32	6·86
	BURWOOD		.....	3	.....	.....	.....	3		
	CANTERBURY		.....	.....	.....	.....	.....	.....		
	FIVE DOCK		1	.....	.....	.....	.....	1		
	KOGARAH		.....	.....	3	.....	.....	3		
	MARRICKVILLE		9	4	2	.....	1	16		
	PETERSHAM		.....	5	1	.....	.....	6		
	WEST BOTANY		.....	.....	.....	.....	.....	.....		
North Shore.	EAST ST. LEONARDS	20,070	3	.....	3	1	.....	7	21	10·46
	ST. LEONARDS		2	2	1	.....	.....	5		
	GORDON AND LANE COVE		1	.....	2	1	.....	4		
	NORTH WILLOUGHBY		1	.....	1	.....	.....	2		
	MANLY		2	.....	1	.....	.....	3		
SHIPPING			1	1	.....	.....	.....	2	2	
	TOTALS	357,856	179	130	71	71	15	466	466	13·02

No. 2.

RETURN showing the number of persons suffering from Typhoid Fever, who were removed to the Metropolitan Hospitals for treatment from each district of the metropolis, during the seven months ending 31st July, 1888, whose cases terminated fatally.

Districts.		Coast Hospital.	Prince Alfred Hospital.	Sydney Hospital.	Saint Vincent's Hospital.	Children's Hospital.	Total.	Total of District.
SYDNEY		4	4	5	4	...	17	17
SUBURBS.								
North-western	Balmain	...	...	...	...	...	...	7
	Leichhardt	...	3	2	...	...	5	
	Glebe	...	2	...	...	...	2	
West Central	Newtown	1	4	2	1	1	9	13
	St. Peters	...	1	...	...	...	1	
	Camperdown	...	1	...	...	...	1	
	Macdonaldtown	...	2	...	...	...	2	
East Central	Redfern	...	1	1	...	...	2	8
	Darlington	1	...	...	...	...	1	
	Alexandria	...	1	...	...	...	1	
	Waterloo	1	1	...	1	...	3	
	Botany	1	...	...	...	...	1	
Eastern	Paddington	...	...	...	...	...	...	3
	Randwick	...	...	1	...	...	1	
	Waverley	1	...	1	...	...	2	
	Woollahra	...	...	...	...	...	...	
Western and Southern	Ashfield	...	1	1	...	...	2	5
	Burwood	...	1	...	...	...	1	
	Canterbury	...	...	...	...	...	...	
	Five Dock	...	...	...	...	...	...	
	Kogarah	...	...	...	...	...	...	
	Marrickville	...	1	...	...	...	1	
	Petersham	...	1	...	...	...	1	
	West Botany	...	...	...	...	...	...	
North Shore	East St. Leonards	...	...	2	...	...	2	5
	St. Leonards	...	1	...	..	...	1	
	Gordon and Lane Cove..	...	...	1	1	...	2	
	North Willoughby	...	...	...	...	...	...	
	Manly	...	...	...	...	...	...	
	Totals	9	25	16	7	1	58	58

No. 3.

No. 3.

RETURN showing the number of deaths from Typhoid Fever, Measles, and Scarlet Fever, during the six months ending 30th June, 1888, which were registered in the City of Sydney and Suburbs including the cases which died in the Metropolitan Hospitals—the latter being distributed according to the places from which they were removed.

Districts.		Estimated Population, 30 June, 1888.	Typhoid Fever.	Measles.	Scarlet Fever.	Total.	Total of District.	Rate per 10,000 of District.
SYDNEY		125,896	24	23	8	55	55	4·38
SUBURBS.								
North-western	Balmain	49,803	9	15	1	25	47	9·48
	Leichhardt		9	1	...	10		
	Glebe		3	7	2	12		
West Central	Newtown	33,845	14	14	4	32	42	12·44
	St. Peters		3	...	4	7		
	Camperdown		1	...	...	1		
	Macdonaldtown		2	...	...	2		
East Central	Redfern	44,081	5	2	...	7	20	4·54
	Darlington		1	...	...	1		
	Waterloo		9	1	2	12		
Eastern	Paddington	37,520	2	4	2	8	16	4·24
	Randwick		1	1	...	2		
	Waverley		6	...	...	6		
	Woollahra		...	...	...	...		
Western and Southern	Ashfield	46,641	6	3	2	11	39	8·36
	Burwood		3	1	2	6		
	Canterbury		...	...	...	...		
	Five Dock		...	...	...	...		
	Hurstville		...	...	...	...		
	Kogarah		...	1	...	1		
	Marrickville		1	...	...	1		
	Petersham		6	3	11	20		
	West Botany		...	...	...	...		
North Shore	St. Leonards	20,070	6	1	...	7	7	3·49
	Manly		...	...	...	...		
Totals		357,856	*111	77	38	226	226	6·31

* Fifty-six of these deaths occurred in the Metropolitan Hospitals.

A 2.

Sanitary Condition of the Western Suburbs.

Government Statistician's Office, Sydney, 27 September, 1888.

Sir,

In accordance with the instructions of the Honorable the Secretary for Public Works, I have the honor to transmit a plan* of the western suburbs, showing the localities where deaths from specific febrile or zymotic diseases occurred during the first six months of the current year.

* See Plan I, Diagram Plan II.

In order to make the plan complete the fatal cases in the hospitals have been assigned to the localities where the persons affected originally lived. The deaths from zymotic diseases only have been shown, as these are held to be directly traceable to the absence of sanitary measures, and therefore directly preventable. The following table shows the number of fatal cases in each municipality :—

Deaths from Miasmatic and Diarrhœal Diseases, from 1st January, to 30th June, 1888.

Municipality.	Number of deaths from							
	Measles.	Scarlet Fever.	Diphtheria.	Typhoid Fever.	Cholera.	Diarrhœa.	Dysentery.	Total.
Alexandria	.....	.....	1	3	.....	5	.....	9
Ashfield	8	4	13	7	.....	5	.....	37
Balmain	13	1	3	9	1	13	1	41
Burwood	1	.....	.....	3	.....	1	.....	5
Camperdown	1	2	2	.....	.....	6	.....	11
Canterbury	1	2	1	.....	3	2	1	10
Concord	.....	.....	.....	.....	.....	1	.....	1
Darlington	.....	.....	.....	1	.....	.....	.....	1
Five Dock	.....	.....	2	.....	.....	1	.....	3
Glebe	8	2	7	2	1	16	1	37
Leichhardt	1	.....	2	10	1	4	.....	18
Macdonaldtown	.....	1	.....	3	.....	2	.....	6
Marrickville	2	6	3	3	.....	5	.....	19
Newtown	10	1	3	14	.....	6	1	35
Petersham	2	4	3	5	.....	2	1	17
Redfern	3	.....	.....	5	2	14	1	25
St. Peters	.....	4	2	2	.....	4	.....	12
Strathfield	.....	.....	.....	.....	.....	.....	.....	.....
Waterloo	1	2	1	5	1	7	2	19
Total	51	29	43	72	9	94	8	306

It will be seen that deaths have been most numerous in Balmain, Ashfield, Glebe, and Newtown; but such was only to be anticipated from the greater density of population found in these districts. The total number of these deaths was 306, or at the rate of 3·62 per thousand of the population per annum; and although it may not be possible even with the most complete sanitation to save all these lives, there is ample evidence that an efficient sewerage scheme would have prevented the sacrifice of many lives, have saved much sickness, and have ensured a greater length of life to those who survived. That such opinion is not one of mere speculation may be shown from the experience of the cities of Sydney and London, where in the former case the death rate has declined about five per thousand since the sewerage system has been completed, while in the case of London the rate has fallen four per thousand since the main intercepting scheme came into operation.

The number of cases of each disease which have occurred cannot be given, but it may be safely assumed that the number which proved fatal practically bears the same proportion to the total number of cases in each district.

I have, &c.,

T. A. COGHLAN.

Statistician.

The Under Secretary for Public Works.

[*To Evidence of W. C. Bennett, Esq.*]

B.

Sewage Farm—Webb's Grant.

Webb's Grant, 15 November, 1888.

Sir,

I have the honor to submit for your information a short report covering the first twelve months' operations on this property under "sewage."

Although a commencement was made and a considerable amount of work done so long ago as 1884, the first sewage was only received on the land in August, 1887. During this long period the floors of the filter beds had blown so much out of level as to necessitate their almost reconstruction, and the levelled formation on the north side of the main carrier so much so as to require entirely renewing.

On the 28th of September, 1887, the first seeds were sown on a plot of about 10 perches, and on the 5th of November 2 roods of lucerne, and later on 2 roods of rye-grass; even this small patch of 1 acre 10 perches proved too large for the quantity of sewage available, and all the plants excepting the lucerne and sorghum died off.

On the 1st of February, 1888, the sorghum began to mature, and three rows were cut and weighed, showing an average weight of 60 tons an acre; the remainder yielded 3 bushels of seed, worth £3; and in April a stubble crop of 61 cwt., for which I obtained £2 0s. 6d.

The half-acre of lucerne sown in December, 1887, has been cut four times, and produced 89 cwt., and sold for £4 9s. 3d.

Half an acre of lucerne sown in March has only been cut twice and yielded 28 cwt. 2 qrs.—£1 8s. 6d.

Half an acre of barley sown in February only returned 150 cwt. 2 qrs., at 8s. 6d. a cwt., after occupying the ground six months.

Appended is a tabular statement of all crops sown, areas of ground to each crop, and money return.

Total area under crop, 1 acre 2 roods 16 perches; net proceeds, £17 17s. 5d.

In the absence of a self-recording gauge I have no reliable data to enable me to estimate what quantity of sewage this ground will take up, but for these last two months the whole supply has been taken up by 1 acre, and now that the crops are becoming somewhat bulky, they are falling off for want of more moisture and manure.

I have, &c.,

J. N. OXLEY,

Superintendent.

The Commissioner and Engineer-in-Chief for Sewerage.

Abstract

Abstract of crops sown on Webb's Grant from September, 1887, to September, 1888, showing area sown, quantity produced, and value.

	Areas and Produce.							a. r. p.		
	2 roods.	2 roods.	2 roods.	2 perches.	10 perches.	2 perches.	2 perches.	1 2 16		
	cwt. qr.	cwt. qr.	cwt. qr.		cwt.					£ s. d.
Lucerne	89 1	.....	.....	.....	.....	.....	.....	.....	1/	4 9 3
Do.	.....	28 2	.....	.....	.....	.....	.....	.....	1/	1 8 6
Barley	.....	.....	150 2	.....	.....	.....	.....	.....	/6	3 15 3
Turnips	.....	.....	.....	.....	.....	Not weighed.		.....	...	2 7 9
Sorghum	.....	.....	.....	.....	61	.....	.....	.....	/6	2 0 6
Cabbage	.....	.....	.....	.....	.....	Not weighed.		.....	...	0 6 2
Cauliflowers	.....	.....	.....	.....	.....	Do.		.....	...	0 10 0
Sorghum "seed"	.....	.....	.....	.....	3 bushels	.....	.....	.....	20/	3 0 0
								1 2 16		£17 17 5

[*To Evidence of G. H. Stayton, Esq.*]

C.

SEWERAGE AND DRAINAGE OF THE WESTERN SUBURBS.

(Report of Mr George H. Stayton, M. Inst. C.E., on.)

Presented to Parliament by Command.

Department of Public Works, Roads Branch, 30 January, 1888.

I forward to the Honorable the Secretary for Public Works Mr. Stayton's report on the drainage of the Western Suburbs. He has conferred with me from time to time, and I have studied the case sufficiently to enable me to concur in all his recommendations. I would suggest that the report be distributed amongst the Municipal Councils and the press for discussion before taking any definite action on it.

W.C.B.

Under Secretary, B.C. Submitted; and I would suggest that this report of Mr. Bennett form the first page of the printed matter.—J.R., 30/1/88. Approved; and distribute copies of this report as suggested; send also copies to the press. No time should be lost; the matter is one of the utmost importance.—J. Sutherland, 31/1/88.

Report on a System of Sewerage for the Western Suburbs of the City of Sydney.

With a view to the preparation of a comprehensive system of sewerage and drainage, my best consideration has been given to the sanitary conditions and requirements of the western suburbs of the city of Sydney, and I now have the honor to submit the following observations and recommendations thereon.

Extent of western suburbs.

The boundaries of the district comprised within the scope of the inquiry may be briefly described as extending from the city boundary to Botany on the east, along Cook's River to Liverpool Road on the south, through Strathfield on the west, and along Parramatta River on the north. This area contains about 31 square miles, and it includes the Boroughs of Alexandria, Ashfield, Balmain, Burwood, Camperdown, Darlington, Glebe, Macdonaldtown, Marrickville, Newtown, Petersham, Redfern and Waterloo, together with the Municipal Districts of Canterbury, Concord, Five Dock, Leichhardt, St. Peters, and Strathfield.

Extraordinary provision of streets.

In comparison with large cities in other parts of the world, the suburbs of Sydney present a somewhat peculiar feature, and one which must have an important bearing on the cost per head of population for the execution of sanitary works. I refer to the extraordinary provision of streets and roads, as formed or laid out for building purposes. In the city of Sydney the proportion may be taken on the existing population as 1 mile for 1,380 persons; for the city and suburbs generally (which contain 1,032 miles, and an estimated population of 350,000 persons) the proportion is 1 mile for 339 persons; but for the western suburbs it is 1 mile for 254 persons. By way of illustration it may be mentioned that about four years since the population per mile for large cities and suburbs in America varied from 500 to 3,640; in London it is about 2,000, and in Paris 4,000. These figures prove that the provision is largely in excess of ordinary requirements, and if the streets of the western suburbs alone were built upon to the same extent as London and its suburbs, over a million persons could occupy the area without overcrowding.

Increase of population.

The population of the metropolitan suburban area may be said to have increased by leaps and bounds during the last ten years; inasmuch as it has increased from 83,000 to 200,000 persons, or 141 per cent. The Metropolitan Suburban District includes the eastern suburbs of Paddington, Woollahra, Waverley and Randwick; also St. Leonards, East St. Leonards, and Victoria at North Shore; none of which are considered in connection with the subject of this report, as they do not form part of the western area. Reference is made on page 10 to the still greater rate of increase which is taking place in the western suburbs, viz.—100 per cent. since the year 1881, or at a rate equivalent to 166 per cent. for ten years. In certain municipalities the population is somewhat dense, whilst in others, where the houses are much scattered, it is obviously small. The latter conditions, however, will very shortly disappear, in consequence of the rapid nature of the further developments which are taking place, and of the extent of the building operations now in progress. It may therefore be reasonably anticipated that the population will continue to increase in a very marked manner.

Preliminary work.

The foregoing remarks and figures may serve to show that the question under consideration is one of some magnitude. From the extent of the area it will be readily understood that a considerable amount of time has necessarily been expended in making a close personal investigation throughout the district. Without such examination it was of course impossible to acquire a thorough knowledge of the several areas, or of the conditions and requirements of the various localities, which information was absolutely necessary prior to devising the measures hereinafter referred to.

The

Sanitary condition of suburbs.

The existing sanitary condition of the western suburbs is most unsatisfactory, and owing to the want of efficient sewerage and drainage, great inconveniences and nuisances are occasioned. The inquiries show that glaring sanitary defects exist in nearly every municipality. It is the old tale of impure air and water resulting from defective drainage, and it is doubtless owing to the favourable climatic conditions of the Colony that the existing mortality from preventable disease is not greater, especially as the evils are becoming aggravated by additional surface drainage, owing to the increase in the population.

Mode of laying out new streets.

The mode in which land is subdivided and laid out for building purposes without due regard to proper levels or drainage, and in which dwelling houses are erected thereon, is a question which materially affects suburban sanitation. The existing laws do not apparently provide regulations governing the laying out of new roads and streets and the erection of dwelling-houses, requirements which are urgently needed. Neither is there any power to restrain persons from building on low-lying areas or unhealthy sites; therefore, in the absence of proper drainage, the soil is liable to become charged with filth and fever-poison, and such premises are not only a source of danger to the health of the occupants, but to the locality generally. The present system ought to be emphatically condemned, as without doubt "fever-beds" and "rookeries" are being created in certain localities, which will not only cause endless trouble hereafter, but will be most difficult and expensive to deal with.

Building on low-lying land.

It may not perhaps be desirable to allude to any particular premises, but it must be obvious that during the course of the inspection of the suburbs my attention was naturally drawn to the existence of dwelling-houses in positions utterly unfitted for human habitation and quite contrary to all modern sanitary laws and requirements. In Marrickville, Leichhardt, and elsewhere, premises have been erected on most unsuitable sites, the level of which in some instances is scarcely above high-water mark, and where effectual drainage is out of the question, unless a large outlay is incurred at the public cost. In Marrickville Valley, drastic measures will be required to remedy the evil, and until these can be accomplished, it would certainly be for the public good to prohibit by law the further erection of dwelling-houses below a certain prescribed level, both in that and other unsuitable parts of the suburbs. The question may hereafter be raised whether portions of the lowest areas should be resumed and any specially objectionable dwellings be demolished.

Regulations for new streets and buildings.

Under the provisions of the Public Health and other Acts in England, every person who intends to lay out or form a new street is required to submit plans and sections thereof to, and receive the approval of, the authorized sanitary authority; and no dwelling-house or building can be erected without a similar application and approval. I am acquainted with several instances where the attempted creation of insanitary areas was thus frustrated by the action of the sanitary authority. It is not only important that the erection and drainage of all premises should be governed by efficient sanitary regulations, but, previous to any dwelling-house being occupied, its proper completion should be duly certified. In New York, the health authorities are even more stringent in their regulations, and any violations thereof are dealt with in a very summary manner—*e.g.*, only four or five months ago, both the owner and the builder of certain new houses were "arrested" and convicted for improper work. Considering the immense importance of efficient sanitation, it may not perhaps be a matter of surprise to find persons representing it as absolutely criminal that the creation of future plague spots should be permitted, more especially when stringent quarantine regulations for the prevention of other diseases are in operation.

Rates of mortality.

According to the Statistical Register, it appears that prior to 1885 the yearly death-rate of the entire suburban district (which includes North Shore) was less than that of the city of Sydney, but subsequently it has invariably exceeded it; the deaths for the year 1886 being 21·04 per thousand for the suburbs and 17·06 for the city. The death-rate per thousand of children under 5 years of age in the suburbs has exceeded that of the city since 1880, the figures in 1886 having been 74·58 for the former and 60·91 for the latter. These facts clearly indicate a considerable waste of human life from preventable diseases, independent of debilitating sickness, and represent a serious money loss to the community; they are therefore highly significant of the necessity for improved sanitation. The mean suburban death-rate from 1884 to 1886 has exceeded 21 per thousand per annum, but it may be confidently asserted that efficient sanitation would reduce such rate to at least 15 or 16 per thousand; in fact, a higher death-rate ought to be regarded as unsatisfactory. Irrespective of deaths from other preventable diseases, the following fatal cases of typhoid fever have been recorded in the suburbs of Sydney since 1882, viz.:—

1882.	1883.	1884.	1885.	1886.	1887.
71	93	109	130	229	164

Beneficial results of sanitary works.

The ultimate object of sanitary science is the health and convenience of communities and the reduction of the death-rate. The sanitary improvements carried out in England during the last fifty years (although much yet remains to be done) have been greater than in any other country, and the death-rate has been so much reduced that it is now 3 per cent. less than France, 6 per cent. less than Germany, 8 per cent. less than Italy, and 11 per cent. less than Austria. Since the completion of the London main drainage, the improvement in the death-rate of that city has been continuous, the annual saving of life being no less than 16,000 persons. Sanitation has very materially lessened the mortality from typhoid fever, inasmuch as official returns show a reduction from 10·8 to 1·8 per 10,000 of the population in some instances; whilst the deaths from typhoid fever, in England generally, which from 1861 to 1870 were at the rate of 19,000 per annum, fell to 7,000 per annum during the ten years ending 1880. An efficient system of sewerage lowers the subsoil water-level, and has a material effect on the healthiness of a low-lying locality; a result which has been specially well marked by a decrease in the number of deaths from phthisis.

Pure air essential.

Pure air is essential to healthy existence, and in populous towns and their suburbs it is absolutely necessary to adopt measures for its preservation. The whole of the filth which is produced, of whatever kind, should be removed at once and completely before decomposition can take place. A comprehensive system of sewerage not only provides for the effectual removal of the fæcal matter and urine, but removes the water supply after it has done its duty and become filthy.

Disposal of liquid refuse.

The method which prevails throughout the greater part of the suburbs for getting rid of household slop-water and other liquid refuse, is to allow it to flow into the surface channels at the sides of the streets, from which it eventually finds an outlet in the natural watercourses. Even where open channels have

have been formed, the sight and smell are very offensive; but where the channels are unformed and the surface inclination is slight, the nuisance is greatly intensified, especially in hot seasons, as the filth becomes stagnant and highly offensive. It is obvious that the many miles of these gutters which are in existence must cause the air to become so polluted as to be detrimental to the public health.

Existing drains.

Several of the Municipal Councils have expended considerable sums of money from time to time in the construction of drains and culverts in various streets, for the removal of refuse water from the surface channels. The adoption of these measures may have afforded relief in the immediate vicinity, but the nuisance has only been removed to an adjacent watercourse or creek. Although these works cannot be otherwise regarded than as temporary expedients for the removal of liquid refuse, they may, however, be hereafter utilized with advantage for the removal of surface waters during rainfall.

Pollution of watercourses and creeks.

It is obvious that under such a system the watercourses and creeks become fouled with liquid sewage; and owing to their imperfect condition and to the number of holes and places of deposit which they contain, most offensive smells are frequently given off. In a hot climate especially, this cannot be otherwise than dangerous to public health. As the outlet of the various creeks is either in the Parramatta River or Cook's River, the offensive matter must eventually be discharged into the harbour or into Botany Bay, and it is evident that these waters are becoming more and more polluted. The foregoing remarks refer particularly to Orphan's School, Johnstone's, White's, and Long Cove Creeks, on the north side, and to Shea's and Marrickville Creeks, on the south side; but it is only a matter of time for the watercourses which discharge into Iron Cove Creek, Hen and Chicken Bay and Homebush Creek on the north, and from Canterbury and Strathfield into Cook's River on the south, to become similarly fouled, and unless efficient measures are taken this will most assuredly result.

Recently constructed sewers.

The only portion of the western suburbs which possesses recently constructed sewers in active operation is Darlington and part of Redfern. In this instance the sewers were constructed by the Department, and form branches of the Prince Alfred Hospital sewer.

Areas omitted.

A brief inspection of the condition and requirements of certain portions of the area described on the first page, showed that no immediate necessity existed for the construction of sewers throughout Dobroyd, Five Dock, and Concord. The greater part of these districts consists of bush or partially-cleared land, the houses being much scattered. The Alexandria swamps and adjacent low-lying lands are also excluded, as from the nature of the conditions which exist, building operations will doubtless be greatly restricted upon sites so extremely unsuitable. The parts thus excluded from further consideration cover an area of about 9 square miles.

Plan and levels.

The only available map of the western suburbs, when the question first came before me, was the map of Sydney and suburbs which accompanied the Sewage and Health Board's Reports in 1877. Although the map is a compilation and consists merely of a skeleton plan showing the outlines of certain streets as they then existed, and does not extend further westward than Ashfield and Five Dock, yet it has been of great service as a foundation to work upon in preparing a revised and extended plan.

New map and levels.

The preparation of a plan showing the whole of the existing and proposed streets and the areas built upon, together with the ridges, creeks, and water-courses, and taking the levels thereof, has occupied several months, during which about 600 miles of streets have been inspected and partially surveyed, and a great number of levels taken. Levels had been taken from time to time by departmental officers between 1881 and 1885, at Marrickville, St. Peters, Redfern, Newtown, Camperdown, and Petersham, and they were of much service, but it should be noticed that they did not extend beyond Petersham or Marrickville. The new map is a compilation from various Government surveys and municipal maps. It is drawn to a scale of 20 chains to the inch, and shows approximately the position of the houses and buildings; it also shows the intended reclamations and other improvements at Cook's River. It is certainly the best map extant for the purpose of this report, but prior to the preparation of working plans and sections, detail surveys, such as are already in progress under the Surveyor-General's Department for Sydney and Suburbs, and plans drawn to a scale of 40 feet to an inch, will be necessary.

Physical conditions.

The physical conditions of the district present peculiar features, and although favorable for the discharge of rainfall and stormwaters from the surface, they render the drainage question unusually difficult to determine. A reference to the map shows that very nearly the whole area consists of ridges and valleys. Some of the slopes present considerable declivities; whilst other parts, such as the Glebe, Annandale, Leichhardt, and Balmain, extend towards the Parramatta River and are nearly surrounded by bays and coves.

Ridges.

Commencing at Redfern, near the city boundary, the main ridge which separates the northern and southern watersheds passes westward along the north side of the railway works at Eveleigh; thence along or near to Newtown Road, Enmore Road, Stanmore Road, and Canterbury New Road, to the south end of Queen-street, Ashfield. After crossing the latter it continues parallel to it on the west side; thence along Goodlet-street, crosses George's River Road near Brighton Avenue, and passes on to the Liverpool Road at its junction with Burwood Road. At Emu-street it leaves Liverpool Road and passes across Redmyre Road and Homebush Road, and continues further westward on the south sides of Busby Hill, and Albert-street, Strathfield. The northern watershed discharges into Parramatta River and the southern into Cook's River. There are six principal spurs on the north side, and they extend through the Glebe; Camperdown; Petersham, Leichhardt, and Balmain; Ashfield and Dobroyd; Burwood and Five-dock; and Burwood and Concord. On the south side there are three, viz., through Newtown and St. Peters; from the west end of Marrickville Road to the Warren, at Tempe; and along the west end of Liverpool Road. The height of the main ridge averages about 120 feet above high-water-mark, but at the summit, which is at Seaview-street, Ashfield, the surface level is 175 feet. In several instances the levels of portions of the various spurs exceed 100 feet in height.

Creeks, watercourses, and flats.

Most of the creeks and watercourses possess good natural inclinations, but the flats which call for special observation are at Marrickville and Shea's Creek. Marrickville valley is practically at a level of 1 foot only above high-water-mark for a distance of over a mile north of Cook's River, whilst considerable portions of the area are at least a foot below high-water-mark. During the heavy rains in April last no less than 141 acres were under water, and a number of dwelling-houses were flooded; the greatest depth of water, as measured at the time, being about 3 feet 6 inches. The land adjacent to Shea's Creek, between Ricketty-street and Cook's River, is at a similar level to Marrickville valley, and is inundated at high spring tides. About 53 acres of a building estate near Undercliff Bridge, Cook's River, were also flooded.

Proposals

Proposals for Sewerage.

I have perused the correspondence, reports, and minutes relating to the question, together with the statements of various deputations to the Government thereon, but there is no evidence whatever that any proposal for the drainage of the Western Suburbs has hitherto been definitely formulated. The northern and southern drainage systems for the City of Sydney, as devised and constructed by the Department, are intended however to receive the sewage from a limited portion of the suburbs. The position of these sewers is shown on the plan by black lines.

Northern system.

The northern outfall sewer is about to be extended to George-street West, terminating at the city boundary at Newtown Road; at which point its dimensions will be 45″ in diameter, and the invert level 28·68 feet above datum. This will permit the construction of a main sewer and sub-mains to drain the Glebe, the northern part of Leichhardt, and Balmain, an area (exclusive of reserves, &c.) amounting to 1,641 acres. A branch sewer to the Prince Alfred Hospital has already been constructed; its terminating dimensions are 4′ × 3′ and level 53 feet above datum. As explained on page 7, the Borough of Darlington and a part of Redfern, comprising an area of 120 acres, are drained into this system, and the proposed extensions westward of the hospital will receive the drainage from certain parts of Camperdown, Newtown, and Petersham. The total area draining into the Prince Alfred Hospital sewer will thus amount to 443 acres.

Southern system.

The southern outfall sewer is 5′ 6″ in diameter, and on the western side of Botany Road its invert-level is about 26 feet above datum. This system will receive the sewage from a portion of the City and from parts of Redfern and Waterloo (an area of 583 acres), and the construction of a branch sewer across Shea's Creek, Alexandria, will further provide for the drainage of 329 acres, being portions of Alexandria, Macdonaldtown, and Newtown.

Various methods of sewerage.

The various methods which have been devised for the sewerage of towns may be briefly described as—

(*a*) The "combined" system, by which all sewage, surface water, and subsoil waters are carried off in the same sewer.

(*b*) The "partially-separate" system, by which all sewage and a limited portion of surface water are so removed.

(*c*) The "absolutely separate" system, which involves separate sewers for sewage, for surface water, and for subsoil water.

(*d*) The "Liernur" pneumatic system, by which sewage is removed by exhausting the air in specially constructed sewers and drains; the collected matter being subsequently conveyed to works, where it is converted by evaporation into dry manure.

(*e*) The "Shone" pneumatic-ejector system, by which sewage is collected in receivers and ejected by compressed air, forced into cast-iron main pipes, and delivered to the outlet provided at a higher level.

Various dry systems of collecting and intercepting excrementitious matters (all of which, however, necessitate some system of sewers to carry off liquid refuse), such as earth-closets, "Goux" closets, and "Rochdale" pails, have been adopted in towns to a limited extent; but none of the dry systems can be considered suitable for large communities. The collection and disposal of large masses of excrement is very troublesome, and often creates much unpleasantness. In fact I can testify that the whole process of collection and removal under the "pail system," as carried out on a large scale at Nottingham (where nearly 30,000 of these closets are in use) is so offensive, that it would never be tolerated in the western suburbs of Sydney. Indeed the Medical Officer of Health for Nottingham has stated "that he did not regard the pail or tub system as perfect; but on the contrary most decidedly gave the preference to properly constructed and well ventilated water-closets, as being free from all danger." At the best, the so-called dry systems are but inferior substitutes for water carriage, which, if efficiently constructed throughout, is the cleanest and most convenient of all. Moreover, it has already been adopted for a part of the district in question, and the desirability of its extension throughout the area is obvious.

Joint sewerage scheme recommended.

From a careful study of the question of the best mode of draining those portions of the district which must necessarily be excluded from the beforementioned existing systems, I am fully convinced that any proposal which fails to embrace a joint sewerage scheme for the entire area, is undesirable. The various municipal boundaries are not concurrent with the natural watersheds, and even if they were, purely local systems for each borough would be found both difficult and expensive. I have therefore no hesitation in recommending as the most practical, efficient, and economical remedy, a comprehensive scheme upon the "partially-separate" system.

Position of Outfall.

The next question which arises has reference to the best available position for the outfall and the method of disposal to be adopted, and from the following remarks it will be observed that consideration has been given to the possibility of utilizing the existing sewer outfalls, to conveying the sewage to the sea or various rivers, to the establishment of local systems of treatment, and to the adoption of a sewage farm at Rookwood or Botany.

Existing outfalls.

The main outfall sewer of the northern system discharges into the sea at Bondi, but the sewage of the southern system will be removed by the outfall sewer which discharges at the intended sewage farm at Webb's Grant, Botany Bay. Neither the dimensions nor the levels of the above outfall sewers would permit of the remainder of the area being drained into them by gravitation, and to convey the sewage to any other point on the coast south of Ben Buckler, would necessitate the construction of an outfall sewer of great length and the erection of powerful pumping engines, involving a great outlay and large annual cost.

River outfalls.

The remarks on page 7 show that the greater part of the area to be sewered falls towards Parramatta River and the remainder towards Cook's River. Although the former is a tidal river, it contains numerous bays and coves, in several of which mud flats of considerable extent are exposed at low water; moreover, it is so situated at the head of Sydney Harbour, that any proposal to utilize its bays or heads as outlets for the discharge of sewage, without treatment, ought not be entertained for one moment. Such a system would unquestionably create serious pollution of the waters, and much inconvenience would be caused by the silting up which would ensue. In the case of Cook's River, which discharges at the head of Botany Bay, the objections are even stronger, inasmuch as above the dam at St. Peters there is little or no current; in fact the velocity in dry seasons is practically *nil*. George's River, to which the sewage of a great part of the area could be conveyed by gravitation, is nearly 6 miles further

further south. It discharges a large volume of water into Botany Bay on the ebb-tide, and having a catchment area of 375 square miles, its discharge after rainfall is very great. Notwithstanding these advantages it cannot be deemed suitable as an outfall for the discharge of a large quantity of crude sewage.

Local systems undesirable.

The objections to the discharge of crude sewage in the before-mentioned rivers are insuperable, and it does not appear that suitable sites can be procured on the south side of Parramatta River for the adoption of local systems of treatment, such as precipitation and filtration. Even if practicable, however, such systems would certainly be open to serious objection, and apart from this, they would necessitate considerable extra expense in separate management.

Sewage farm at Rookwood.

A suggestion was recently made that the sewage from the greater portion of the Western Suburbs might be conveyed to the model farm at Rookwood, and there be utilized by irrigation. I have considered the proposal and have made a preliminary investigation of its merits, with the view to the preparation of an approximate estimate of the cost. The primary objection to the scheme is the great outlay it would entail in the construction of works and erection of machinery, also in the acquisition and preparation of a large area of land, amounting eventually to 2,000 acres. Moreover, as the summit of the farm is about 160 feet above sea level, it is obvious that the cost of transmitting the sewage to the requisite altitude by steam power would be a very serious matter. The scheme would necessitate the reversal of the Western system hereinafter described, and its execution, including the capitalised cost of pumping, would involve an outlay of £1,222,000. This amount is £550,209 in excess of the estimated cost of the intended Western system (*vide* p. 21), and it would involve an additional annual charge, to cover interest and repayment of principal, amounting to £24,000. The cost of pumping would be proportionately greater as the population increased, the estimate being based on a prospective population of 100,000 persons. The strongest point in favour of the proposal is that the levels of the main sewer would be sufficiently low to enable the intended gravitation area to be increased, but I am decidedly of opinion that the adoption of such a scheme is undesirable.

Sewage farm at Botany.

The fact that the establishment of a sewage farm at Botany had already been determined upon for the Southern system was naturally a strong inducement to consider whether a sufficient area would be available for the purification of the sewage from the Western system, and if not, whether additional land could be procured and rendered suitable for the purpose. The area of Webb's grant is 309 acres; of this, however, about 270 acres only are at present available for the purpose of sewage farming; an area clearly insufficient for the Southern and Western systems combined. The resumption of about 250 acres of unused land to the south and west of Webb's grant is practicable, and its immediate acquisition is highly desirable. Of the additional area it is probable that 100 acres could easily be made available, and the remainder would need to be filled up and levelled as hereafter found requisite.

Botany site recommended.

The nature of the soil and the situation of the land render the Botany site admirably fitted for the utilization and purification of sewage. The former consists of a free sandy soil and open subsoil, and for the greater part of the area the surface level is at least 8 feet or 9 feet above the sea. The site is not only compact in itself, but is also sufficiently removed from buildings and population to enable it to be used in the manner proposed, without risk of reasonable objections being raised; it also has extensive water frontages, and convenient access could be provided. Under these circumstances I feel convinced that it would not be possible to provide a better position for the outfall and for the efficient and economical purification and disposal of the sewage of the Western area. Certainly there is none within reasonable distance, nor any which can be so confidently recommended.

Proposed Scheme.

Northern, Southern, and Western systems.

The drainage area of the proposed scheme comprises nearly 22 square miles, and the sewerage thereof can be best effected by the adoption of three systems, hereinafter referred to as the Northern, Southern, and Western systems respectively. The Northern and Southern suburban systems will embrace an area of nearly 5 square miles, and they will be drained into the existing systems which discharge at Bondi and Webb's Grant. The Western area, embracing nearly 17 square miles, will be drained by an entirely new system discharging at Botany.

Drainage area.

The total area of the district included in the scheme contains 14,077 acres; from this, however, must be deducted the area of public parks, reserves, and cemeteries therein, amounting to 449 acres; consequently the net drainage area is 13,628 acres. The latter is more or less built upon or laid out for building purposes, and as doubtless the whole will eventually require drainage, provision should be made for it in the scheme. Although it is essential that the capacity of the main sewer and sub-mains shall be devised to meet the future requirements of the entire area, it may not become necessary to construct sewers in every street within that area until a considerable period has elapsed.

The various systems into which the drainage area is subdivided are as follows, viz.:—

No.	Municipality.	Colour on plan.	Area in acres.	Total area of each system in acres.
	NORTHERN SYSTEM.			
1	Glebe, Leichhardt, and Balmain	Purple	1,641	
2	Newtown, Camperdown, and Petersham	Neutral tint	323	
3	Darlington and Redfern	Dark brown	120	
				2,084
	SOUTHERN SYSTEM.			
4	City (part of), Redfern, and Waterloo	Light brown... ...	583	
5	Alexandria, Macdonaldtown, and Newtown	Green...	329	
				912
	WESTERN SYSTEM.			
6	Marrickville, Petersham, Newtown, and Leichhardt	Light yellow... ...	1,477	
7	Marrickville, St. Peters, Macdonaldtown, and Alexandria ...	Dark yellow	1,180	
8	Marrickville, Ashfield, Petersham, and Leichhardt	Red	2,005	
9	Ashfield, Burwood, Strathfield, Concord, and Five Dock ...	Blue	4,100	
10	Canterbury and Southern slopes	Light blue	1,870	
				10,632
	Total...			13,628

Population.

At the commencement of the past year the drainage area contained about 32,704 houses, and an estimated population of 154,000 persons; but in order to determine the prospective population, the circumstances relating to each municipality have been separately considered. The existing number of persons per acre varies very materially, *e.g.*:—

In Ashfield there are 4·48 persons per acre.
„ Burwood „ 4·79 „ „
„ Marrickville „ 5·66 „ „
„ Leichhardt „ 7·80 „ „
„ Petersham „ 10·63 „ „
„ Balmain „ 26·37 „ „
„ Glebe „ 34·83 „ „
„ Newtown „ 36·03 „ „

The prospective rate per acre for the entire area has been determined in accordance with the conditions peculiar to each district, that is to say—In Redfern, Darlington, Camperdown, and other well populated parts near the city, it is taken at 47 or 45 persons; and in Glebe, Leichhardt, and Balmain, the average is 42 persons. In Marrickville, Petersham, and other districts coloured yellow on plan, it is 40; in Ashfield and those parts coloured red, it is 33; and in Burwood, Strathfield, Concord, Canterbury, and other outlying places where coloured blue, it is taken at an average of 30 persons per acre. It may be recollected that the prospective rate allowed for the city of Sydney was 47 persons, but for the eastern outlying districts it was 31 only. The following table shows that the average number of persons for the entire drainage area is estimated at 35·41 per acre, and that the total prospective population for which provision is made in the scheme amounts to 482,608 persons, or nearly three times the number of the existing population:—

System.	Area in acres.	Average number of persons per acre.	Total prospective population.
Northern	2,084	42·637	88,857
Southern	912	46·28	42,206
Western...	10,632	33·065	351,545
Total	13,628	35·41	482,608

The growth of the Western Suburbs has been enormous. According to the Census returns, the population contained within the area which constitutes the nineteen boroughs or municipal districts referred to on the 1st page, was 41,716 in 1871, and 82,273 in 1881; but it is estimated that at the present time the numbers have increased to 164,103. At this rate of increase it may be fairly assumed that the total prospective population of 482,608 will be realized in the course of eighteen or twenty years.

Sewage.

The quantity of fouled-water to be removed by the sewers, even from the existing population, amounts to a considerable volume. It will, however, be largely increased so soon as the new water supply works have been completed and brought into operation throughout the area.

The Sydney intercepting sewers provide for the removal of a daily consumption of 72 gallons per head, and although this may appear to be a liberal allowance for domestic purposes in the suburbs, it is no doubt desirable to make provision in the proposed sewers for carrying off an equally large volume of water, the consumption during the hot season of the year being especially great. At Adelaide the sewers were designed to carry off 50 gallons per head per diem, but this quantity is exceeded in the summer. The sewers are intended not only for the removal of fæcal matter from water-closets, but for all kinds of liquid refuse, such as domestic slops and urine, together with the waste-water from baths, sculleries, wash-houses, stables, dairies, and other premises.

Careful observations and experience have proved that sewage is not discharged into the sewers at an uniform rate throughout the period of twenty-four hours; but in order to provide for the removal of the maximum quantity of sewage likely to enter the sewers, provision is made in their capacity for one-half the quantity to pass off in six hours, or at the rate of 1 cubic foot per head per hour. On washing days and in very hot weather this quantity will doubtless be exceeded. The estimated maximum sewage discharge for the whole area, on a prospective population of 482,608 persons, amounts to 8,044 cubic feet per minute.

Rainfall.

The provision to be made for the rainfall to be carried off by the sewers is a question of much importance, demanding special consideration. The extent of the area to be dealt with, and the quantity of rain which sometimes falls in a short period, render it somewhat difficult to determine. In London and nearly all the principal cities and towns in England, the sewers and stormwater overflows are sufficient in capacity to carry off the ordinary rainfall from the streets, roofs, paved yards, and other surfaces; but in order to similarly remove the semi-tropical rains which from time to time are recorded in and near Sydney, the dimensions of the sewers would require to be very large, and the cost of construction, even if financially possible, would be enormously increased. From a sanitary point of view such sewers are extremely undesirable, because the maximum sewage or dry-weather flow would scarcely be sufficient to ensure a self-cleansing velocity, and the increased internal surface which would thus be exposed, would greatly facilitate the formation of sewer gases.

Catchment area for rainfall.

The principal points to be determined are those relating to catchment area and depth of rainfall. For the city of Sydney and Redfern, the late Mr. Clarke, M.Inst.C.E., recommended an allowance of 40 per cent. of the entire drainage area, as the proportion of roof and paved-yard surfaces forming the rainfall catchment. The rule adopted for town areas in England by Mr. T. Hawksley (one of the foremost hydraulic engineers in the world) is to allow *one* square of roofing and *one* square of paved yard as the contributing area of each head of the population; which, if applied to the City and Redfern at the rate of 47 persons per acre ($\frac{47 \times 200}{9} = 1{,}044$ square yards), would amount to 21·58 per cent. of the entire area. I am of opinion that it is preferable to determine the catchment area in this manner by the ratio of population per acre, instead of assuming a certain percentage of the whole area. The prospective population of the Western Suburbs is estimated to range from 30 to 47 persons per acre.

Doubtless

Doubtless the dwelling-houses in the suburbs of Sydney present a greater superficial area of roof surface per head of population than that allowed for English towns, in consequence of so many of the houses consisting of "cottage" or ground-floor residences; but to allow for the interception of more than 100 feet of roof surface per head would necessitate the construction of larger sewers than are desirable. The sewers of Adelaide were designed to carry off all the rainfall from roofs, paved yards, and courts, but during recent heavy rains they were said to be incapable of discharging the quantity of rainfall which had found its way into them, showing that the water allowed ingress was greatly in excess of the quantity intended. It is obvious, therefore, that the greatest precautions will be necessary in dealing with the quantity of rainfall to be admitted into the sewers. A further and by no means unimportant reason may be urged in favour of restricting the admission of rainfall, viz, that excessive dilution of sewage greatly depreciates its value as a fertilizer. The estimated quantity of sewage per head to be admitted to the sewers is much greater than the usual allowance; therefore all additions of rainwater will still further depreciate the market value of the sewage when applied to land at the sewage farm.

The catchment area allowed for in the Southern and Western schemes is 200 feet superficial per head of population, that is to say, 100 feet for paved yards and 100 feet for roofed surfaces. Rainfall from paved yards is invariably more or less foul, and it should therefore be admitted to the sewers; in fact it would materially help to scour out the house drains. With respect to rainwater from roofs, I think that the allowance of 100 feet superficial is the utmost provision that should be made; in which case it will doubtless be necessary, wherever practicable, but especially in the case of the low-level systems, to conduct the water which falls upon the front part of the houses to the street channels, from whence it would flow into storm-water drains or culverts, and be discharged into natural watercourses. All surface water from roads and streets should be likewise conducted to storm-water culverts and channels, and be absolutely excluded from the sewers. The estimated prospective population per acre for the Western and Southern areas is 34·11 persons ($\frac{3,9,3,7,5,1}{11,5,4,4} = 34{\cdot}11$) and the before-mentioned allowance of roof surface per head, is equivalent to 15·66 per cent. of the entire area.

In the case of the Northern area, it will be absolutely necessary to further restrict the admission of rainfall into the sewers. The main sewer in George-street West, at the point where the Prince Alfred Hospital branch sewer joins, is designed to carry 2,103 cubic feet per minute when flowing ¾ full, or 2,469 cubic feet if flowing quite full; it would however, carry more than that quantity under a temporary additional head without creating inconvenience, but it would not be desirable to allow a much greater internal pressure. Fortunately there are great facilities for the natural discharge of rainfall at Glebe, Leichhardt, Balmain, and Camperdown, and therefore the whole of the water falling upon roofs should be excluded from the sewers, and be made to discharge into street channels. The catchment area allowed in this system (100 feet superficial per head) is intended to provide for backyards only, and, if calculated at the prospective average of 42·64 persons per acre, is equivalent to nearly 10 per cent. of the entire area.

Depth of rainfall.

The depth of rainfall intended to be removed by the main intercepting sewers of Sydney is calculated at 1¼ inch per diem for the Northern catchment area, and 3 inches for the Southern. The former amounts to a discharge of 1·26 cubic feet, and the latter to 3·02 cubic feet per minute per acre for the entire area. The calculations for the present scheme are based on a rainfall measuring 2 inches in depth during twenty-four hours, and although the official returns show that the rainfall in the suburbs of Sydney sometimes falls at a heavier rate for shorter periods, in all probability it would not frequently occur during the actual period of maximum sewage flow. The foregoing allowance for the Sydney Northern area is equivalent to ½-inch in depth if distributed uniformly over the entire area, but for the Southern area it equals 1⅓ inch over all. The present scheme provides for an average of ·313 inch in depth for the Southern and Western suburban systems, the discharge from which amounts to ·79 cubic feet per acre per minute. The restricted catchment area in the Northern suburban system will reduce the discharge therefrom to ·49 cubic feet per acre per minute. The following table of areas and discharges shows that whereas the total maximum sewage flow amounts to 8,044 cubic feet per minute, the quantity of rainfall proposed to be carried off in addition thereto, is 10,143 cubic feet per minute. If, however, 40 per cent. of the entire rainfall were removed by the sewers, the resultant discharge of rainfall only would be no less than 27,483 cubic feet per minute.

Volume of sewage and rainfall.

The various details explanatory of the volume of sewage and rainfall from each of the ten areas, are given in tabulated form in the appendix to this report, and it is therein shown that the resultant flow of sewage and rainfall combined will furnish discharges in cubic feet per minute as follows, viz.:—

System.	Prospective Population.	Area in Acres.	Rainfall per Acre.	Volume of Sewage.	Volume of Rainfall.	Combined Maximum Discharge.
			Cubic feet per minute.			
Northern	88,857	2,084	·4935	1,481	1,028	2,509
Southern	42,206	912	1·071	704	977	1,681
Western	351,545	10,632	·7654	5,859	8,138	13,997
Total	482,608	13,628	.....	8,044	10,143	18,187

Proposed Sewers.

Advantage of gravity sewers.

The primary object to be attained in devising the proposed scheme is to provide for the removal of as much of the sewage as practicable by gravitation, or in other words to reduce the amount of pumping to a minimum. Nearly 29% of the entire drainage area, however, is too low to admit of the former system, and low-level sewers and branches will be necessary at Marrickville and other places. These sewers will require to be emptied by means of pumping machinery or other mechanical power, the sewage being discharged into and carried off by the gravitating sewers.

The proposed sewers are designed to carry off the foregoing combined quantities when flowing about ¾ full, but should a heavier rate of rainfall occur during the six hours of maximum sewage flow, the excess of stormwater would be carried off by overflow-weirs, which would act as safety-valves in case of sudden

sudden emergency. It must be borne in mind that the capacity of the sewers is such, that several years must necessarily elapse before the actual catchment area would become so great as to cause over-chargiug or backflooding. This, however, could always be prevented by making sufficient stormwater overflows, or by providing relief sewers hereafter, as may be found necessary. The small quantity of sewage contained in stormwater so discharged into natural water-courses, would be so greatly diluted as to be rendered perfectly unobjectionable. During the night and at other periods of minimum flow, the sewers would be available for a much larger quantity of stormwater.

Tunnelling. It will be observed that the greater part of the proposed intercepting sewers and sub-mains is intended to be in tunnel; in fact a specially close study of the topographical features of the district was not required to show that a considerable amount of tunnelling must necessarily be resorted to in their construction. Experience tends to prove that the cost of executing such sewers in tunnel, through ordinary sandstone or shale formations, is not greater than for moderately deep open cuttings, and it is obvious that much public inconvenience is saved from the fact that streets do not need to be closed to traffic for considerable periods, and that carriage-way surfaces are only slightly interfered with during the construction of the works.

Plan and sections. The plan and sections which accompany this report show the position, dimensions, and levels of the proposed sewers and works. The situations and points of termination of the various sewers and sub-mains have been determined with a view to facilitating the construction of the necessary subsidiary sewers hereafter, and securing as large a gravitating area as practicable. The plan illustrates the drainage areas and extent of the various systems, the position of the proposed sewers being indicated by red lines, but it is possible that further investigation may render it desirable to make certain minor modifications. Without entering into the detail requirements of an efficient sewerage system, it may perhaps be mentioned that the present system is designed with a view to the sewers being laid in straight lines as far as practicable, and at a sufficient depth to drain the lowest part of the adjacent premises. The main intercepting sewers are oviform, with the narrow part at the bottom; this form giving the greatest hydraulic mean depth and consequently the greatest velocity or scouring power during the periods of minimum dry-weather flow. The areas and gradients, together with steps at the intersections, are so regulated as to ensure self-cleansing, and to carry off effectively the maximum quantity of sewage and rainfall. Due provision is made by shafts for inspection and ventilation, also for storm-water overflows, for automatic flushing tanks or chambers, and for air-flaps.

Northern System.

Route and length. The main intercepting sewer for the Glebe, Leichhardt, and Balmain portion of the Northern system, colored purple on plan and referred to on page 8, commences at the intersection of George-street West and Newtown Road, at a level of 28·68 feet above high-water-mark, and after passing through the Glebe and across Johnstone's Creek, it enters Leichhardt at the east end of Piper-street, through which it is continued to and across White's Creek. On the west of White-street its direction is changed, and it passes across Bronan's Estate and enters Balmain at Foucart-street, on the west side of Brockley-street. The sewer is continued through Evans-street to Reynolds-street; it then crosses Montague-street, Palmer-street, and Booth-street, and enters Darling-street opposite Elwin-street. It continues through Darling-street to a point north of Johnson-street, where it terminates at a level of 53·54 feet. The total length of the northern main sewer is 4 miles 520 yards, and with the exception of inverted syphons at Johnstone's and White's Creeks, and at the valley at the north end of Darling-street, the sewer will be practically in tunnel throughout. Twelve branch intercepting sewers or sub-mains are intended to be constructed at the Glebe, Leichhardt, and Balmain, as shown on plan. The total length of these sewers is 5 miles 513 yards, the greater part of which will be in tunnel.

Dimensions and inclination. The main sewer for a distance of 700 yards from its commencement is intended to be of oviform section, the dimensions being 5 feet by 4 feet. A sewer of this size is necessary to carry the estimated maximum discharge of 1,947 cubic feet per minute when flowing three-quarters full, but as the intended 45-in. syphon in George-street West will only carry off 1,600 cubic feet per minute at the ordinary rate of flow, provision must be made at the inlet for the discharge during heavy rainfall of at least 400 cubic feet per minute by means of a storm-water overflow. The foregoing circumstances, however, will render it possible to secure an additional temporary head of 9 inches for the purpose of flushing the syphon whenever necessary, which will be decidedly advantageous. At the Glebe Point Branch sewer the size is reduced to 4 feet 9 inches by 3 feet 9 inches, and the dimensions are further decreased at the various branches until at the intersection of Darling-street and Ann-street, Balmain, the size is 4 feet 2 inches by 2 feet 6 inches. North of the latter it consists of 15-in. and 12-in. pipes. The parts of the sewer in tunnel are intended to be lined with concrete and faced with cement. The inverted syphon at Johnstone's Creek will consist of wrought-iron pipes, 42 inches in diameter, carried across the flat on masonry piers at a height of 12 feet above the surface for a distance of 600 feet. The syphon at White's Creek is 40 inches in diameter, and could be so arranged as to form part of the proposed bridge at Piper-street, Leichhardt. With respect, however, to the 12-in. iron pipe syphon and pipe sewer beyond it at the north end of Darling-street, Balmain, it may perhaps be found desirable to postpone the construction of the portion of the main sewer north of St. John-street, or to omit it entirely, with a view to that part of the district, both high and low level, being dealt with by pumping the sewage into the intercepting sewer. The inclination of the main sewer for a length of 5,466 yards from its commencement is 1 in 1,509, or at the rate of 3 feet 6 inches per mile, while the intervening syphons have a fall of 1 in 1,200. From Reynolds-street to Ann-street, Balmain, the inclination is 1 in 800, north of which it is 1 in 500 and 1 in 450, the syphon being 1 in 400. The levels of the sewers have been so regulated and adjusted at each branch that an uniform flow-line will be secured, and the velocity, which, at the estimated maximum flow in the 5 feet by 4 feet sewer is calculated at 165 feet per minute, will gradually decrease to 141 feet per minute in the 4 feet 2 inches by 2 feet 6 inches sewer.

The drainage area of this portion of the Northern system is 1,641 acres, of which about 1,000 acres can be drained by gravitation into the before-mentioned sewers. The remainder of the area consists of houses on the water frontages, and of various parts of the district which are below the contour level, and its drainage may necessitate the adoption of the special means hereinafter described for raising the sewage to the required height. The extent of the gravitating area is shown on the plan by green dotted lines.

The

The Callan Park Lunatic Asylum at Leichhardt contains an area of about 100 acres. The premises are fitted with a large number of water-closets, and for the drainage thereof and the removal of liquid refuse of all kinds, a complete system of sewerage and drainage has been provided. The maximum dry-weather volume discharged into the waters of Long Cove from the outfall sewer at all states of the tide, is about 13,000 cubic feet per diem. It may perhaps be mentioned that part of the liquid sewage is utilized by irrigating the vegetable garden in dry weather, but the arrangements, however, are somewhat crude. The proposed main sewer at Balmain will permit of the interception of the greater part of the dry-weather or sewage flow from the asylum, should it be deemed desirable. Callan Park Asylum.

The Prince Alfred Hospital branch sewer is proposed to be extended through Camperdown to the north end of Liberty-street, Petersham, a distance of 1 mile 140 yards. Commencing by a junction with the existing sewer, about 4 chains to the east of the hospital, at a level of 50·5 feet, it passes into and along the lane on the north side of the hospital; thence in tunnel under the ridge at Missenden Road, and through Grose-street; across Church-street; thence continuing in a westerly direction under Australia-street and the ridge at St. Mary-street to the north end of Kingston Road, through which it passes to the south end; terminating at Liberty-street, at a level of 58·36 feet. From the junction with the existing sewer to the north end of Kingston Road, a distance of 1,400 yards, the sewer is 4 feet by 2 feet 8 inches of new oval form; the rate of inclination from the commencement to Church-street being 1 in 1,150, and from Church-street to Kingston Road 1 in 1,000. The remainder of the sewer will consist of 21-inch and 18-inch pipes, laid at inclinations of 1 in 650 and 1 in 600 respectively. The area is shown by a neutral-tint color on plan; it amounts to 323 acres, inclusive of the University, and its drainage can be entirely effected by gravitation. As previously explained, the Borough of Darlington and a part of Redfern, colored dark brown on plan, and comprising 120 acres, are already provided with efficient main sewers. Extension of Prince Alfred Hospital branch sewer

Southern System.

The southern outfall sewer referred to on page 8, together with the Bourke-street sewer, will provide for the drainage of Waterloo, for the greater part of Redfern, and for the southern slopes of the city. In this case a separate scheme is nearly perfected by the Department for the construction of the necessary subsidiary sewers and for connecting the house-drains; consequently no further reference to this portion of the area need be made, beyond mentioning the fact that it contains 583 acres, and is tinted light brown on plan.

For the drainage of the district lying to the south of the ridge at Newtown Road, and between Rosehill-street, Alexandria, Macdonaldtown Park, and Erskineville-street, Newtown (colored green, and containing an area of 329 acres), it is proposed to construct a branch from the southern outfall sewer, opposite Reserve-street on the Waterloo Estate. The most practical route is across Shea's Creek Swamp and Creek to Harley-street, Alexandria, continuing across Mitchell Road and the Park, thence *via* Park-street and Henderson Road, under the Illawarra Railway at Erskineville to Burren-street, and terminating at Wilson-street, Newtown; a distance of 1 mile 780 yards. The prospective maximum discharge from the area is 590 cubic feet per minute, and a sewer of circular form will best meet the requirements of construction and level across the swamp, where, for a length of 400 yards, it is proposed to be carried as an aqueduct on masonry or concrete piers, the maximum height of the iron pipe being about 12 feet above the surface. The commencing level is 25·95 feet above high-water-mark, and at the termination at Newtown it is 78·48 feet. From the southern outfall to Mitchell Road, a distance of 1,100 yards, the sewer is 30 inches in diameter and the inclination 1 in 1,000; the fall then increases to 1 in 600 and 1 in 200. The variation of level between the south end of Burren-street and Wilson-street is about 42 feet, but, by breaking the fall of the sewer into four steps of 3 feet each, an inclination of 1 in 50 is obtained. On the west side of Mitchell Road the sewer consists of 21-inch and 15-inch pipes, except in Burren-street, where, owing to the before-mentioned fall of 1 in 50, a sewer 9 inches in diameter is ample. The maximum depth of flow in the 30-inch circular sewer is 1·8 feet, the corresponding velocity being 154 feet per minute; in the 21-inch and 15-inch sewers the velocity is 165 feet and 239 feet respectively, but in the 9-inch it is no less than 375 feet per minute when flowing half full. With the exception of the aqueduct and embankment at each end, the sewer will be in open cutting at a moderate depth. The only proposed alteration in the surface level consists in slightly raising the old Bourke-street Road at the sewer crossing. Macdonaldtown branch sewer.

A branch sewer or sub-main is intended to be constructed in Mitchell Road extending to Henderson Road, a distance of 730 yards. The sewer consists of 24-inch, 21-inch, and 18-inch pipes, laid at inclinations of 1 in 800 and 1 in 500, the terminating level being 33·98 feet above datum. These levels will permit the interception of the dry-weather flow from the sewer recently constructed by the Department in Alexander-street, Alexandria. This sewer temporarily discharges into the watercourse, which is thus rendered very offensive in hot weather. A further branch sewer is shown along Buckland-street for a distance of 500 yards; it consists of 9-inch pipes laid at an inclination of 1 in 250, the level at the upper end being 38·50 feet. The reason for devising these branch sewers to fall towards Mitchell Road is to ensure a greater dry-weather flow and more satisfactory velocity through the aqueduct, the levels not permitting a greater inclination than 1 in 1,000. Sub-mains

Western System.

Notwithstanding that the only available routes for the outfall sewer of the Western System (referred to on page 9) between Webb's Grant and the north side of Cook's River are confined within narrow limits, the question of the best position required much consideration. The main points to be determined were how best to ensure, consistently with efficiency, the highest practicable level at the outfall on the one hand, and on the other, the lowest in the penstock chamber at the termination. Also that the direction and levels of the sewer should ensure a minimum amount of interference with public roads and private property, that no interference whatever should be made with the navigation of Cook's River, and that the sewer should pass under the Illawarra Railway at the least objectionable point. Outfall sewer.

From the physical nature of the locality, the foregoing conditions practically prohibit the adoption of a direct route, and render it desirable that Cook's River should be crossed at a point to the west of Marrickville Valley; in fact, the only alternative would be to cross it by means of an inverted syphon below the dam. From the nature of the works to be constructed this would be a very costly undertaking,

and

and the route would further necessitate an embankment or aqueduct across the intended reclamation works on the north side of the river. Moreover, it would either be necessary to cross Marrickville Valley by a syphon or aqueduct of considerable length, or to make a dêtour on the north side. Either method would result in the invert level at the extremity of the various main sewers being so much raised as to materially decrease the extent of the gravitating system in the outlying portions of the suburbs.

Route

The proposed outfall sewer commences at Webb's Grant at a spot about 20 chains east of Muddy Creek, and after passing through the additional land proposed to be resumed, the route selected would enable the sewer to pass under the two main roads and the Illawarra Railway at Tempe in tunnel, across Wolli Creek, through Unwin's Hill in tunnel, across Cook's River opposite the west side of Mansion street, Marrickville, and in tunnel under the high ground on the west side of the "Warren," terminating in a penstock chamber at the junction of the intercepting sewers in Premier-street, the length being 2 miles 380 yards. It is apparent that the outfall sewer will be a work of special construction, and that, like some of the London main sewers, some parts of it will be raised above the level of the surface in an embankment; whilst in others it will be carried by aqueducts over creeks, swamps, and flats. At the crossing of Cook's River, the level of the bottom of the sewer will be at least 14 feet above high-water-mark, thus affording an increased headway of 5 or 6 feet, as compared with the Illawarra Railway Bridge.

Levels.

The importance of embracing as large a gravitating area as possible has already been mentioned, consequently each extra foot in height at the head of the outfall sewer is an important factor. The invert level at the outfall is fixed at 9 feet above datum, a height which will practically command filtration through at least 6 feet of earth, at any portion of the western part of the sewage farm. The distance from the outfall to the penstock chamber at Premier-street is 11,700 feet, and as the intended inclination is 1 in 1,700, the invert at the intercepting chamber will therefore be 15·88 feet above datum. The inclination is equivalent to a fall of 3·11 feet per mile.

Form and dimensions.

The most suitable form of sewer is circular; it combines the greatest strength and capacity with the smallest amount of brickwork; but from the following remarks it will be seen that it is most undesirable that the outfall should consist of one large sewer only. The dimensions of a sewer capable of discharging the estimated maximum flow of 13·997 cubic feet per minute, when running full, would require to be 9 feet in diameter; but as the flow-line in the largest intercepting sewer at the penstock chamber would only be 5·12 feet above the invert, it is obvious that a step of nearly 4 feet would have to be provided, a loss of level which would most seriously restrict the gravitation area. Notwithstanding that the construction of an outfall sewer of smaller dimensions in triplicate may involve a greater outlay, yet the advantages to be gained thereby are highly important. Three sewers, each 6 feet in diameter and flowing about 4 feet 9 inches deep, would not only furnish the required discharging capacity, but would obviate any loss of level by the step previously alluded to. This form of outfall would enable the intercepting sewers to be continued to Petersham, Leichhardt, Ashfield, Burwood, and Strathfield, and permit the extension of the high-level system in various districts, which would otherwise be impracticable. Further, by adopting three smaller sewers instead of a single one of larger dimensions, the crown would be about 3 feet lower; therefore greater lateral stability would be ensured where it passes above ground as an aqueduct.

Inclination, &c.

The discharging capacity of a sewer 6 feet in diameter is sufficient to enable the sewage of the existing population of the drainage area to be carried off by one only of the three intended sewers; it would, however, be advisable to construct the outfall in duplicate. This would enable internal examination or repairs to be carried on, and would also provide for sudden emergencies and future requirements. Storm-water overflows would be provided, and the works would be so arranged that the third sewer could be added whenever necessary. Another advantage may be mentioned—viz., that, inasmuch as the sewage from the existing population is relatively small in comparison with the prospective discharge, a much better velocity would be secured by conveying it through a smaller sewer for the time being. At an inclination of 1 in 1,700, each sewer will have a velocity of 189 feet per minute when flowing at a depth of 4·75 feet. The outfall sewer being a main carrier and not an intercepting sewer, the flow will be uniform throughout its length; consequently the probability of deposits taking place therein is very small, even during the period of minimum flow. Although the proposed gradient is flatter than the one adopted for the northern outfall sewer at Sydney, viz., 1 in 1,509, I have no hesitation in recommending it, having had practical experience of the working of circular sewers of similar dimensions in London, with inclinations of 1 in 1,751 and 1 in 1,915 respectively.

Intercepting sewers.

For the effectual drainage of the Western area, it will be necessary to provide for the construction of four intercepting sewers, as follows, all of which will commence at the before-mentioned penstock chamber, viz.:—

Eastern. (1).—An intercepting sewer and branches, which will provide for the eastern area colored yellow on plan, and will take the drainage of Marrickville and St. Peters, also parts of Newtown, Macdonaldtown, Alexandria, Petersham, Leichhardt, and Camperdown. The total drainage area is 2,657 acres, of which 1,477 acres are upon the gravitation principle, whilst the remainder (1,180 acres) comprises the low-lying parts of Marrickville, St. Peters, Newtown, Macdonaldtown, and Alexandria, which will be embraced in a low-level system. The latter sewers are shown by blue lines on plan. The high-level sewer

High-level system.

commences at the penstock chamber, at a height of 16·13 feet; its route is along Illawarra Road and across Addison Road, Stanmore Road, and Parramatta Road; thence along Ferris-street and Alfred-street to Booth-street, Leichhardt, a distance of 2 miles 1,590 yards, its terminating level being 32·09 feet above datum. The estimated maximum discharge from the 2,657 acres is 4,231 cubic feet per minute, of which 2,352 cubic feet is from the high-level system. The inclination of the main sewer is in 1 in 1,509 for a distance of 4,240 yards, and 1 in 1,000 for 590 yards, the remainder being 1 in 700. The dimensions to the outlet of the low-level delivery main, which is at a distance of 720 yards from the intercepting chamber, are 6 ft. 6 in. x 5 ft. 6 in.; the size is then reduced to 5 ft. 2 in. x by 4 ft. 2 in., and is afterwards decreased at the various points of interception until it becomes 4 ft. 0 in. x by 2 ft. 8 in., the termination at Leichhardt consisting of 18-inch pipes. The maximum velocities vary from 193 feet to 135 feet per minute. Except at the three depressions in Illawarra Road and at Alfred-street, Leichhardt, the sewer will be in tunnel, the greatest depth of shaft being 78 feet at Petersham. The crossing of the valley at Sydenham Road is intended to be effected by means of an inverted syphon 870 feet in length, the inclination of which is 1 in 737. An iron pipe 33 inches in diameter will ensure a velocity of

183 feet per minute, and it will be sufficient in capacity to discharge the maximum flow from considerably more than the existing population; but should it hereafter be found necessary to increase the provision, a second pipe could be added. The syphon is so devised that for the purpose of examination or repair, its contents could be temporarily drawn off into the low-level sewer.

Sub-mains. The first of the branch intercepting sewers shown on plan is on the southern side of the main ridge, the second one being at Leichhardt, north of Parramatta Road. The former commences at and passes along Addison Road, it then crosses Enmore Road and continues under the ridge in tunnel to Edgeware Road, thence through Camden-street and in tunnel under Cook's River Road to within a short distance of the south end of Toogood-street, Macdonaldtown. The length of this sewer is 1 mile 190 yards, the invert level at its termination being 34·71 feet above datum. The size of the sewer in open cutting is 24 inches and 21 inches in diameter, but where it passes under the ridges at Enmore and Cook's River Road in tunnel, the dimensions are increased to 4 ft. 0 in. x 2 ft. 8 in. The inclinations vary from 1 in 900 to 1 in 500. At the lowest places in Addison Road and Camden-street it will doubtless be advantageous to substitute iron for stoneware pipes for short distances. The northern branch consists of a 4 ft. 0 in. x 2 ft. 8 in. sewer, 1,670 yards in length; it commences at Albion-street, through which it passes to Johnstone's Creek, thence to Pyrmont Bridge Road, Camperdown, continuing under Booth-street and the ridge in tunnel, and terminating near the Orphan School Creek in the Old Parramatta Road, Glebe, at a level of 36·11 feet above datum. A short branch consisting of 12-inch pipes is also shown in Susan-street, extending to Booth-street, Annandale, a distance of 570 yards, the terminating level being 35·16 feet above datum. It is possible however that on closer examination it may be found desirable to carry the sewer along Nelson-street for a part of the distance, the levels being more suitable.

Low-level system. The low-level system will necessitate the erection of a pumping station in Marrickville Valley, the site selected as the most convenient being in the vicinity of Meek's Road, adjacent to the proposed Liverpool loop-line, and it is probable that the best position for the delivery main, which would discharge into the eastern intercepting sewer in Illawarra Road, would be alongside such railway. The invert of the low level sewer at the pumping station is 7 feet below datum, and at the upper end at Macdonaldtown, on the eastern side, it is 10·74 feet above. The levels at the extremities of the branch sewers are 5·95 feet above datum at South-street, St. Peters; 6·87 feet at the south end of Harber-street, and 11·56 feet at the south end of Mitchell Road, Alexandria. On the western side the level of the invert at the south end of Meeks' Road is 0·31 feet below datum; at the intersection of Meek's Road and Sydenham Road it is 1·61 feet below datum, terminating at a level of 6·69 feet above datum at the intersection of Victoria and Cook's Roads, Marrickville. The low-level main sewer on the eastern side would pass under the Illawarra Railway, along Bridge-street, Unwin's Bridge Road, and May-street, crossing under Cook's River Road, Mitchell Road, and the railway, thence to Devine-street, terminating at Macdonald-street, Macdonaldtown. The length of the low-level main sewers on the eastern side of the pumping station is 4,170 yards, and on the western 1,560 yards, amounting to 3 miles 450 yards in all. The prospective maximum discharge is 1,389 cubic feet per minute from the eastern section, and 490 cubic feet from the western, making a total of 1,879 cubic feet per minute to be pumped into the high-level sewer. The inclinations vary from 1 in 1,509 and 1 in 1,200, to 1 in 300 at the upper end. The largest sewer is 4 ft. 6 in. x 3 ft. 6 in., oviform in section, the dimensions being reduced by the several steps to 4 ft. 0 in. x 2 ft. 8 in. and from 21 inch to 12-inch pipes; the maximum velocities varying from 154 feet to 172 feet per minute. About 1,460 yards in length would probably be in open cutting, the remainder being in tunnel at a moderate depth, the deepest shaft being 38 feet in May-street. Due allowance is made in the estimates for increased cost in providing sub-ducts and additional concrete under and around the sewers, owing to unsound foundations and to the probable existence of sub-soil waters. The sub-main to St. Peters is a 4 ft. 0 in. x 2 ft. 8 in. sewer in tunnel, its inclination 1 in 500, and length 700 yards. The Campbell-street sub-main is also partly in tunnel and the remainder consists of 12-inch pipes, the total length being 1,000 yards. The branch to Mitchell Road is an 18-inch pipe sewer, 534 yards in length, laid at an inclination of 1 in 550, and the length of the 12-inch pipe-sewer at the south end of Meek's Road is 600 yards.

Pumping engines. In determining the measures to be adopted for raising the sewage from the low-level system into the high-level sewer, a lift of 34 feet, it is necessary to consider both existing and prospective conditions. The low-level area contains 1,180 acres, and at the prospective rate of 40 persons per acre, the estimated future population is 47,200 persons, whereas the existing population does not probably exceed 12,000 persons. To provide steam-power for raising the combined maximum flow of 1,879 cubic feet per minute direct from the sewers, without storage, would necessitate pumping engines equivalent to 120 horse-power; but it is only intended in the first instance to provide for a population of 15,000 persons, in which case the maximum discharge would be 597 cubic feet, or 3,731 gallons per minute; consequently an engine of 38 horse-power would be sufficient to perform the actual duty required. The maximum dry weather or sewage flow would not exceed 250 cubic feet per minute, the additional quantity being the limited amount of rainfall intended to be carried off from back yards. The combined quantity to be raised per annum is as follows, viz.:—

		Gallons.
Sewage	15,000 population x 50 gallons x 365 days =	273,750,000
Rainfall	15,000 population x 200 sq. ft. x 4⅓ ft. x 6·25 gallons =	78,125,000
Total		351,875,000

Type of engine. The engines generally adopted for the purpose of raising sewage were, until quite recently, compound condensing rotative beam-engines, or compound vertical direct-acting engines. This type of engine, however, is much more costly than the "Worthington" pumping engine, which is now being largely used and which is recommended in the present scheme. The "Worthington" engines will give a duty of 100,000,000 foot-lbs. per cwt. of coal, and the class of pump best fitted for the requirements at Marrickville is the "direct-acting low service steam pump," which is not only economical in first cost, but saves a very considerable outlay in the expense of foundations and buildings. Duplicate engines, each capable of raising 4,000 gallons per minute will be necessary, and it is estimated that the adoption of "Worthington" engines will ensure a saving of £5,000 on the existing requirements.

Northern (2).—A branch intercepting sewer, which will provide for the area colored red, amounting to 2,005 acres, and comprising the western parts of Marrickville, Petersham, and Leichhardt. A sub-main at Summer Hill will take the drainage of the eastern portion of Ashfield, and its capacity will be sufficient

sufficient to include Dobroyd, should that district hereafter require drainage. The main sewer commences at Premier-street, at a level of 16·88 feet above datum; and after passing under Warren Road, Livingstone Road, and Marrickville Road, it enters Wardell's Road, through which it continues and passes under the main ridge at Canterbury New Road and under the railway to Canterbury Old Road, Petersham. After crossing Parramatta Road, and passing along Flood-street, Allen-street, James-street, and Commercial Road, Leichhardt, it terminates at Church-street at a level of 38·71 feet. The total distance is 3 miles 960 yards, and, with the slight exceptions hereafter referred to, the sewer will be entirely in tunnel, the deepest shaft being 58 feet at Frazer Road, Petersham. The levels of those parts of the area which front Long Cove and Iron Cove Creek, together with a strip on each side of Long Cove Creek, as shown by dotted lines and containing an area of about 490 acres, are too low to permit of drainage by gravitation; therefore these places will probably have to be provided for hereafter in conjunction with low-level areas on adjacent systems.

Dimensions, inclination, &c.

The prospective maximum discharge from the above area is 2,635 cubic feet per minute. The inclination of the sewer is 1 in 1,509 for 2,740 yards from the commencement; it is subsequently increased at various points from 1 in 1,200 to 1 in 800, the fall at the upper end of Leichhardt being 1 in 600. The dimensions vary from 5 ft. 6 in. x 4 ft. 6 in. to 4 ft. 0 in. x 2 ft. 8 in., and the maximum velocities from 175 to 140 feet per minute. The portions of the sewer in open cutting occur at and near the crossings of Parramatta Road and Lord-street, and in James-street, Leichhardt, and at Lord-street it is intended to slightly raise the level of the surface. The branch sewer or sub-main from Frazer Road, Petersham, to Parramatta Road, Ashfield, is 1 mile 310 yards in length, the terminating level being 32·75 feet above datum. The route selected passes under Denison Road, Victoria-street, and Canterbury Old Road, at Petersham; across Long Cove Creek, and along Smith-street and Fleet-street, at Summer Hill; thence under the Railway, and across Grosvenor, Crescent, and Bogan-streets, to the intersection of Sloane-street and Kensington Road; thence to and along Parramatta Road to the watercourse near Ormond-street, Ashfield. The inclination varies from 1 in 1,509 to 1 in 500, and the size of sewer decreases from 4 ft. 4 in. x 3 ft. 4 in. to 4 ft. 0 in. x 2 ft. 8 in., nearly all of which is in tunnel; the only special work of importance being at the crossing of Long Cove Creek, where iron pipes will require to be used.

Route.

Western (3).—An intercepting sewer, extending to Strathfield. Its length is 5 miles 240 yards; and, aided by three branch-sewers on the north side, it will provide for an area of 4,100 acres. This area is shown by the blue colour on plan, and includes the western part of Ashfield and a portion of Enfield, also the Borough of Burwood, the south portions of Five Dock and Concord, and so much of Strathfield as lies south of Parramatta Road, east of the ridge beyond Homebush Railway Station, and north of the main ridge described on page 7. The main sewer commences at a level of 15·88 feet above datum; and, after passing in tunnel under the ridge at Livingstone Road, it enters Terrace Road and continues in a direct line therefrom in tunnel under the main ridge and various spurs, to the intersection of Alt-street and Albert Parade, Ashfield. It then proceeds in a westerly direction, *via* Albert Parade, across Croydon Road, Young-street, and Cheltenham Road, to the intersection of Shaftesbury Road and Victoria-street, Burwood, and passing through Victoria-street under Park Road and Wentworth Road, and across Redmyre Road, it continues along Redfern-street to Homebush Road, Strathfield, where it terminates at a level of 36·76 feet above datum. The area between the main ridge and the proposed sewer, together with the higher parts on the north side thereof, can be drained by gravitation; but the lower parts of the area in the vicinity of Iron Cove Creek at Croydon; of the water-courses which drain into Hen and Chicken Bay at Burwood, Five Dock and Concord; and of the water-courses leading to Homebush Creek at Strathfield, as shown by dotted lines on plan and containing a total area of about 1,100 acres, will not permit of that system, but will have to be specially provided for hereafter, in connection with other low-level areas.

Dimensions and inclination.

The prospective maximum discharge from the above area is estimated at 4,897 cubic feet per minute, and the inclination of the sewer being 1 in 1,509, its dimensions at the commencement require to be 6 ft. 10 in. x 5 ft. 10 in. The size will be reduced at the various points of interception, until, at the termination at Strathfield it is 3 ft. 9 in. x 2 ft. 6 in. The inclination of 3 feet 6 inches per mile extends to Redmyre Road, Strathfield, at which point the level of the invert is 34·37 feet above datum, but westward thereof the fall is 1 in 1,200. The maximum velocity of the 6 ft. 10 in. x 5 ft. 10 in. sewer is calculated at 198 feet per minute, decreasing to 146 feet per minute in the smallest sewer. With the exception of short lengths in open cutting at Terrace Road, Marrickville; at Etonville Parade, Croydon; at Burwood Road, Burwood; and at Redfern-street, Strathfield, the sewer will be in tunnel, the deepest shaft being 102 feet at Ashfield. The construction throughout will be simple, and will only interfere with the surface at the before-mentioned depressions, at which points the levels thereof will require to be slightly raised, the watercourses deepened, and a special form of covering provided; all of which, however, are mere matters of detail.

Sub-mains.

The three branch sewers or sub-mains will provide for the drainage of parts of Ashfield, Croydon, Five Dock, Burwood, and Concord. The sub-main at Ashfield commences by a junction with the main intercepting sewer at the intersection of Alt-street and Albert Parade, and passes along Alt-street in tunnel to Parramatta Road, the terminating level being 35·09 feet above datum. The dimensions of the sewer are 4ft. 0 in. x 2 ft. 8 in., and the length is 900 yards. The sub-main for the southern portion of Five Dock branches off from the main sewer at Young-street, Croydon; it then passes along Young-street, crosses Queen-street and Lang-street, and enters Church-street; thence under Bay-street, across to Parramatta Road, and along Cross-street to King's Road, Five Dock; a total distance of 1 mile 130 yards, of which about two-thirds will be in tunnel. The size of the sewer is 4 ft. 0 in. x 2 ft. 8 in., and the invert level at the termination is 40·21 feet. The Concord sub-main commences by a junction with the main intercepting sewer at Wentworth Road, Burwood; it then passes along Wentworth Road in tunnel, and crosses Parramatta Road; passes along Broughton-street, across Gipps-street, and terminates at the intersection of Crane-street and Bay Road, Concord. For a length of 970 yards the internal dimensions are 4 ft. 0 in. x 2 ft. 8 in.; the size is then reduced to a 21-inch pipe. The total length is 1,640 yards, and the invert level at Crane-street is 44·67 feet above datum.

Route, dimensions, &c

Branch to Canterbury (4).—A sewer for the future drainage of the district, coloured light blue on plan, containing an area of 1,870 acres, a prospective maximum discharge of 2,234 cubic feet per minute, and comprising the portion of Canterbury on the north side of Cook's River, together with Enfield and the part of Strathfield south of the main ridge. Cook's River, from Marrickville to Liverpool Road, forms the

the southern boundary, and the main ridge the northern. Although it may not be imperatively necessary to construct this sewer at the present time, it is desirable to make provision for it in the general scheme, in consequence of the fact that the population of Canterbury and Enfield is rapidly increasing. The position of the proposed main intercepting sewer—a considerable part of which would be in tunnel—is shown by red dotted lines ; and as the portion between the penstock chamber at Premier-street and the bend in Terrace Road would be parallel to the intended western main sewer, it would doubtless be advantageous and economical to construct such length in connection with the latter. For the reasons expressed on pages 13-14, with reference to the dimensions of the main outfall sewer, it would be extremely undesirable to provide a larger single sewer in preference to a double one as proposed. The commencing level is 17·13 feet above datum, and at the termination at Homebush, a distance of 5 miles 250 yards, it is 44·63 feet. The route west of Terrace Road, Marrickville, is across Garnet-street, Canterbury Old Road, Holden-street, King-street, Croydon Avenue, George's River Road, and Burwood Road; along part of Church Road and Dean-street, Enfield, and thence northward along Homebush Road to the watercourse near Fairhome-street, Strathfield. The inclination of the sewer varies from 1 in 1,509 at Marrickville to 1 in 500 at Strathfield, and the dimensions from 5 ft. 2 in. x 4 ft. 2 in. to 4 ft. 0 in. x 2 ft. 8 in.

Length of proposed Sewers.

The total length of sewers comprised in the foregoing systems and included in the present scheme, exclusive of the proposed main sewer for the future drainage of Canterbury, Enfield, and other districts, is 37 miles 967 yards, as will be seen by the following summary, viz. :—

System.	Mains.		Sub-mains.		Total.	
	Miles.	Yards.	Miles.	Yards.	Miles.	Yards.
NORTHERN SYSTEM.						
Glebe, Leichhardt, and Balmain branch	4	520	5	513		
Camperdown branch	1	140	...	...		
	5	660	5	513	10	1,173
SOUTHERN SYSTEM.						
Alexandria and Macdonaldtown branch	1	780	...	1,230	2	250
WESTERN SYSTEM.						
Outfall sewer	2	380	...	...		
Eastern branch—high-level	2	1,590	2	670		
Do. low-level	3	450	1	1,074		
Northern branch	3	960	1	310		
Western branch	5	240	2	810		
	17	100	7	1,204	24	1,304
				Total	37	967

Low-level Areas.

Description of low-level areas.

It has already been explained that, in addition to the low-level system at Marrickville, certain low-lying parts of the western suburbs are below the gravitation level. About one-fifth of the remainder of the drainage area will thus be excluded from the gravitation system ; and although at the present time there may not be any absolute necessity for the construction of sewers therein, it was necessary that the future provision for those areas should receive full consideration. There are twenty-two low-level areas in all—viz., two at the Glebe, three at Leichhardt, ten at Balmain, one at Ashfield, one at Five Dock, two at Burwood, one at Concord, and two at Strathfield. The low-level areas at the foot of the eastern slope of the Glebe would no doubt be dealt with at Blackwattle Cove, in connection with the city system of sewerage. In devising the main sewers and sub-mains, provision has been made in their capacity for the removal of the sewage from the whole of the low-level areas; but in the majority of those instances the existing conditions do not demand the immediate construction of sewers, therefore no provision has been made for the same in the present estimate. Doubtless the first areas to be dealt with will be at the Glebe, Leichhardt, and Balmain; and, as the population increases in the western districts, it will hereafter become necessary to make further provision from time to time. It would, however, in my opinion, be prudent to postpone the further consideration of any such works until the gravitating sewers are complete and in operation, as under those conditions the actual requirements of each area could be better ascertained. It is considered that the actual volume of sewage to be dealt with below the gravitating level will not only be relatively small, but, when diluted, its discharge into deep water would be inoffensive; and as portions of some of the areas front the Parramatta River, it is quite possible that under proper arrangements the drainage from the several houses thereon might be so conducted as to discharge below low-water mark, and thus obviate considerable expense in the construction of sewers in extreme cases.

The "Shone system.

One of the most efficient and economical modes of dealing with the several areas which are situate below the gravitation level would doubtless be by the adoption of the "Shone pneumatic-ejector system," which is a most valuable adjunct to a sewerage system where various parts of the drainage area are too low for gravitation, or too small in area and not sufficiently compact for an ordinary low-level system, involving pumping. Without entering into a detailed description of the machinery and apparatus, the principle of the system may be explained in a few words. In each area, ordinary stoneware pipe sewers would be laid in the streets for conveying the sewage by gravitation to an iron receiver, fixed at the lowest convenient part of the area to be drained. The sewage would then pass into an ejector, made of cast-iron and placed in an underground brick chamber. The ejectors are made to contain from 500 to 1,000

1,000 gallons each, and are fixed in groups of two, three, or four, according to local requirements. Immediately one is filled with sewage, an automatic arrangement admits compressed air into the cylinder, thus expelling the contents and forcing the sewage through an iron sewage-main into the nearest gravitating sewer. The system has been in operation for some time at Eastbourne and Southampton, where it has given great satisfaction, and it has recently been adopted in several other towns in England. A station for air-compressing machinery at the south end of Balmain would supply compressed air through cast-iron mains to ejectors at Balmain, Leichhardt, and the west side of the Glebe, and it is probable that a station in the vicinity of Hen and Chicken Bay, at Burwood, would serve for the remaining ejectors.

Sewage disposal.

Method of disposal.

Sewage is an uninteresting subject to many persons, but there is no greater problem than how to dispose of it effectually. The methods of treatment generally adopted for cities and towns were referred to in the recent report on the North Shore Sewerage and in various departmental reports, and the latest information from England shows that very little modification has since taken place. In London the Metropolitan Board of Works are now expending about £750,000 in the construction of tanks and other works for the precipitation process, in order to improve the condition of the River Thames at the main outfalls. At Portsmouth £120,000 has just been expended in the erection of additional pumping engines and in the construction of large storage tanks at the outfall which will enable 4½ million gallons of crude sewage to be discharged into the sea, within one hour from the commencement of each ebb-tide. In other important sanitary works, where irrigation is inadmissible, precipitation (*i.e.*, chemical treatment) and earth filtration appear to have been largely adopted.

Adelaide Sewage Farm.

The Adelaide Sewage Farm is 470 acres in extent; it is worked upon the broad irrigation principle, combined in the winter months with intermittent-downward filtration. The expenditure for land and works has amounted to £65,000. The experience of colonial sewage farming at Adelaide is valuable, for on the one hand it has shown that about £10,000 might probably have been saved by the non-erection of buildings for dairy purposes which are no longer used, irrespective of a considerable sum for levelling land, which might have been saved by the use of modern appliances. On the other hand, however, it shows that liquid sewage is an especially valuable fertilizer in a hot climate, and that under good management a substantial income can eventually be derived from grazing and fattening stock, and from the growth and sale of root crops, fodder, plants, fruit, and vegetables. During the first two or three years' operations the farm did not pay working expenses, but a recent return indicated a profit of £700 on the operations of the previous half-year.

Various systems of treatment.

The report of the Sewage and Health Board in 1876 renders it unnecessary to enter into details of the various systems of sewage disposal or treatment, but they may be recapitulated as follows, viz.: —

1. By discharge into the sea or into a tidal estuary or river, without treatment.
2. On land, by irrigation.
3. On land, by intermittent downward filtration.
4. By chemical treatment.

Advantages of irrigation.

It would be undoubtedly misleading to assert that any one special system of disposal is the best for adoption; everything depends upon local conditions, or, in other words, every place must be dependent upon its own physical circumstances and requirements. Irrigation is not the universal mode of sewage purification, but where favourable conditions exist it is the cheapest and most efficient process, especially where sewage can be delivered by gravitation. The conditions essential to efficiency and financial success necessitate,—

(*a*) Suitable soil of a sufficient depth;
(*b*) Sufficient area of land;
(*c*) Straining the sewage;
(*d*) An artificial filter as a stand-by for use in wet seasons.

A warm climate suits irrigation, and so far as the available area of land will allow, the process could be economically carried on at Botany in the manner hereinafter pointed out. It is essential to the success of sewage farming, when conducted under sanitary obligations—that is to say, jointly for the production of remunerative crops and for the complete purification of the sewage—that the area to be employed shall be sufficiently large to enable the cultivation to be frequently varied, and to prevent the land from becoming either drowned with water or overgorged with excretal and other organic matters.

Various allowances for land.

Mr. Hawksley states "that in the moist climate of England 6,000 tons per acre per annum is the desirable limit for broad irrigation on land of average suitability." This is equivalent to 60 inches in depth. Sir Robert Rawlinson, however, states "that 12,000 tons is not too great a volume to be used on well-prepared land without swamping it, if the sewage is equally and evenly distributed." Professor Robinson states "that open porous land, drained to a depth of 6 feet, will take the sewage of 600 or 700 persons per acre per annum, but there must be an artificial filter for use in wet seasons." Other authorities state that a less depth than 6 feet will suffice to purify the effluent after chemical treatment or precipitation. Professor Tidy recommends a combination of "precipitation and irrigation" as a sound process to adopt. It is, of course, well understood that whereas chemicals will clarify sewage, earth alone will absolutely purify it and render it unobjectionable.

Volume of sewage and rainwater to be treated.

The combined volume of sewage and rainwater to be discharged at the sewage farm from the southern and western outfall sewers will eventually assume large proportions. It is obvious that the sewage flow will vary throughout the year in proportion to the increase in the consumption of water during hot summer days, and to the decrease during the winter months. The range affects the quantity consumed very materially; for instance, for a population of 100,000 persons at the summer rate of 72 gallons per head, the daily volume would amount to 32,140 tons; at the mean rate of 50 gallons, to 22,320 tons; and at the winter rate of 25 gallons, to 11,160 tons. The rainfall catchment area being calculated at 200 square feet per head of population, a rainfall of 2 inches in twenty-four hours from a similar population would give the following results, viz.:—$\frac{100,000 \times 200 \times \frac{1}{12}}{35{\cdot}84 \text{ c. ft.}} = 93,006$ tons per day. It is therefore apparent that for a population of 100,000 persons the volume will vary from a minimum dry-weather flow of 11,160 tons per day, to a maximum flow of sewage (taken at the mean rate) and rainfall combined, amounting to 115,326 tons per day.

Assuming

Annual volume.

Assuming the commencing population at 100,000 persons, the volume of sewage and rainfall combined (the former being calculated at 50 gallons, or ·2232 tons per head per day throughout the year, and the latter based upon an annual rainfall of 50 inches) would amount to the following quantity per annum, viz.:—

	Popu. Gals. Days.		Tons.
Sewage	$\frac{100,000 \times 50 \times 365}{224 \text{ gallons.}}$	=	8,147,321
Rainfall	$\frac{100,000 \times 200 \times 4\frac{1}{6}}{35{\cdot}84 \text{ cubic feet.}}$	=	2,325,149
Total			10,472,470

or at the rate of 104·72 tons per head per annum. From these figures it is a simple matter of calculation to determine the annual volume to be dealt with as the population draining into the sewers increases; *e.g.*, the quantity would amount to 20,944,940 tons per annum for a population of 200,000 persons, whereas for the entire prospective population of the southern and western areas, as described on page 9, it would amount to 41,235,454 tons.

Arrangement of Sewage Farm and Outfall Works.

Mode of application to land.

The various volumes requiring to be utilized and purified having been described, the best mode of applying the sewage to the land, after it has been strained, will consist in the combined processes of irrigation and intermittent-downward filtration. Although the area of land at present available for this system of treatment is sufficient for a population of over 200,000 persons, it will probably be unnecessary to provide for more than half that number in the first instance. As the population further increases, it will become necessary to enlarge the effective area from time to time, and to adopt the process of "precipitation" for a portion of the additional sewage, the effluent being subjected to æration and earth filtration, or further chemical treatment. With a total area of 550 acres it will thus be practicable to utilize and purify the sewage and rainwater from a population of about half-a-million persons.

Provision for tanks and destructor.

It will be desirable to so arrange the outlet works that the contemplated "precipitation" tanks can be added whenever deemed necessary. Sewage should not be unnecessarily exposed before its application to land, and although it may materially add to the cost of construction, it will doubtless be found desirable to cover the tanks and main carriers. The results obtained will justify the extra outlay. It may possibly be deemed advantageous on sanitary grounds to establish a "Destructor" on the farm for the disposal of household and other refuse. If so, steam-power might thus be obtained for the purpose of pumping water or sewage, or for working machinery; moreover, noxious gases from tanks could be drawn off and consumed by the furnaces or be carried away by the chimney-shaft. Convenient access to the farm from each end should also be provided.

Preparation of areas.

The work of draining, forming, and preparing the effective area which will eventually be required in addition to the 370 acres referred to on p. 9, could be gradually proceeded with. A considerable quantity of superfluous material could be removed from the higher parts and levelled where required, and other parts could be filled in by the deposit of dredged material. These operations could be greatly facilitated by the use of water and suitable appliances. The solids extracted from crude sewage, after being deodorised, together with sludge from the precipitation tanks, could also be dug in and covered up with earth; thus, the swampy area would gradually be reclaimed and the level brought up to the requisite height above high-water. An effective area for the purification of a precipitation effluent, need not necessarily have its surface more than 5 feet above high-water-mark spring tides.

Annual allowance per acre.

The volume to be delivered at the sewage farm is apparently very great in proportion to the area of the land, but, under all the circumstances, I have no doubt whatever that the latter is capable of effectually purifying the sewage. The soil, which at present is uncultivated, is of an extremely porous nature, and its surface is well above high-water-mark; it is therefore scarcely possible to place a limit on its powers of absorption. It will certainly purify an exceptionally large quantity for the first few years, and under the favorable climatic conditions which exist, provided the crude sewage be first strained, an allowance of 18,000 tons per acre per annum for broad irrigation, and from 1,600 to 2,000 tons per acre per day for intermittent-downward filtration will be within a safe limit.

Filtration allowance.

The irrigation allowance is equivalent to 178 inches in depth, and 186·4 persons per acre. Broad-irrigation alone would require an area of 582 acres for each 100,000 population, irrespective of a small filtration area in reserve; and as so extensive an area is impracticable, the advantage of a combined system is obvious. A daily allowance of 1,600 tons per acre of filtration area on 120 days is equivalent to 1,833 persons per acre per annum. The allowance under this process in England varies from 1,000 to 2,000 persons and upwards per acre, consequently it may be safely assumed that the proposed filter at Botany will easily provide for the before-mentioned number. A well-formed filtration area 6 feet deep, will pass 2,000 tons per acre per day intermittently with facility; in fact, the filter at Adelaide is designed to purify sewage at the rate of about 3,000 tons per acre per diem.

Capacity of filters.

If a volume of sewage amounting to 22,320 tons (the estimated mean dry-weather flow from a population of 100,000 persons, *vide* page 18) were delivered upon a filtration area of 34 acres in one day it would cover the whole area to a depth of 6½ inches ($\frac{22,320}{34 \times 101} = 6\frac{1}{2}$), or at the rate of 656 tons per acre; but if rainfall to the before-mentioned depth of 2 inches in twenty-four hours (93,006 tons) passed into the sewers, in addition, the depth would be increased 33·6 inches, and the rate per acre would amount to 3,392 tons. In practice, however, it would scarcely ever be found necessary to discharge the entire volume on the filtration area, because some portion of the irrigation area would be available. Moreover, as the rainfall throughout the entire area of the western suburbs would only amount to or exceed 2 inches in twenty-four hours upon very few days per annum, it may be taken for granted that the capacity of the filters would seldom be tried to such an extent.

Area to be first prepared.

The existing population of the area to be drained into the southern and western outfalls is estimated at 100,000 persons, and in the appropriation and laying out of the sewage farm, provision should be made for at least that number of persons. The quantity of sewage and rainwater to be treated would thus amount

amount to nearly 10½ million tons per annum (*vide* page 19), and for its effective disposal, 254 acres of land would require to be cleared, levelled, and prepared in paddocks for broad irrigation and intermittent-downward filtration, in the following manner, viz. :—

	Acres.		Tons.		Days.		Tons per annum.
For irrigation	220	x	18,000		...	=	3,960,000
„ filtration...	34	x	1,600	x	120	=	6,528,000
			Total		...	...	10,488,000

Additional area.

In order to show the extent of the progressive areas and necessary future arrangements to meet the requirements of the constantly increasing population draining into the systems, the following figures are given, viz. :—

For a population of 200,000 persons,—

	Acres.		Tons.		Days.		Tons.
Irrigation area	300	x	18,000		...	=	5,400,000
Filtration „	73	x	1,800	x	120	=	15,552,000
			Total		...	...	20,952,000

For a population of 393,751 persons,—

	Acres.		Tons.		Days.		Tons.
Irrigation area	350	x	18,000		...	=	6,300,000
Filtration „	100	x	1,800	x	120	=	21,600,000
Additional filtration area for precipitant effluent	50	x	2,250	x	120	=	13,500,000
			Total		...	...	41,400,000

The proposed system can be confidently recommended as the one likely to secure the best results. Under special, experienced, and efficient management, there should be not only a good remunerative prospect, but an absence of any grounds whatever for reasonable complaint of nuisance or smell arising from the process, or from the discharge of the purified effluent. The latter would be removed by deep drainage, and be conducted to and discharged in deep water.

Subsidiary Sewers and House-drains.

Subsidiary sewers

It is obvious that the scheme now submitted provides only for the main sewerage of the western suburbs ; it does not therefore include the construction of subsidiary sewers, although in several instances the depth of the main sewers and sub-mains will be sufficiently moderate to permit the adjacent houses and premises to be connected. The position of the main and branch sewers has been devised to facilitate the construction of the subsidiary sewers in such a manner as to avoid all unnecessary depths and expense. The back streets and lanes will permit back-drainage to be conveniently adopted in numerous instances, and the cost of constructing a sewer in the street (or for the greater part thereof) together with increased lengths of private drains, may thus be avoided. In several instances sewers will probably cross private lands, in which cases the works will have to be carried out by arrangement, or under the compulsory powers usually provided to meet such emergencies.

Construction.

The construction and ventilation of the subsidiary sewers is a matter which will hereafter demand special consideration. The greatest care and attention will also be required in constructing sewers and drains, especially in the low-lying parts, to ensure their being perfectly watertight and capable of excluding subsoil waters. The importance of works of sewerage, when considered in reference to the health of the district, makes it desirable that the most perfect works, including the latest improvements in construction, should be adopted. To ensure the sewers being under perfect control and easily examined at any time without breaking up the ground, the chief requisite is the construction of all those which cannot be entered, as far as possible, in perfectly straight lines ; man-holes or lamp-holes being provided at every lateral point of deviation, and ventilators at every vertical deviation.

Ventilation.

Sir Robert Rawlinson, C.B., whose experience in sanitary engineering exceeds that of any other engineer, says :—" Better be without sewers and drains than have them unventilated." Efficient ventilation cannot be fully secured unless the sewers and drains are constructed with special reference thereto, and it is highly important that ample provision be made for frequent changes of the atmosphere in the sewers, and for the escape of sewer gases, in such a manner that no nuisance will be created, and all danger to public health will be avoided. At the changes of gradient in the main sewers, and at each junction or branch in the lateral sewers, a few inches should be taken at the bottom of the shafts or man-holes to form a step, in order to break the sewer into lengths. Air-flaps should be provided at each break for the purpose of preventing the sewer gas from traversing the whole length of the sewer and escaping at the summit, and for ensuring its escape up the shafts. Fresh air will be admitted into the sewers by certain shafts, and polluted air allowed to escape by others. The outlets at the top of the " upcast" shafts will be extended in such a manner that the gases will be discharged into the open air at a level considerably above the street surfaces.

House-drainage

The work of house-drainage has been forcibly described as the "crowning-point" of a system of sewerage, and unless it is efficiently carried out under proper regulations and superintendence, not only is the advantage to health and comfort of a good system lost or minimized, but a positive source of evil and expense is established. Prior to commencing the house-drainage works in connection with the proposed sewers, no effort should be spared to ensure the due framing and passing of modern regulations in reference to house-drainage. " Disconnection" or " isolation and ventilation" is a subject even now not so fully understood and practised as it should be, therefore the regulations must provide for the insertion of a disconnecting " trap" or " chamber" in each instance, together with ventilation to the open air by vertical pipes carried well above the tops of adjacent buildings. Effectual sewer ventilation will thus be ensured, and the only "open" gratings in the middle of the streets will be those intended to act as fresh air inlet or " downcast" shafts.

Cost of Proposed Works.

The entire sewerage scheme, as hereinbefore described, comprises a total length of 37 miles 967 yards of sewers, 42 automatic flushing chambers, and 351 shafts, manholes, and ventilators; and the estimated cost thereof, together with the execution of the undermentioned works, and including land and compensation, is as follows, viz.:—

	£	£
Northern System—Main sewer	75,518	
Sub-mains	70,376	
Camperdown branch	12,454	
		158,348
Southern System—Main sewer	10,289	
Sub-mains	2,856	
		13,145
Western System—Outfall sewer	190,557	
Eastern high-level main sewer	56,690	
,, sub-mains...	27,530	
,, low-level main sewer	62,076	
,, ,, sub-mains	16,217	
Northern main sewer	65,776	
,, sub-mains...	20,434	
Western main sewer	133,001	
,, sub-mains...	29,930	
		602,211
Marrickville pumping station (including duplicate engines, boilers, penstocks, buildings, &c., complete)		11,000
Outfall works (including additional land and laying out first section of sewage farm)		45,600
Total		£830,304

Note.—Should it be decided to make provision for the first section (1,620 yards in length) of the Canterbury branch main-sewer as explained on pp. 16–17, the sum of £20,741 should be added to the above estimate.

Comparative cost per head population

The above expenditure upon the proposed system of main sewerage, inclusive of the outfall and other works, represents an outlay of nearly £2 per head upon the prospective population of the western suburbs. This is apparently a large sum, therefore a few remarks upon the cost of sewerage works elsewhere may not be uninteresting. The only colonial work of importance executed to which reference can be made is the Adelaide sewerage system, and its cost furnishes certain data as to the probable outlay for sewerage works in the Colonies, when carried out under favorable conditions. The total expenditure has amounted to £360,000, which is at the rate of £3 per head on the estimated future population. In European and American cities a remarkable variation has been experienced in the cost of sewerage and drainage works. London contains some 2,400 miles of sewers, and the cost of the main and subsidiary sewers, together with pumping machinery, storm-water relief-sewers and outfall works, has amounted to over £2 per head. In a large number of English towns the cost varied from under £1 to over £4 per head, whilst in some of the more recent sewerage works, such as Reading, Oxford, and Portsmouth, the cost was about £2 2s., £2 10s., and £3 per head respectively. The recently constructed sewerage works and sewage farm at Berlin have cost £2 5s. per head, whilst the sewerage of Hamburg, Dantzic, Frankfort, and other continental cities, has cost from £1 8s. to £3 15s. per head. In American cities the cost has ranged from £1 to £5 per head.

Comparative prices.

The higher rates for labor and materials in Sydney as compared with English prices, obviously increase the cost of sanitary works; *e.g.*, the contract rates for cement concrete for sewers in tunnel is about 26s. 6d. per yard cube in England, but in Sydney it is 65s., whilst for ordinary cement concrete the respective prices are 14s. and 45s. per yard cube. Brickwork in cement in sewers costs 39s. per yard cube in London, against 85s. in Sydney. The most recent sewerage works which involved a large amount of tunnelling in rock, were executed at Torquay a few years since, where an outfall sewer 7 feet in diameter and 9,000 feet long was constructed, the deepest shaft being 205 feet. The actual cost of driving the more difficult portion of the tunnel, including shafts, was £2 17s. per foot lineal, whereas the execution of the same quantity of work calculated at the Sydney prices, would amount to £5 11s. per foot. The cost of the sewer complete for the entire length averaged less than £3 per foot lineal, against £8 11s. at the Sydney rates. It should be mentioned that the removal of the rock was effected by means of the "Ingersoll" rock-drill and "Sturgeon's" high speed air compressor, and engineers of the highest eminence assert that this enabled the work to be carried on at three times the speed as compared with hand labour; indeed, Sir John Coode stated that "foot for foot of length of holes drilled, the work would be done at one-half the cost." It was however actually found at Torquay, that three holes were drilled by the rock-drill for one hole bored by two first-rate miners.

Annual Cost.

Terms of payment.

Should the works be carried out under the provisions of the Metropolitan Water and Sewerage Act, (43 Vict., No. 32), the annual payment to repay principal and interest at 4 per cent. per annum, would amount to 6 per cent. on the sum expended for a period of *twenty-eight* years. In England, under the provisions of the Public Health Act of 1875, the Local Government Board sanction loans for the execution of water and sewerage works, not only at a low rate of interest but for a period of *sixty* years; it being deemed just and equitable that a succeeding generation should contribute towards the cost of permanently beneficial works. By extending the period to sixty years in this Colony, the annual payment would be reduced from 6 per cent. to 4·42 per cent.—a result obviously advantageous.

Ratable value of property.

According to particulars recently ascertained from the various Council Clerks and from other sources, it appears that at the commencement of the past year, the annual ratable value of the nineteen Boroughs and Municipalities which constitute the area included in the scheme, amounted to £1,460,000. During the two previous years the ratable value of the whole of the suburban area increased no less than 35 per cent., and it may be reasonably assumed that the subsequent increase in the western portion has at least maintained a similar rate. Under these circumstances the ratable value will probably amount to at least £2,000,000 at the end of 1889, in which case a rate of 1d. in the £ throughout the area to be sewered, would produce about £8,300.

The

Annual cost.

The annual cost of management and maintenance of the sewers and works, including pumping at Marrickville, also office and incidental expenses, is estimated at £5,650. It is anticipated that the working expenses in connection with the sewage farm will scarcely be counterbalanced by the receipts during the first two or three years, but the subsequent operations should undoubtedly result in substantial profits, which would go towards reducing the annual cost. The charges for interest and repayment on the outlay of £830,304 if taken at 6 per cent. would amount to £49,818, but if taken at 4·42 per cent. they would not exceed £36,699. The annual cost of the scheme may therefore be summarised as follows, viz. :—

	For repayment in 28 years.	For repayment in 60 years.
	£	£
Interest and repayment	49,818	36,699
Working expenses	5,650	5,650
Total	55,468	42,349

The balance in favour of the extended period for repayment of loan therefore amounts to £13,119 per annum, and the effect would be to reduce the amount of the drainage rate from 6·68d. to 5·12d. in the £ per annum.

Money Value of Sanitation.

It will no doubt be asserted that the scheme will entail a heavy charge upon the community, and a question may arise as to the advantages to be derived from the outlay, and also what is the probable value of human life saved and sickness prevented by efficient sanitation? In the first place it may be answered that greater cleanliness is obtained, and that purer air, and increased comfort and convenience are ensured; and secondly, that where sanitary measures have been properly carried out, experience has proved that in the course of comparatively few years the money value of lives saved and sickness averted has exceeded the full cost of the works executed.

It is well known that for every death from preventable disease there are at least twenty cases of serious sickness. Leading authorities assert that six-tenths of such deaths are those of persons over twenty years of age, and that one-tenth of that number are probably infirm. Life is priceless, therefore it is exceedingly difficult to estimate its money value; but there can be little question that the labour value of each life saved in the suburbs, in addition to the cost of maintenance, would average at least £50 per annum. The funeral, nursing, and other expenses in each fatal case would probably average £10; and the value of the labour in each case of sickness prevented, together with medical and other expenses, would no doubt average £2. Applying these figures to the existing population only of the western suburbs (164,000), that is without any allowance for the increase of population constantly going on, and assuming that the death-rate of 21 per 1,000 (see page 6) should be reduced to 16 per 1,000, it will be found that there are no less than (164 × 5) 820 deaths per annum from preventable disease, and that the annual money loss to the community, which may be stated as follows, amounts to more than the annual cost of the entire sewerage scheme, viz. :—

Lives saved—Value of labour, 443 cases	@ £50 =	£22,150
Funeral and other expenses saved, 820	@ £10 =	8,200
Sickness prevented—820 × 20 = 16,400 cases	@ £2 =	32,800
Total		£63,150

STORM-WATER DRAINAGE.

A sewerage scheme alone will certainly not meet the whole of the sanitary requirements of the western suburbs. The frequent floods at Marrickville Valley and the removal of storm-waters generally is a question which must necessarily be dealt with; and although no sum is included in the foregoing estimate for sewers and other works, the following remarks will show that the subject has received careful investigation, that it has been fully considered, and that the execution of certain works is absolutely necessary.

Drainage of Marrickville Valley.

Extent of recent floods.

The flooding of Marrickville Valley after heavy rainfall has already been referred to on the sixth and seventh pages; it is, however, a matter requiring special consideration. In June, 1885, and in the months of April and May last, the area under water extended for more than a mile in length and from 150 yards to 630 yards in width on the north side of Cook's River; the thoroughfares inundated being the low-lying parts of Marrickville and Sydenham Roads, Fitzroy-street, Meeks Road, Saywell-street, and Renwick-street, at which places the level of the surface is either below ordinary high-water-mark, or only slightly above it. The levels of the flood in April were taken, and prove that the waters rose considerably above high-water-mark. The ordinary level of Cook's River opposite Marrickville Creek is from 2 to 3 feet below high-water-mark, but on the above occasion it rose to 1 foot above. At Premier-street foot-bridge the level was 1·03 feet; at Renwick-street, 1·40 feet; at the Reserve on the south side of Marrickville Road, 1·75 feet; at Marrickville Road, 2·37 feet; and at Sydenham Road, 2·68 and 2·92 feet. In Fitzroy-street the level was about 2·34 feet; but at the store in Marrickville Road, the waters headed up to 3·84 feet; and at the tramway crossing at the corner of Victoria and Sydenham Roads to 5·37 feet above datum. A number of houses, principally cottage residences, were flooded, and it is obvious that inundations of this character not only cause public inconvenience and damage to private property, but the after effects must be very prejudicial to the health of the inhabitants.

Watershed.

The approximate area of the Marrickville watershed draining into Cook's River is 1,712 acres, or nearly 3 square miles, therefore the volume of surface-water to be carried off during continuous heavy rainfall obviously assumes large proportions. The existing conditions do not afford sufficient facility for the discharge of flood-waters. The channel is by no means straight, clear, or uniform in its course; the levels of the bottom are irregular, and at the several streets which have been formed over it, insufficient openings have been left for the passage of storm-waters. Apart, however, from these defects, the physical conditions of the locality are such, that flooding must inevitably occur during periods of continuous rainfall, unless an efficient remedy is afforded. The

Works recommended.

The works recommended to be carried out are estimated to cost £20,000, and they consist in—

(1.) Cutting and embanking a main channel of sufficient capacity to effectually carry off all storm-waters from the valley, both at high-water and when Cook's River is in flood.

(2.) Raising the levels of the low-lying streets to a prescribed height above flood-level, and increasing the facilities for the discharge of storm-waters at the various bridges, also at the intersection of Victoria and Sydenham Roads.

To give effect to the above recommendations legislation would doutless be necessary, which should also extend to the whole area, it being made compulsory that the ground-floor level of existing houses and the land on which the premises are erected shall be raised above flood-level; also, that no further building operations be permitted until the sites of the intended buildings have been filled up to an approved height. The suggested future level for the south end is 2 feet above datum at Premier-street, gradually rising to 4 feet at Sydenham Road. The levels of the remainder of the low-lying area could be raised from time to time, and if the proposed Liverpool loop-line is carried out, an excellent opportunity might be afforded for the supply of material for that purpose. I think that the foregoing provisions would, in a measure, equalise the cost between the ratepayers generally on the one hand, and the owners of land and property in the flat on the other.

To afford a really effective remedy it is necessary to provide for carrying off heavy as well as continuous rainfalls under adverse conditions. It is not an uncommon occurrence for rainfall in the district in question to amount to 1 inch per hour, which depth over the entire area would equal 103,576 cubic feet per minute. Under certain conditions the actual quantity flowing off the surface would be materially less on account of evaporation and soakage, but taking into consideration the geological formation of the area and the impervious nature of a large portion of its surface, I think that an allowance of 75 per cent. of 1 inch per hour during continuous rainfall, is not too liberal a provision to ensure safety from flooding. This would represent 45 cubic feet per acre per minute, or 77,040 cubic feet from the entire area, a small portion only of which would be carried away by the sewers.

To discharge about 75,000 cubic feet per minute into Cook's River at flood-level, allowing a fall at the rate of 24 inches per mile below Sydenham Road, would necessitate a channel flowing 5 feet deep and of an average width of 50 feet at the northern end, gradually increasing to 66 feet wide south of Renwick-street. Obviously the width of the channel could be decreased by adopting a deeper section, but as the bottom would be below the level of Cook's River, the water in it would undoubtedly become stagnant in dry seasons; which, considering the nature of the water flowing into it, might prove extremely objectionable from a sanitary point of view.

I have considered the desirability of recommending alternative measures, such, for instance, as the resumption of the flooded area, the demolition of the houses thereon, and the conversion of the site into a park or reserve; also making a smaller cutting and providing pumping power for flood-waters; also making a direct channel for storm-waters to Cook's River below the dam, or a tunnel under the ridge at St. Peters to Shea's Creek, but on examination, neither of these proposals commends itself financially or otherwise.

Creeks and Watercourses generally.

The necessity for utilising the existing creeks for the removal of rainfall has already been strongly urged. Natural streams or watercourses should not be arched over to form sewers, but should be improved, regulated, and lined in accordance with local requirements, in order to more readily remove surface water and extreme falls of rain. Owing to its impurity, the surface water from streets during slight rains will pollute natural watercourses, but during heavy rainfall it will flow off comparatively pure. A great portion of the silt from street surfaces carried off during storms could be prevented from flowing into the Parramatta River, but even if some did so, it could be easily and inexpensively removed by dredging. Certain works which have recently been carried out in parts of Johnstone's and White's Creeks at Leichhardt will facilitate the discharge of storm-waters in that locality, but it will doubtless become necessary to deal effectively with the entire length of those creeks in the course of a short time, together with parts of Orphan's School, Long Cove, Iron Cove, and Shea's Creeks. It may also be desirable to consider whether the resumptions of portions of the creeks, and reclamation in the vicinity of their outlets, would not be a prudent course to adopt.

GEORGE H. STAYTON,
M. Inst. C.E.

Department of Public Works, Sewerage Branch, Sydney,
January 10th, 1888.

APPENDIX.

TABLE A.

NORTHERN SYSTEM.—Drainage areas and discharges—the maximum sewage-flow being calculated at 1 cubic foot per head per hour.

District.	Area in acres.	Number of persons per acre.	Total prospective population.	Rainfall per acre.	Volume of sewage.	Volume of rainfall.	Combined maximum discharge.
				Cubic feet per minute.			
Glebe, Leichhardt and Balmain	1,641	42	68,922	·4861	1,149	798	1,947
Camperdown, Newtown, and Petersham	323	45	14,535	·5208	242	168	410
Darlington and Redfern	120	45	5,400	·5208	90	62	152
Total	2,084	.....	88,857	.....	1,481	1,028	2,509

NOTE.—The average number of persons per acre is 42·637. The amount of rainfall per acre averages 0·4935 cubic foot per minute.

TABLE

TABLE B.

SOUTHERN SYSTEM.—Drainage areas and discharges—the maximum sewage-flow being calculated at 1 cubic foot per head per hour.

District.	Area in acres	Number of persons per acre.	Total prospective population	Rainfall per acre.	Volume of sewage	Volume of rainfall.	Combined maximum discharge
				Cubic feet per minute.			
City (part of), Redfern and Waterloo.....	583	47	27,401	1·008	457	634	1,091
Alexandria, Macdonaldtown, and Newtown.....	329	45	14,805	1·042	247	343	590
Total	912		42,206	..	704	977	1,681

NOTE.—The average number of persons per acre is 46 28. The amount of rainfall per acre averages 1 071 cubic feet per minute.

TABLE C.

WESTERN SYSTEM.—Drainage areas and discharges,—the maximum sewage-flow being calculated at 1 cubic foot per head per hour.

District.	Area in acres	Number of persons per acre.	Total prospective population	Rainfall per acre	Volume of sewage.	Volume of rainfall.	Combined maximum discharge
				Cubic feet per minute.			
Eastern branches (*Vide* page 14)	2,657	40	106,280	·9259	1,771	2,460	4,231
Northern branch (,, 15)	2,005	33	66,165	·7639	1,103	1,532	2,635
Western branch (,, 16)	4,100	30	123,000	·6944	2,050	2,847	4,897
	8,762		295,445	·7805	4,924	6,839	11,763
Canterbury and Enfield branch (p. 16) .	1,870	30	56,100	·6944	935	1,299	2,234
Total . . .	10,632	.	351 545	.	5,859	8,138	13,997

NOTE —The average number of persons per acre is 33 065 The amount of rainfall per acre averages 0 7694 cubic foot per minute

TABLE D

SUMMARY of Southern and Western systems combined.

System	Area in acres	Number of persons per acre	Total prospective population	Rainfall per acre	Volume of sewage	Volume of rainfall	Combined maximum discharge
				Cubic feet per minute			
Southern . . .	912	46 28	42,206	1 071	704	977	1,681
Western	10,632	33 065	351,545	·7654	5,859	8,138	13,997
Total .	11,544		393,751	.	6,563	9,115	15,678

NOTE.—The average number of persons per acre is 34 11 The amount of rainfall per acre averages 0 7896 cubic foot per minute

For summary of Northern, Southern, and Western systems combined, *vide* pages 9 and 11.

C 1.

STATEMENT showing the estimated ultimate cost of works for a complete system of Sewerage throughout the Western Suburbs, prepared September 20th, 1888 —

(1) *Works already executed or nearing completion.*

	£	£
Northern outfall (proportionate part)	88,000	
Southern outfall and sewage farm (do) . .	186,000	
		274,000

(Note.—These may be regarded as maximum proportionate amounts for the Western Suburbs)

(2) *Present scheme.*

Main sewers and other works as per Report		830,304

(3) *First section of additional works*

Subsidiary sewers (300 miles)	300,000	
Canterbury and Enfield main sewer (first part) ...	20,741	
Marrickville storm-water drainage	20,000	
		340,741
		£1,445,045

(4.) *Subsequent works.*	£	£
Subsidiary sewers (100 miles)	100,000	
Completion of Canterbury and Enfield main sewer	65,410	
Low-level systems (Shone's)	119,650	
Completion of western outfall sewer	48,374	
Completion of Marrickville pumping station	6,817	
Completion of sewage farm	32,600	
		372,851
Total		£1,817,896

The above sum is believed to be ample to provide for every contingency, and is inclusive of all works which can possibly be foreseen at the present time.

C 2.

STATEMENT showing the Annual Ratable Value of the nineteen Boroughs and Districts comprising the Western Suburbs of Sydney.

	£
In 1884	1,116,000
In 1886	1,437,000
In 1887	1,571,000
In 1888 (estimated)	1,700,000

On the completion of the first three sections of the scheme in 1894 it is estimated that the annual ratable value will have increased to £2,200,000, in which case a rate of 1d. in the £ would probably produce £8,900 net.

At the final completion of the entire scheme in (say) from fifteen to twenty years' time or upwards, when the population would be double or nearly treble what it was in 1887, the ratable value may be fairly estimated at £3,300,000, in which case a 1d. rate would produce £13,400 net.

As to possible lower rate of interest.

The magnitude of the work and its importance to the ratepayers is such that special consideration will, doubtless, be necessary with regard to the financial part of the question. Under the Metropolitan Water and Sewerage Act the rate of interest chargeable on cost of works is fixed at 4 per cent., and the term of repayment twenty-eight years. This rate was, doubtless, in accordance with current rates in 1880, when the Act was framed.

It is now proved that the Government of this Colony can effect loans in London at 3½ per cent. From my knowledge of the London market, I feel sure that there would be no difficulty experienced in obtaining a loan for such reproductive works as sewerage and water at 3½ per cent., especially as the money will not be wanted for two or three years, and the security would be on the rates of the whole district.

The London Metropolitan Board of Works Three-and-a-half per Cent. Stock is now at about £112. The Birmingham, Liverpool, Nottingham, and other corporation stock is practically as good. In all these cases the security for interest and repayment is upon the rates, and for long periods.

C 3.

COMPARATIVE Annual Rates for Western Suburbs Sewerage, including interest on outlay, repayment, and working expenses. (Prepared Dec. 3, 1888.)

If under *existing Act*, with interest at 4 per cent. and repayment in 28 years.
„ *proposed amended Act*, with interest at 4 per cent. and repayment in 60 years.
„ *further amended Act*, as to reduced interest, with interest at 3½ per cent. and repayment in 60 years.

	Existing Act.	Proposed amended Act.	Do. if interest be taken at 3½ per cent. per annum.
In 1894 (sections 1 to 3)	10½d.	8d.	7¼d.
In 15 to 20 years (being final completion of entire scheme)	9¼d.	7d.	6½d.

C 4.

PARTICULARS showing the Estimated Annual Cost of Disposal of Nightsoil throughout the Western Suburbs under existing systems.

In the Western Suburbs the charge varies from 3d. to 6d. per week per house for emptying dry earth pans. The charge for cesspits is probably not quite so much.

	£ s. d.	
3d. per week	0 13 0	per annum.
4d. „	0 17 4	„
5d. „	1 1 8	„
6d. „	1 6 0	„

For the purpose of comparison I have taken the low average of 15s. per house as the annual cost. In 1887 the occupied houses numbered 34,000; in 1894 the number of houses is estimated at 44,000.

34,000 houses at 15s. ..... £25,500 per annum in 1887.
44,000 „ „ ..... £33,000 „ in 1894.

A sum of £33,000 per annum would be equivalent to a rate of 3·70d. in the £ throughout the suburbs; or, in other words, a house assessed at £50 would, at 8d. in the £, be rated at £1 13s. 4d. for sewerage purposes *less* the present cost, which, if put at 15s., would merely involve an extra outlay of 18s. 4d. per annum.

GEO. H. STAYTON.
Dec. 3, 1888.

Sewerage Branch,
Sydney.

C 5.

DEPARTMENT OF PUBLIC WORKS, SEWERAGE BRANCH,—WESTERN SUBURBS SEWERAGE SCHEME.

MEMORANDUM upon a paper by Mr. J. B. Henson, as read before the Engineering Association of New South Wales, on September 13th, 1888, and subsequently discussed by the members of the Association.

I HAVE perused the abovenamed paper with much interest, more especially as it is the only professional criticism of the Western Suburbs Sewerage Scheme, which has appeared since the report thereon was issued in February last. The paper is ably written, but it is to be feared that the author's obvious inexperience has led him into serious error. The leading feature of the remarks contained therein *is the advocacy of the absolutely separate system of drainage*, which is by no means a new proposal; and in order to point out the fallacies enunciated by Mr. Henson, the following observations are submitted for consideration.

The author has given expression to various theoretical views, which are diametrically opposed to the opinions and practice of the most eminent engineers in the world. This, however, has occurred in older countries; and even where efficient sewerage systems have long been in operation, many persons of limited experience, or possessing only a book knowledge of the question, have fallen into similar errors, and have formulated "ideal" systems of drainage, which almost invariably are incapable of practical application. With more practical experience, the author will find it absolutely necessary to considerably modify such theories, that is, if he wishes to render them consistent with sound practice. In several instances his figures are incorrect, and certain of the statements are apt to mislead. Moreover he has failed to furnish any corroboration of his ideas, nor has he quoted any authority of eminence in support of his views.

Practically Mr. Henson's objections to the system adopted in the scheme are:—

(1.) That the dimensions of the intercepting sewers are unnecessarily large, and that owing to the large prospective population provided for, it will be many years before the maximum sewage flow will be sufficient to ensure a self-cleansing velocity.

(2.) That, owing to the adoption of the partially-separate system, the sewers will become huge gas-holders, especially during the periods of minimum dry-weather flow.

(3.) That the admission of rainfall to the proposed sewers would cause complications in their efficient working, which would be seriously felt in the case of local thunderstorms, and that all rainfall should, therefore, be rigidly excluded.

(4.) That it is contrary to the teachings of sanitary science to make the efficiency of a system of sewers dependent on so uncertain an element as local rainfall.

(5.) That the velocity of the maximum dry-weather sewage flow in the western intercepting sewer will not exceed 109·2 feet per minute for a reasonable time after the completion of the works (taken at from three to five years hence), whereas the standard velocity is 180 feet per minute.

(6.) That the provision in the capacity of the sewers for the removal of a maximum daily consumption of water at the rate of 72 gallons per head is too liberal, 36 gallons being a fair allowance at so early a period.

(7.) That the English practice for ascertaining the maximum sewage flow (viz. one half the total daily flow to pass off in six hours) will not apply, and a deduction from that rate is necessary.

(8.) That the provision for a prospective increase of population for twenty years hence is too remote a contingency.

(9.) That the horse-power of the pumping engines for Marrickville has been greatly under-estimated.

(10.) That the spyhons on the eastern branch and northern main will be injurious to public health.

The Separate System (1 to 4).

As the desirability of the adoption of the "absolutely separate" system in lieu of the "partially separate" system constitutes the key-note of Mr. Henson's objections to the scheme, it may be more convenient to discuss the question in the first instance, instead of dealing with the various points at issue *seriatim*. In support of the principle adopted in the scheme, I shall not hesitate to embrace the opportunity to quote from recognized authorities of eminence.

The separate system *per se* is a method which necessitates one set of sewers and drains for sewage, and a second set for surface waters from roofs, paved yards, and streets, and for sub-soil waters. In the few towns where the so-called separate system has been carried out, it has involved the construction of either a duplicate or triplicate set of channels, but in no single instance has it been found practicable to rigidly exclude the rainfall from roofs and paved back yards.

It is clear that the separate system requires duplicate drains for each dwelling-house. In the back-yards, therefore, there must be at least one yard-trap so placed as to be above the surface-level, into which slop waters would be discharged; whilst the inlet for surface waters would be slightly below the yard level. It has, however, been found in practice where the system has been tried (even in the southern part of Sydney) that, either through the laziness or ignorance of domestic servants or others, the surface water drain, instead of the sewer drain, has received the slop waters. The insanitary results of such a system in dry seasons must be obvious, and as the population annually increased the evil would be magnified.

On pages 10 and 11 of the official report it will be seen that the rainfall question received special consideration, and that the English practice has been considerably modified with a view to meeting Colonial conditions. The report states that wherever practicable, but especially in the case of the low-level systems, the rain-water from the roofs of the front part of the houses should be excluded from the sewers, and that all street surface waters should be absolutely excluded. The rainfall catchment, for which allowance is made is but 15·66 per cent. of the entire western and southern areas, and but 10 per cent. of the northern area. The western suburbs scheme provides for much less rain-water than the City main outfall sewers, which are intended to receive the rainfall from 40 per cent. of the entire area.

Under

Under the separate system the sewers would certainly be of smaller dimensions, but their internal conditions would invariably be less sanitary, because they would be sewage carriers only. It will therefore be readily understood that the sides of such sewers would become much fouler, and that during the periods of minimum flow, the gases given off therefrom would be more concentrated and virulent than in sewers of larger capacity in which they would be diluted, and where the limited quantity of rain water not only dilutes the sewage and retards putrefaction from time to time, but scours the internal surface. During the night period the flow would be very slight, and nearly the entire capacity of the sewers would be filled with sewer-gas, the greater part of which would be expelled on the following morning by the early morning discharges. By way of illustration, it might be mentioned that the length of the intended western branch sewer in tunnel, from Ashfield to Marrickville (the dimensions of which are 6 ft. 6 in x 5 ft. 6 in., the fall 1 in 1,509, and the length 8,580 ft.), to which Mr. Henson particularly draws attention, would require to be 5 ft. 3 in. x 3 ft. 6 in., at an inclination of 1 in 1,000, for the purpose of carrying sewage only. The following statement indicates the air capacity, wetted perimeters, and velocities for the various flows in each of the foregoing sewers from a drainage area of 3,506 acres, and an average population (*vide* p. 4) of 10 persons per acre, viz. :—

Discharge per minute in cubic feet.	Depth of flow.	Sectional area above flowline in sup. ft.	Sectional area below flowline in sup. ft.	Wetted perimeter in ft.	Velocity per minute in ft.	Remarks.
			Intended western sewer (6 ft. 6 in. x 5 ft. 6 in).			
4,186	¾ full	5·85	21·99	12·54	193	Prospective maximum combined flow.
1,753	2·76 ft.	17·16	10·68	8·30	165	Do do sewage do
1,402	2·45 ft.	18·90	8·94	7·42	159	Maximum combined flow in 1894.
584	1·58 ft.	23·30	4·54	5·52	131	Do sewage do
.....	·00 ft.	27·84	.....	.....	.....	
			Sewage sewer under "separate system" (5 ft. 3 in. x 3 ft. 6 in.)			
1,753	3·69 ft.	4·25	9·40	8·24	194	Prospective maximum sewage flow.
514	1·98 ft.	9·84	3·81	5·09	154	Maximum sewage flow in 1894.
.....	·00 ft.	13·65	.....	.....	.....	

It is obvious that the maximum sewage flow velocities are slightly in favour of the smaller sewer, but the minimum flow in either system would be under 2 ft. per second. A further calculation gives the following comparisons :—

System.	Air space in cubic feet.	Wetted perimeter in sup. feet.	Percentage of air space during night period, to max. W.P. of previous day.	Remarks.
Intended system	238,867	71,214	335	At prospective maximum sewage flow.
Separate system.....	117,117	70,699	165	Do do
Intended system	238,867	47,366	500	Maximum sewage flow in 1894.
Separate system.....	117,117	43,672	268	Do do

and shows that the sewer-gas dilution during the night period would be *less* under the "absolutely separate" system than under the intended partially separate system. Surely Mr. Henson could not have considered these points when he asserted that the sewers under the separate system were superior from a sanitary point of view ?

Mr. Henson says that a system which is dependent on rainfall for keeping the sewers clean cannot be a sanitary one. I would like to remind him, however, that the efficiency of the sewers is otherwise attained in dry weather, inasmuch as, in addition to the constant flow from ordinary subsoil waters, subsoil-water flushing wells near the sewer man-holes would be provided, which would be fitted with sluices or otherwise arranged for automatic flushing. This system is proved to be both beneficial and economical, and in dry seasons the additional water would be of great advantage at the sewage farm.

The storm-water drains for conveying rainfall and surface waters from streets, roofs, and paved yards would practically become sewers. Washings from paved yards are so highly impregnated with organic matter, that it is necessary to intercept such waters and deal with them in the same way as ordinary sewage. The sides and inverts of the storm-water sewers would become fouled, and in dry weather the gases evolved would be nearly as offensive as in the case of a sewage sewer. Thus the evil complained of would be duplicated.

The conditions where the separate system has been advocated are (1) where it is necessary to pump the sewage on to land for purification, precipitation, or filtration; or (2) where the sewers are tidelocked. In towns drained by gravitation, where there is a free discharge, it is considered that a limited amount of rainfall may be admitted to the sewers with beneficial results.

The additional fall required to ensure satisfactory working velocities in the smaller sewers under the separate system would so curtail the extent of the gravitating area of the western suburbs, and increase the extent of the low-level system, that the cost of the works and annual expense of pumping would be enormous. Moreover, such a system would necessitate the entire rearrangement of the sewers comprised in the scheme.

Neither the author nor Mr. Trevor Jones, who supports his views, has had any English experience in sewerage, and it is obvious that their Colonial experience has been of a limited nature. The only cities in Australia possessing efficient sewerage systems are Adelaide and Sydney, and in each case the schemes were

were approved by the late Mr. W. Clarke, M. Inst. C.E., an English engineer, and the works were subsequently carried out by the Government. In each instance rainfall from roofs and back yards was admitted to the sewers. On page 19 of the report on the Sydney drainage, Mr. Clarke referred to the separate system, and stated that rain-water from roofs and paved surfaces should be removed by house drains; that such course would be a benefit to the inhabitants, and that the partially-separate system is the better practice, being of even greater importance to the comfort and health of a community, inasmuch as it has the effect of scouring out the house drains.

The author does not refer to a single instance where the separate system has been successfully carried out and maintained in its entirety, nor does he quote any authority of repute in confirmation of his theories. He contends that colonial conditions vary so much from the English, that the same system will not apply here, but I am inclined to think that he would be a bold man who dare assert that the washings or scourings from the paved back yards of our suburban residences are not as foul as those in English suburban districts. The removal of these fouled waters by the sewers is, after all, the fundamental difference.

The author gives as a further reason in favour of the separate system, that rainfall cannot be depended upon to flush the sewers, it falls at such uncertain intervals; and mentions this year's drought as an instance when such sewers would become very foul. It has also been urged that as Sydney has so large a proportion of fine days, the experience gained in England will not apply. On this point I would like to remark that in London, *e.g.*, the mean annual rainfall is 25 inches, falling upon 155 days; whereas in Sydney, the average number of days on which rain has fallen during the last twenty-eight years is 151. Last year, which was unusually wet, rainfall was recorded on 190 days, upon 157 of which the rainfall would have been of service in the sewers and drains. During the present year (to October 9th) rainfall was recorded on ninety-five out of 282 days, of which the quantity falling on sixty-four days would have been serviceable for flushing. The fact may have been overlooked that the allowance of rainfall proposed to be admitted to the sewers under the scheme (2 inches per day), is only at the rate of one-twelfth of an inch per hour.

In the course of the discussion on Mr. Henson's paper, Mr. Trevor Jones is reported to have expressed himself entirely in favour of Mr. Henson's views, and to have stated that under the partially separate system large spaces would be left in dry weather in which sewer gas would accumulate. I would, however, remind him that in a recent paper on Suburban Sanitation, he said that "sewage flowing in sewers does give off deleterious gases, and which if not excluded from the dwelling, renders the breathing-air unwholesome; but in the opinion of men who have had most experience in Europe and elsewhere, such objections can be met by ventilation." He advocated the "exclusion of storm-waters from the sewers, or what is known as the separate system." He also stated that "the system now obtaining such unqualified approval in Adelaide is identical with that proposed herein, so far as the mode of conveyance is concerned. It *is called the separate system*, because if underground drainage is desired for both storm-water and sewage they shall flow in separate channels. * * * The water-carriage system is the best, it receives indifferently all sewage, *as well as a proportion of the rainfall.*" I am quite unable to reconcile the above-quoted opinions of Mr. Jones with his more recent statements.

The following opinions upon the question of the "separate system," coming from engineers of the greatest experience, may not be uninteresting, viz.:—

Sir Robert Rawlinson, K.C.B., for many years Engineer-in-Chief to the Local Government Board in England (and who was first invited on behalf of the Government of this Colony, in 1875. to advise on the question of water supply and drainage), says:—"Two sets of main sewers with two sets of house drains will be costly to construct; and, if constructed, would often lead to complications tending to defeat the proposed uses. The so-called clean-water sewer cannot, in many cases, be large enough to receive storm-water, and in dry weather it should of course be dry. The sewer proper would thus be without the flushing and cleansing given by roof-water during falls of rain, and the washings off yards, &c., during the first falls of heavy rain would, in many cases, be as polluted and as polluting as the sewage in the true sewer. Again, supposing two sewers in a street, and two sets of drains from each house on each side of such street, the house drains must interlace the duplicated sewers, the foul-water drain communicating with one, the surface-water drain with the other. Under such circumstances it would be almost impossible to prevent builders and workmen from entering the sewers with their drains indiscriminately."

In a paper on the sewerage of London, Sir Joseph Bazalgette, C.B., Engineer-in-Chief to the Metropolitan Board of Works said, "How to dispose of the rainfall is a question of considerable difficulty, and has given rise to much diversity of opinion. This arises from the fact that whilst in itself harmless, it sometimes falls suddenly in large quantities. *These considerations have induced theorists to advocate that the rainfall should not be allowed to flow off with the sewage, but should be dealt with by a separate system of sewers. The theory is, however, most impracticable.* It would involve a double set of drains to every house and the construction and maintenance of a second series of sewers to every street.**The interference with private property would alone render such a proposition intolerable." With reference to the sewerage of Abingdon, Sir Joseph more recently said, that "It might be cheaper and in many cases it was necessary to separate the surface water, the subsoil water and the sewage. Where there was a large rural district and a small town area, it was impossible to deal with the rainwater, and where the sewage was pumped, it became of the utmost importance to reduce the quantity. But in dealing with a large town where the sewage could be mainly removed by gravity, the one expense of forming a tunnel sewer, saved much inconvenience and outlay."

Mr. James Lemon, M. Inst., C. E., a strong advocate of the separate system, said that "The foregoing opinion of Sir Joseph Bazalgelte, coming from so eminent an authority, was a heavy blow to the separate system." In an able paper on the question which he read at an Annual Congress of the Sanitary Institute of Great Britain, he says, "What is the 'separate system,' so-called? Does it mean the *entire and absolute separation* of the rainfall from the sewage? If so, then I say at once that there is no town in England where it is carried out." With regard to the sewerage of the City of Winchester, which he had recently carried out, he stated that he "knew of no town where there are such natural facilities for carrying out the separate system in its integrity. In the scheme, however, he excluded surface drainage, and provided for the sewage and a small quantity of rainfall from the houses, feeling confident that a margin for rainfall under the most favourable circumstances was necessary. The city authorities passed stringent by-laws, which were ably carried out by the City Surveyor and his assistants, but in spite of all these precautions, some other portion of the rainfall is connected with the sewers." Mr. Lemon

Lemon added that "it is neither desirable nor practicable to entirely exclude rainfall from the sewers, for the reason that the rain is a scavenger and flushes the drains and sewers, and prevents noxious gases from forming therein, and he favoured the partial admission of rainfall in the interest of the separate system."

Amongst other recent instances of the so-called separate system, the Abingdon sewerage may be mentioned. Three sets of sewers and drains are provided (as recommended in Mr. Henson's paper) viz., for sewage, storm-waters, and sub-soil waters. The *sewers proper, however, admit the rain-water from roofs and back yards.* The maximum velocity of the sewers varies from 145 feet to 117 feet per minute; but the ordinary or dry weather flow is only sufficient to cause them to flow a quarter full, and with a decreased velocity. Owing to the fact that all road detritus is excluded, flushing is easily effected; it is periodically carried out and renders the sewers thoroughly efficient. The system is a costly one, and has involved an annual drainage rate of 1s. 7d. in the £. Other instances within my own knowledge where the separate system has been recommended, were for the sewerage of Oxford, Eton, and Windsor, in which cases the engineer, Colonel Ewart, R.E., proposed to carry out the system "as far as practicable" only.

In a paper on the separate system submitted to the Institution of Civil Engineers in 1884, Mr. White said, "It probably is necessary in almost all cases, in order to avoid an unreasonably complicated arrangement of branch drains, to admit the water from back roofs and back yards to the sewers, even where there are separate drains for surface water."

I venture to think that the evidence in favour of the principle on which the Western Suburbs scheme is based, and in opposition to the system advocated by Mr. Henson, is overwhelming. I must also differ with him in respect to his assertion that "the common idea as to the admission of rainfall must be relegated to that obscurity which is the fate of so many old notions which the advance of science has driven from their vantage grounds," and am inclined to reply that the very place he suggests appears to be admirably adapted for the reception of unsound theories like those propounded in his paper. I think it has been clearly shown that the system contemplated is not only in accord with common sense, but its efficiency must be obvious to all practical men. I am, however, perfectly aware of the fact that it is useless to expect to convince enthusiasts who possess a limited practical experience only.

Inefficient Working of Western Sewers (1).

Mr. Henson alleges (*vide* pages 9 and 10) that "the volume of sewage and rain-water which will pass down the *three* western sewers from the existing population will cause a variation in the flow-line of the three sewers at the point where they join," and "that the maximum sewage volume alone will cause the flow-line of the western branch to be considerably below the flow-line in the other sewers, and the result will be that it will be back-watered to a considerable extent."

To test the soundness or value of this assertion, it is necessary to first consider what the population and relative discharges will be in 1894, that being a reasonable period at which the works could be fairly in operation, and the efficiency of the system ascertained.

In 1887 the eastern drainage area averaged 11 persons per acre, the northern 8, and the western 5. In the preceding six years the population of each of the municipalities in those areas doubled itself, the increase being even threefold in some instances.

The population contributing to the rainfall and sewage discharges in 1894 may therefore be safely estimated at 22, 16, and 10 persons per acre for the eastern, northern, and western areas respectively; the maximum discharges in cubic feet per minute being as follows, viz.:—

Nature of Flow.	Eastern Branch. 6ft. 6in. x 5ft. 6in.	Northern Branch. 5ft. 6in. x 4ft. 6in.	Western Branch. 6ft. 10 in. x 5ft. 10in.	Outfall Sewer.
Combined	2,338	1,283	1,640	5,261
Sewage only	974	534	684	2,192

The depth of flow and velocity in feet per minute for the foregoing discharges is shown in the following statement:—

Nature of Discharge.	Eastern Sewer.		Northern Sewer.		Western Sewer.		Outfall Sewer.	
	Depth.	Velocity.	Depth.	Velocity.	Depth.	Velocity.	Depth.	Velocity
	Feet.		Feet.		Feet.		Feet.	
Combined	3·36	173	2·58	155	2·57	163	3·10	178
Sewage only	1·94	146	1·81	136	1·62	134	1·83	147

Mr. Henson must have overlooked the fact that the relative flow-line in the outfall sewers, which are of circular form, would be lower than that of the oviform sewers; and that, although the flow-line in the eastern and northern mains would be higher, yet the water surface in the lengths next to the intercepting chamber would form an inclined plane to the water-level in that chamber. It is obvious, therefore, that the water-level in the intercepting chamber at the head of the outfall sewers will correspond with the flow-line in the latter; and, from the above figures, it is apparent that the variation, which Mr. Henson says "will backwater the western branch to a considerable extent," will be 2½ inches only for the maximum sewage flow and but 6½ inches for the combined maximum discharge. The practical effect of such backwatering would be to temporarily decrease the mean velocities of the western branch to 118 ft. in the one instance, for a length of 1,300 ft., and to 144 ft. per minute in the other, for a length of 3,000 ft. Any inconvenience or irregularity thus created would invariably be counterbalanced towards the termination of each period of maximum sewage flow, because the length of the western sewer being considerably greater than either of the others, the higher flow and, consequently, greater velocity, would be maintained for a correspondingly longer period, thus effectually removing any temporary deposit.

A careful and impartial investigation of the question would have shown the author of the paper that the matter was altogether of too trivial a nature for consideration, especially with the knowledge that the equilibrium would be established and maintained in the course of a few years.

Velocity (5).

On page 5, Mr. Henson says:—"Many of the velocities given are below the standard of 180 feet per minute." Subsequently, he states, "that in England it has been found that a velocity of 150 feet per minute, at the least, is necessary to maintain the sewers in a sanitary condition; and considering the warmer temperature which here prevails, a velocity of 180 feet per minute is required to insure a speedy removal of the sewage before decomposition sets in." I join issue with him, both in his statement of facts and theory, and especially in a further assertion, which is to the effect that "a velocity of 180 feet per minute has been shown to be necessary." There is absolutely no authority whatever for the assertion that the standard velocity is 180 feet; doubtless, however, it suited the argument to especially assume one for the western suburbs of Sydney.

The opinions of some of the most experienced English engineers vary somewhat, *e.g.*, Mr. Bailey Denton, M. Inst. C.E., says that a velocity of 60 feet for well-watered sewage, and 150 feet for ordinary sewage, is necessary. Mr. Baldwin Latham, M. Inst. C.E., says that 120 feet should be the smallest velocity for the maximum sewage flow in sewers of a greater diameter than 2 feet; and in one of the latest sewerage schemes carried out by him and embracing an area of over 10,000 acres, the main sewers have a 120 feet velocity. The London main sewers were designed by Sir Joseph Bazalgette to have a velocity of 132 feet when flowing half-full, the dry weather flow being 31¼ gallons per day. When it was first proposed to adopt 150 feet per minute as the minimum velocity, the water supply was upon the intermittent system and only from 20 to 25 gallons per head per diem, and at that time many thousands of untrapped street gullies discharged into the sewers, causing frequent deposits of silt.

In Mr. White's paper, referred to on page 4, it is stated that "150 feet is an ample self-cleansing velocity for *ordinary* (not separate) sewers, and 135 feet is probably quite sufficient for a shallow flow."

The late Mr. Clarke reported that 3 feet per mile was a fairly good fall for main sewers; the western main, however, has a fall of 3½ feet per mile. And with reference to the Sydney main intercepting sewers that gentleman stated "that in consequence of the large extent of drainage work already in existence it will be difficult to exclude substances such as road detritus from the sewers, therefore the velocity should be *greater* than usual. It should be 150 feet per minute at maximum dry weather flow."

In the western suburbs sewerage report, page 11, it states that "all surface water from roads and streets should be absolutely excluded from the sewers."

On first checking Mr. Henson's velocities for the western branch sewer, I noticed that there was some discrepancy, and upon subsequently seeing the form of sewer which he had taken as the basis of his calculations (as illustrated in the Building and Engineering Journal of Sept. 22nd) it became apparent that he had not adopted the correct formula for determining the form of the intended sewer. He had also understated the estimated number of the population. The maximum velocities decrease from 190 feet to 146 feet per minute, the length being 9,040 yards; it should, however, be mentioned that, for 7,200 yards of that distance, the velocity averages 181 feet. The length of sewer in which temporary backwatering (see p. 4) might occur, would have ordinary velocities as follows, viz:—

Nature of flow.	In 1894.	In from 12 to 15 years afterwards.
Maximum combined flow.	163 feet.	198 feet.
,, sewage ,,	134 ,,	172 ,,

or, if the maximum sewage flow were taken at the rate of 50 gallons per head per diem, the velocity would be 125 feet at the former and 157 feet at the latter period.

In consideration of the fact that there will be an entire absence of silt from road detritus, and that the sewage of the western suburbs will be greatly diluted by a liberal water supply, it is perfectly clear that the intended velocity will be ample, even from the commencement.

With regard to Mr. Henson's inference that the temperature of sewers here is higher than in England, the statement must be received with reservation. He evidently is not aware of the circumstance, but it is nevertheless a fact, that not only in London, but in the majority of English cities and towns, various operations and manufactures are carried on, from which hot water or steam is discharged in great quantities into the public sewers. I have frequently seen such sewers nearly filled with steam day after day, and in London the vast number of warm baths alone materially raises the sewage temperature. It is quite true, as Mr. Baldwin Latham says, that heat is one of the most powerful agents at work within a sewer, and that the air of every sewer and drain is subject throughout the day to repeated expansions and contractions by the admission of hot or cold water. The entrance of hot liquids into the most perfect sewer increases the temperature of the sewer, and hence offensive gases are liberated, whereas cold water has the opposite effect. It is obvious that the western sewers will not receive discharges at so high or fluctuating a temperature, or to so great an extent, as the English sewers referred to. Barometric changes also affect the amount of foul air in sewers,—*e.g.*, a sudden fall in the barometer decreases the barometric pressure, and leads to the escape of gases from sewage solids, and favours decomposition; whereas increased pressure has the effect of retarding decomposition, and causes the retention of gases in sewage. In short, whether the maximum velocity be 134 feet or 180 feet per minute, there is a period each day when sewer gases will be given off, and although the temperature above ground in summer in this country is higher than in England, yet from the before-mentioned circumstances it would appear that the actual temperature of the sewers will not be so relatively high as to necessitate an increased velocity in the sewers. Efficient ventilation will amply provide for the dilution and egress of foul gases. And with regard to the general question of sewer gas it may not be uninteresting to state that at the annual meeting of the British Association at Bath, in September last, the president of the mechanical section (Mr. W. H. Preece, M.Inst.C.E., F.R.S., Chief Electrician to the English Government) in his opening address stated that "in electricity our sewers are likely to find in its active agency a power to neutralize offensive gases."

Water

Water Supply (6).

In referring to the sewage volume in the western branch sewer, Mr. Henson states that "72 gallons per head, however, will not be used at so early a period; 36 gallons, or one-half, is a fair estimate." He further remarks that "if the present rate of increase be maintained, the population of the metropolitan area, 20 years hence, will be 900,000, and at 72 gallons per head the daily consumption of water in the summer would be nearly 65 million gallons." Mr. Henson then proceeds to compare the Sydney water supply with that of Glasgow, but the figures and assumptions are hopelessly incorrect; in fact, the quotations from the Sydney Water Supply report are not even accurate. These errors are of so serious a nature that it is not at all surprising to find that other deductions are wrong.

With regard to the rate of 72 gallons per head on which the maximum sewage flow is based, the report distinctly states that such rate is for the summer consumption, and that 50 gallons is the average daily consumption throughout the year. Whenever it is found that the supply falls much below the mean rate it may be safely assumed that the weather is either cold or wet. The annual sewage volume is taken throughout the report at the mean rate of 50 gallons per head per diem.

In a hot climate like this, a liberal water supply is most essential; therefore 72 gallons per head cannot be deemed an excessive summer rate of consumption. Mr. Clarke concurred in such allowance for the Sydney sewers, and the works have been constructed accordingly. The western suburbs report refers to the desirability for making equal provision in the suburbs for the maximum sewage flow, and it is shown on the following page that the rate may be exceeded on washing days in very hot weather. The Adelaide water supply averages 50 gallons per day, but in summer the consumption rises to 70 gallons and upwards.

The mean daily rates per head for cities in various parts of the world, some of which have a summer heat as great as Sydney, are as follows, viz.:—

London	31¼ gallons	Boston	63 gallons
Paris	36 ,,	San Francisco	64½ ,,
Manchester (new scheme)	44 ,,	Greenock	72 ,,
Hamburg	45½ ,,	Ottawa	102 ,,
Philadelphia	54 ,,	Chicago	102½ ,,
Baltimore	54 ,,	Columbia district	143 ,,
Glasgow	55 ,,	Marseilles	158 ,,
Montreal	60 ,,	Rome	160 ,,
New York	61 ,,		

According to a statement prepared nearly a year since, it was shown that the prospective population of Sydney and suburbs, twenty years hence, is estimated at 730,000 persons, and not 900,000, as assumed by Mr. Henson; the summer rate of consumption would, therefore, amount to 52⅔ million gallons per day instead of 65 millions. The conduits from Prospect reservoir to Potts' Hill are capable of delivering 50 millions per day, and at the latter place a storage reservoir of 100 millions is being provided. The tunnels to Prospect are capable of delivering 155 millions per day, and by an extension of the catchment area the supply could be largely increased; it is, therefore, obvious that a very liberal water supply will be available. Mr. Jones, Engineer to the Water Board, recently stated that in six years time 30 millions a day would be required, which would be equal to a mean rate of 60 gallons per head. The recent Kenny Hill Water Supply Commission allowed for a mean rate of 50 gallons to be pumped to the elevated parts of Paddington and Woollahra. It will thus be seen that there is no apparent justification for Mr. Henson's "fair estimate of 36 gallons."

In his extract from Mr. Moriarty's remarks in reference to the Glasgow water supply, Mr. Henson entirely omits an important statement, which is to the effect that "Glasgow is acknowledged to be the best watered city in Great Britain," and no doubt inadvertently quoted "30 *millions per day*" as "30 *gallons per head.*" The actual figures show that the water supply of Glasgow is at the rate of 55 gallons per head. This very materially upsets the calculations, inasmuch as the estimated maximum rate for the existing population of Sydney and suburbs is 4¼ millions *less* instead of 10 millions *more*, as asserted; and at 50 gallons per day, it is 12 millions *less*, instead of being *equal to* the Glasgow consumption.

Sewage Flow (7).

The rule laid down by the Sydney Sewage and Health Board, in 1875, and subsequently adopted by Mr. Clarke, was for a maximum sewage discharge of 1 cubic foot per head of the population per hour, or 72 gallons per head per day. The Adelaide sewerage system was designed by Mr. Oswald Brown, M. Inst., C.E., to carry off 50 gallons per head per day, one-half of which was estimated to be discharged in four hours, which is also at the rate of 1 cubic foot per head per hour.

Mr. Bailey-Denton has stated "that it is always safer to consider the amount of water supply per head as sewage to be carried off by the sewers." The Kenny Hill Commission reported "that it is an established fact that *one-half* the daily supply is consumed in six hours"; and Mr. Trevor Jones, concurred therein, and stated in evidence that "he regarded such standing rule as an excellent one, and applicable in hot weather." The maximum sewage-flow allowance of 1 cubic foot per head per hour for the Sydney sewerage was also approved by Mr. Moriarty, M. Inst. C.E., who as Engineer to the Prospect Water Supply scheme has doubtless a better knowledge of the requirements of the city and suburbs than Mr. Henson; who says that "the common or English practice for ascertaining the maximum flow of sewage, viz., one-half the total daily flow to pass off in six hours, is not applicable to the conditions which will prevail in the western suburbs." He then proceeds to explain that a deduction is necessary from the estimated maximum volume of sewage on account of the use of water for gardens. Why, even assuming that over a million gallons per day were so used in 1894, it would only represent an average of 8 gallons per head. Mr. Henson first assumes that 30 gallons per head is a proper allowance for cool climates, and then asserts that a large proportion of the excess of 42 gallons (making a total 72 gallons as allowed for in the scheme) will pass into the sewers within the six hours period. Therefore we have 30 gallons ÷ 12 = 2½ gallons, and 42 gallons—8 gallons ÷ 6 = 5½ gallons, or a total maximum flow of 8 gallons per head per hour, instead of 6¼ gallons as provided. This at any rate appears to be the only logical deduction to be drawn from the observations which the author has made.

The

The London main sewers provide for the removal of one half the water-supply volume in six hours or at the rate of 2·6 gallons per head per hour. The provision in English towns generally varies from two to three gallons. Mr. Baldwin Latham, who has had great experience in various parts of the world, says that one-half the daily volume of sewage flows off in six hours.

It has not apparently occurred to Mr. Henson that the maximum discharge is always greater during the forenoon on washing days (generally speaking Monday and Tuesday in each week), and he has made no allowance whatever for subsoil waters. In Mr. Clarke's report, p. 18, it says, "In addition to house drainage and surface water there will also be a considerable quantity of subsoil water to be carried off; and by adding to the quantity, will, in the dry time, assist the flow in the main sewer."

It is well known that percolation will take place in pipe sewers, even if kept down to a minimum; and it may be regarded as absolutely certain that the many miles of such subsidiary sewers in the western suburbs, irrespective of house connections, will be no exception to the general rule. In the case of a 12-inch pipe sewer which was constructed in Sydney by the City Council last year, I am informed by a most reliable authority, that on completion it had a constant flow of clear water fully an inch in depth. In the case of one of the most recent sewerage systems carried out in England, the subsoil-water leakage into the pipes amounted to 1 cubic foot per minute per mile, and it was estimated that "one drop only of water per second from each pipe joint, would amount to 25 cubic feet per minute throughout the system."

Enough has been stated to show that the sewers must provide for the *maximum* sewage or dry weather flow, and the evidence is distinctly in confirmation of the estimated volume. The rule has also been found applicable to both American and European cities, where the climate is hotter than in England.

Prospective Population (8).

Mr. Henson is apparently of opinion that the prospective population for which provision has been made in the scheme "is only an assumption, and one that may not be realised," and that it is wrong to base the efficiency of the sewers on a contingency so remote.

The marvellous expansion of the western suburbs since 1871, but particularly the increase of the population from 1881 to 1887, has been clearly shown in the report, and there is no indication whatever that the rate of increase has decreased. In fact there is every probability of the estimate being realised, especially when measures for the improved sanitation of the district have been initiated.

When the Water Commission made its report in 1869, the population of the city and suburbs was 167,000, and the Commissioners recommended that provision be made for a prospective population of 250,000, whereas the present population is officially estimated at 360,000.

I would also remind Mr. Henson that in his paper on the "Sanitary Aspect of Sydney and Suburbs," in 1887, he said, "The growth of the metropolis during the last two decades has been very great, and instances are common where public works have been constructed of an extent estimated at the time to be ample for future requirements, but have been scarcely finished before their limited capacities have been perceived and additions demanded. * * In deciding such schemes it will be necessary to provide for a very large population."

I heartily concur in these statements, but every practical engineer knows, that in providing works for all time, it is difficult to so devise the works that they may be equally efficient for existing as well as prospective requirements. No one in his senses would dream of designing main sewers in tunnel suitable to an increase of, say, 50 per cent. only on the existing population, and in the course of a few years having to duplicate such sewers, for the sole reason that a slightly more favourable maximum-flow velocity might be attained when the system is first in operation.

Marrickville Pumping Engines (9).

With reference to the proposed power of the Marrickville pumping engines, Mr. Henson says on page 10, "If the calculations for arriving at the engine power necessary for raising sewage be accepted as the system adopted throughout, the report should be amended," and he proceeds to show that after making certain allowances, the engine-power required will be 223·2 horse-power instead of 120 horse-power as proposed.

To show how utterly wrong the conclusions are upon this question is an extremely simple matter. The author ought to have known better, considering the official position he occupies, and I am greatly astonished that in his anxiety to criticise the sewerage scheme, he should have laid himself open to correction in so obvious a manner. Any one having practical acquaintance with sewage pumping machinery would know that a 40 horse-power (nominal) engine would indicate to upwards of 70 horse-power, the latter being the figures on which the estimate of coal consumption is based.

The complete pumping arrangements comprise three 40 nominal horse-power engines, together with a fourth as a stand-by in case of repairs or accident. In the first instance it is intended to provide two only, the additions being made hereafter as the requirements increase.

With regard to the lift on which the calculations are based, I have only to remark that the formula ordinarily adopted by engineers of the highest eminence has been used, viz., to provide a margin of 10 per cent. in the net lift for friction, and to make no other allowance. The indicated horse-power of modern pumping engines so exceeds the nominal horse-power, that no further provision is necessary to overcome additional frictional head and other resistances and slip, when working at full speed.

The net lift at Marrickville is 31 feet; the 34 feet is therefore inclusive of the 10 per cent. allowance. Applying the usual rule we have:—

$$\frac{1{,}879 \text{ cubic feet} \times 1{,}440 \times 34}{762{,}088} = 120{\cdot}7 \text{ horse-power.}$$

or three engines of 40 nominal horse-power each.

In

In confirmation of my previous statement as to the practice of well-known engineers, it may be interesting to quote the following particulars, viz. :—

Abbey Mills Sewage Pumping Engines, London.

(Sir Joseph Bazalgette, C.B., Engineer.)

The duty required is to raise 15,000 cubic feet per minute to a net lift of 36 feet. Adding 10 per cent. to the latter it amounts to 39·6 feet, say 40 feet. We therefore have

$$\frac{15{,}000 \times 1{,}440 \times 40}{762{,}088} = 1{,}134 \text{ horse-power.}$$

The actual power of the engines provided is 1,136 nominal, in eight engines of 142 horse-power each.

At the Deptford pumping station the same rules were observed in the design of the engines.

Portsmouth Sewage Pumping Engines, 1887.

(Sir Fredk. Bramwell, F.R.S., Engineer.)

Duty, 18,000 gallons per minute to a maximum lift of 40 feet.

$$\frac{18{,}000 \times 1{,}140 \times 40}{4{,}752{,}000} = 218 \text{ horse-power.}$$

Two engines capable of indicating to 150 horse-power each were provided.

Kidderminster Sewage Pumping Engines.

(Mr. T. Hawksley, F.R.S., Engineer.)

Duty, 1,400 gallons per minute, 120 feet lift.

$$\frac{1{,}400 \times 1{,}440 \times 120}{4{,}752{,}000} = 50{\cdot}9 \text{ horse-power.}$$

Two engines of 25 horse-power nominal were provided, each of which actually indicated to 44·8 horse-power.

Oxford Sewage Pumping Engines.

(Mr. J. F. Bateman, F.R.S., Engineer.)

Duty required, 8,000,000 gallons per day to a 60-feet lift.

$$\frac{8{,}000{,}000 \times 60}{4{,}752{,}000} = 101 \text{ horse-power.}$$

Two engines of 50 nominal horse-power each were adopted.

Boston, U.S.A., Sewage Pumping Engines.

(Worthington type.)

Duty, to raise 25,000,000 gallons per day to a net lift of 43 feet. The latter + 10 per cent. = 47·3 feet. Therefore,

$$\frac{25{,}000{,}000 \times 47{\cdot}3}{4{,}752{,}000} = 248{\cdot}84 \text{ horse-power.}$$

Duplicate engines of 250 nominal horse-power each were supplied, which indicate to nearly double.

Norwich Sewage Pumping Engines.

(Mr. T. Hawksley, F.R.S., Engineer.)

Duty, 3,000,000 gallons per diem to a height of 150 feet. In this case, owing to the length of the rising main and height of lift, the frictional allowance was increased to 12 per cent., making the lift 168 feet.

I could give further instances as to the soundness of the rule adopted for the Marrickville engines, and numerous cases respecting the power of water-works pumping engines, the rule for which is practically the same as for sewage pumping. The Hunter River district water supply pumping engines were fully described to the Engineering Association of N.S.W. in a very able paper by Mr. H. Davies. The duty in that case was 833·3 gallons per minute to a height of 298 feet. Applying the same rule we have 298 feet + 10 per cent. = 327·8 feet lift, and

$$\frac{833{\cdot}3 \times 1{,}440 \times 327{\cdot}8}{4{,}752{,}000} = 82 \text{ horse-power.}$$

The engines actually adopted being of 80 nominal horse-power indicating up to 145·8 horse-power. In Mr. Clarke's reports on the Sydney water supply, the pumping power was determined on the same basis.

I was engaged in the designing and erection of the first set of the Portsmouth sewage pumping engines in 1872 (which were approved by Mr. Hawksley as consulting engineer, and who has designed and carried out no less than 130 water or sewerage systems) in which the same rule was adopted.

I think that Mr. Henson's assertion that "the calculation has been worked out for clean water, without any allowance for slip or friction," has been clearly shown to be wrong. He does not appear to be aware that sewage, after being strained, is practically the same as clean water, so far as the pumping power is concerned. In fact I do not suppose that he ever heard of the "clean-water" question

until it was doubtless suggested to him by the Worthington Pumping Engine Company's pamphlet, in one part of which they ask to be informed whether the liquid to be pumped is salt, fresh, acid, clean, gritty, hot, or cold. No experienced engineer would entertain for one moment so extravagant a proposition as that formulated in the paper.

The author refers to the duty of the Worthington engines, and points out what is an obvious truth, that no such high duty could be expected at Marrickville. I would mention however that the intermittent character of the pumping was well considered beforehand, and the estimate of coal consumption, which at the guaranteed duty rate would not have exceeded 100 tons per annum, is for over 300 tons. The 100 million foot-lb. rate was merely mentioned in the report to show that the Worthington type is an efficient and economical engine.

Eastern Branch-sewer Syphon (10).

Referring to the proposed syphon on the eastern branch sewer, Mr. Henson says, on page 11, that "the sewage flow from the present population will not be sufficient in volume or velocity to thoroughly cleanse the syphon out or prevent undesirable stagnation, * * more especially during the period of daily minimum flow, lasting over twelve hours." Mr. Henson also asserts "that the contents of the syphon will decompose under pressure," which, by the by would not be increased more than about 4½ lb. per square inch. On this point, however, I submit that he is entirely wrong. It is not only a most unscientific assertion, but, as will be seen from the remarks on page 5, is distinctly contrary to natural laws. It would certainly be interesting to learn on what grounds he bases his theory that sewage would thus decompose under pressure or that "gases would be liberated in volumes in the morning" to a greater extent than in a sewer for the removal of sewage only under the separate system. Mr. Henson says that "sewage should be ever on the move at quick march." Theoretically this is very pretty, and it has often been urged by various writers; but practically it is not so easy to accomplish. The separate system would not ensure it during the minimum flow period. It is a great pity that the author did not explain in detail how the "quick march" is to be constantly maintained.

The contents of the 33-inch iron pipe syphon, having a gradient of 1 in 750, would be displaced by the combined flow from the population first draining into the system above it in 4·6 minutes, the velocity being 189 feet per minute. The maximum sewage flow alone would displace the contents in eleven minutes, but the latter period would be accelerated year by year until the prospective population allowed for (40 persons per acre) is realized. By temporarily increasing the head at the inlet, the sewage flow could be so commanded as to ensure a velocity of 250 feet per minute, for short periods, sufficient to thoroughly cleanse the syphon and remove any ordinary matters therefrom.

A reference to the report shows that it will be necessary hereafter to lay an additional pipe, which could however be so adjusted as to carry off the waters above a certain level at the inlet, and that it is contemplated to so arrange the syphons that their contents could be drawn off into the low-level system whenever necessary, an advantage not usually secured in such syphons. Moreover, should it ever be found necessary, the syphons could be similarly drawn off at night, and the dry-weather night-flow be likewise diverted.

Syphons on Northern System (10).

Mr. Henson particularly mentions that "four syphons are proposed on the main line of sewer of the Northern system, viz.:—One at George-street west; one at Johnstone's Creek; one at White's Creek; and one at the north end of Balmain." With reference to the first-named, the author must doubtless be aware that it forms part of the City system and is already constructed, consequently no further reference will be made thereto. Also that on page 12 of the report, it is clearly intimated that the construction of the syphon at the north end of Balmain might be omitted entirely. Under these circumstances the syphons to be specially considered are those at Johnstone's Creek and White's Creek. Of the syphons generally, Mr. Henson says that "they will always be full of sewage in a greater or less degree of decomposition, and if the decomposition prove serious, as may be expected in warm weather, the sanitary efficiency of the whole system below them will be endangered."

Objections to sewage-syphons have been advanced more from unfounded prejudice than from positive experience. In many important cities and towns, such syphons are worked without any of the dificulties being encountered which Mr. Henson foreshadows. The only colonial experience as to the working of such syphons has been at Cook's River, Sydney, and at Adelaide, South Australia, at which place the main sewer passes under the river by an inverted syphon, which is found to work admirably. There are a great many sewage-syphons in various parts of England, and amongst such places, with which I am acquainted, may be mentioned:—

Oxford—One syphon in the city and two deep ones under the Thames.

Warwick—A 24-inch syphon under the Avon.

Rugby—A syphon 1,000 yards long, which works well and saves pumping.

Bristol—Three 42-inch syphons under the Floating Harbour, and three others for the main outfall under the river.

In Dantzic, which has a population of 100,000 persons, there are five or six syphons in all, one being 22½ in. in diameter and 480 ft. long. In Hamburg the sewer-syphon is so effective that cannon balls will pass through it. In the United States there are syphons at Norfolk and at Boston. At the latter place the main sewer passes under the bay as a syphon, at a depth of 135 ft. Its length is 7,000 ft. and diameter 7 ft. 6 in. The sewage allowance per head is 62½ gallons daily, together with ¼ in. of rainfall. The minimum velocity is 1 ft. per second, and the maximum 4 ft.; it is therefore self-cleansing.

The maximum combined flow through the Johnstone's Creek syphon would displace the contents thereof at a velocity of 158 ft. per minute in a period of 7·2 minutes, and the maximum sewage flow in 12·3 minutes; the periods at the White's Creek syphon being 6·8 and 11½ minutes respectively. It is thus obvious that there will be no time for decomposition to take place as suggested, and it has already been shown that the author's theory is wrong with regard to the alleged sanitary inefficiency of syphons and their tendency to develop sewer gas in warm weather. The syphons would be provided with catch-pits for arresting sediment, and being always full and the internal temperature very little varied, the contents would not specially decompose or give off offensive gases during the few hours of minimum flow. By closing a penstock at the upper end of either syphon for a short time, a greatly accelerated velocity could

could be temporarily secured whenever deemed necessary. The syphons could be drawn off into the intended low-level (Shone) system at Leichhardt, if required, as similar arrangements to those already explained for the eastern-branch syphon are intended to be provided.

When the general scheme was designed, alternative proposals for the syphons on the northern main sewer were considered; one being the substitution of an aqueduct for the 42-in. syphon at Johnstone's Creek, and the other to dispense with the 40-in. syphon at White's Creek and convert the remainder of the drainage area (which includes the eastern portion of Leichhardt and the whole of Balmain) into a low-level system, with a pumping station in the vicinity of White's Creek. Compared with the proposed scheme and inclusive of the "Shone system" for the low-level areas, the additional charge for interest and repayment of outlay, together with the cost of pumping to the required height, was approximately estimated at £1,500 per annum.

Surcharged Sewers (3).

Mr. Henson states that the sewers will be overcharged several times during the summer season in consequence of severe rainfall during sharp thunderstorms, and that the diluted sewage will be passed by means of the overflows, into the open water-courses. He adds: "That a thunder shower of short duration will quickly charge the sewers and no doubt perform the object for which the rainwater is admitted, viz., to scour out the drains and disturb the heavy and lingering matters that the ordinary volume of sewage has not power to remove." He also deprecates the discharge of such diluted fouled waters into the open channels in the summer time. Mr. Henson likewise says that a heavy thunderstorm may pass over the northern watershed chiefly, and surcharge the sewers, and that the diluted sewage would thus overflow into the open channels on the southern watershed, where there would be no rain falling to further dilute and wash it away. Upon first reading these objections they are apparently of a serious nature, but on examination it is evident that they are entirely groundless.

It is only right, I think, that the exact words of my report in reference thereto should be given. It is therein stated that "the proposed sewers are designed to carry off the foregoing combined quantities when flowing about ¾ full, but should a heavier rate of rainfall occur during the six hours of maximum sewage flow, the excess of stormwater would be carried off by overflow-weirs, which would act as safety-valves in case of sudden emergency. It must be borne in mind that the capacity of the sewers is such, that several years must necessarily elapse before the actual catchment area would become so great as to cause over-charging or backflooding. This, however, could always be prevented by making sufficient stormwater overflows, or by providing relief sewers hereafter, as may be found necessary. The small quantity of sewage contained in stormwaters so discharged into natural water-courses, would be so greatly diluted as to be rendered perfectly unobjectionable. During the night and at other periods of minimum flow, the sewers would be available for a much larger quantity of stormwater." It has already been shown on p. 5, that the velocity of the maximum dry weather flow even in 1894 will be sufficient to keep the sewers clean, consequently there would be very little "heavy and lingering" matter to disturb, and it is obvious that such velocity would become greater year by year until the prospective population allowed for is realized. It should also be remembered that the western suburbs will be fully provided with water, in which case a supply for the sewers would be available. Under such circumstances, and until a larger volume of sewage is attained, the discharge would be, to a great extent, from water, which would increase the velocity of the sewage flow, but would not add to the suspended matter to be carried. Practically, the conditions of discharge would thus be more favourable prior to the period when the full volume of sewage is attained.

On page 7 of Mr. Henson's paper it states that "rainwater falling on yards will no doubt be polluted, but not more so than the water from street surfaces, which, according to the report, is to be excluded from the sewers, and rightly so; and the yard water should be treated in a similar manner." It is manifest, therefore, that the author advocates the discharge of fouled waters from back yards into the open water-courses. During *heavy* rainfalls the dilution would of course be as great as in the case of the proposed sewers and such discharge would be unobjectionable, because the stormwaters from the entire surface of each watershed would effectually wash the filth down the channels; but on the other hand, the effect of *slight* rainfalls only in hot weather would be such as to merely disturb the accumulated filth and probably convey it a short distance, instead of effectually carrying it away in the sewers, as would be the case under the proposed scheme,—an obviously more sanitary arrangement.

There is therefore an inconsistency in the remarks. In the case of the proposed system he objects to highly diluted filth being discharged into the natural water-courses during times of heavy rainfall, but he apparently approves of polluted yard waters being so discharged, whether the rainfall is slight or heavy.

With reference to the statement that a heavy thunderstorm in the northern area would surcharge the main sewers and cause an overflow of diluted sewage into the open channels on the southern watershed, I think that it must have required a great stretch of imagination on the author's part to have assumed such conditions and results. It would be, to say the least, a somewhat peculiar and remarkable circumstance to find that a heavy thunderstorm should fall precisely on the northern slopes between Leichhardt and Strathfield, and that no rain should fall on the southern slopes. The thunderstorm on September 21st last, was remarkably limited in its range, but the heavy rainfall extended throughout the city and western suburbs, and on both the northern and southern slopes. Assuming however, that such a storm as Mr. Henson refers to did take place at Ashfield, Burwood, and Strathfield during the period of maximum sewage flow, the temporary rise in the flow line in the intercepting chamber at the head of the outfall sewer would not exceed 6 inches. The effect of such a storm on the western branch, although it would bring the overflows on the northern area into operation, could not possibly surcharge the sewer on the southern side of the main ridge. At the Ashfield end of the tunnel the sewer would flow about ¾ full, whereas at the Marrickville end, for the reasons already expressed on p. 4 the depth of flow would be 3·25 feet only.

Sewer Ventilation.

Reference has already been made to the presence of foul gases in sewers and to the necessity for efficient ventilation. It might also be pointed out that however possible it may be to make a wilderness "blossom as a rose," it is utterly out of the question to make and use sewers and drains which are invariably free from foul smells. The main sewers, however, will not become "huge gasholders" as asserted by Mr. Henson. They will be isolated in sections by means of flaps and shafts, and the submains and subsidiary

subsidiary sewers will also be disconnected. There is no royal road to efficient sewer ventilation, but of the various systems which have been tried, none have proved so beneficial as those by which fresh air is admitted to the sewers in sufficiently large volumes to dilute the foul air and carry it off by means of proper shafts. This can be done effectually, and is one of the best safeguards against the danger of accumulations of gas in sewers. To thoroughly prove the efficiency of sewer ventilation, it is necessary to make observations in the sewer to determine the velocity of the currents, the temperature and humidity, and the chemical constituents of the sewer air. It has been found by experience, that, with sufficient openings for the admission of fresh air and ample flushing, the temperature of sewer air can be reduced from 59° to 52°. If sewers can be kept below 55°, it is asserted that gases of putrefaction will seldom be found. Carbonic acid is the principal gas inimical to health found in fairly-constructed sewers. Pure air has 332 parts in 1,000,000; but it has been ascertained that a ventilated sewer has 1,060 parts, and an unventilated sewer no less than 23,000 parts, in 1,000,000.

One of the latest systems of sewer ventilation in England is that invented by Mr. Harrington, formerly Mayor of Ryde, in the Isle of Wight, and which was applied under my superintendence in London in 1884. Particulars of the system and results of the observations subsequently made, are to be found in the Minutes of Proceedings of the Institution of Civil Engineers for May, 1886. The plan was first tried in connection with a comparatively new sewer in Jubilee Place, Chelsea, which had frequently been complained of as smelling offensively, and the system effectually remedied all cause of complaint. The principle consists in forcing fresh air into a sewer by means of specially-devised wind cowls, fixed at a height of 20 or 30 feet above the surface, and connected to downcast shafts; thus diluting the gas generated in the sewers, and driving out the foul air above the houses by means of upcast shafts.

On testing the efficiency of the system in 1884, at a time when the wind was blowing at the rate of 4 miles an hour only, I found that 4,300 cubic feet of fresh air passed into and through the sewer in twenty-eight minutes, which was equivalent to a complete displacement of the sewer air fifty-one times a day. A further series of tests were made by Mr. G. R. Strachan, Assoc. M. Inst. C.E., between February 26th and April 11th, 1885, who recorded the results in the before-mentioned paper. He states that during the forty-four days the gaseous contents of the sewer were changed on the average every 31½ minutes, or forty-six times a day, simply by the force of the wind on a self-acting cowl. The beneficial effect of this current on the interior of the sewers was most obvious, as instead of the slimy coating of bluish-white matter so frequently found adhering to the crown and sides of sewers ventilated by ordinary "open" street gratings, there was dryness for at least 100 feet on each side of the downcast shaft. The moisture at the further end near the upcast shafts was more apparent, but clean as compared with that of an ordinary sewer. The air passing out of the upcast shafts had a very slight smell of sewer gas, but none of the inhabitants of the locality complained of any annoyance therefrom. Before I left London, the residents petitioned the authorities to extend the system, and this has been done with equally satisfactory results.

I am decidedly of opinion that the local conditions of the western suburbs are favourable to such a system of sewer ventilation. The strong winds which prevail here in the summer could unquestionably be made to act beneficially in drying the moisture on the sides of the sewers, and in constantly diluting and expelling the foul air.

Since the date of the report on the western suburbs sewerage scheme, several interesting facts having reference to the results of good drainage have appeared. It must, however, be understood that "efficient disconnection and thorough ventilation of the house drains" form a most vital part in good drainage. In a recent address, Sir George Bruce, the President of the Institution of Civil Engineers, stated that "it is now known to be perfectly easy to prevent with absolute certainty the passage of sewer gas into the interior of houses, and to mitigate almost entirely any offence from public sewers, by providing numerous openings into them, so as to secure a full and free intermixture of common air." In a paper read last year by Sir Douglas Galton, K.C.B., it was stated that "in England the average number of lives saved by sanitary improvements in the five years, 1880 to 1884, has been 102,240 per annum."

The immense importance of making proper provision for the escape of sewer gas is clearly shown by recent events at Baltimore, U.S.A., where, owing to the great number of fatal cases of scarlet fever and diptheria, the authorities instituted stringent regulations regarding the construction of house-drainage works. The regulations came into operation in 1884. The deaths from scarlet fever in the previous year amounted to 334, but they subsequently decreased to 36 in 1887. Mortality from diptheria was also greatly influenced by the reform, being reduced by one-half. We have frequently seen what has been accomplished in other parts of the world, but, coming nearer home, the results achieved at Adelaide are far too important to be overlooked. Before the commencement of the drainage works, the annual death-rate was 23·55 per thousand, but in 1886 it was reduced to 14·34, whilst the deaths from zymotic diseases were reduced from 217 to 98 per annum in the same period.

Conclusion.

Mr. Henson has had the advantage of a scheme to criticise, but beyond a general advocacy of the absolutely-separate system, he has submitted no counter proposal for consideration. It is true that in a former paper on the "sanitary aspect of the suburbs" he foreshadowed a course for the sewerage of the suburbs, viz., "to treat each valley separately, and to conduct the sewage therefrom to filter-beds on reclaimed areas in the vicinity of the heads of the bays or coves." I have only to remark that such a system would mean the establishment of a series of sewage farms throughout the district, would involve a considerable outlay for pumping, and would be enormously costly to initiate and maintain. Mr. Henson's alternative scheme was "to collect the sewage at the various outfalls and pump it to such an elevation as may be necessary to enable it to descend by gravitation to the coast or to some sewage farm." This, too, to say the least, is a proposal necessitating a totally uncalled for outlay and annual expense.

In the proposed scheme every care has been observed to adopt the latest and most scientific sanitation to both the existing and prospective conditions of the suburbs. Doubtless, however, certain of the details would be amended in practice; but the principle is sound. When the works are completed and in reasonable operation, more especially as the main sewers will intercept new sewers and drains only, instead of a network of old and defective sewers, I am convinced that the scheme will be found one of the most effective which could be desired, and that its efficiency will be undoubted.

GEORGE H. STAYTON, M. Inst. C.E.

To the Engineer-in-Chief for Sewerage.

Nov. 12, 1888.

C 6.

DEPARTMENT OF PUBLIC WORKS.—SEWERAGE OF WESTERN SUBURBS.

Reports and other papers relating to the Sewerage of the Borough of Burwood.

Letter from the Burwood Council to The Under Secretary for Public Works.

Sir, Council Chambers, Borough of Burwood, 25 July, 1888.

In reply to your letter of the 17th instant, notifying that if the plans and estimate of the sewerage scheme for Burwood, prepared by Mr. Charles Cowdery, C.E., be submitted for the inspection of the Minister for Works, a day will be appointed to receive a deputation from this Council on the subject, I have the honor herewith to enclose Mr. Cowdery's report, including therein his estimate of the cost of the works; and under cover of brown paper, also herewith, fourteen sheets of plans and section, showing the manner in which he proposes it should be carried out.

It is, of course, to be understood that the report, together with the fourteen sheets of drawings accompanying same, are the property of, and to be returned to, Mr. Cowdery.

When the date is fixed by the Minister, kindly allow sufficient time that I may notify the Mayor and Aldermen to attend.

I have, &c.,
W. REDFEARN,
Council Clerk.

B.C., Mr. Bennett, with report and plans.—J.B., 26/7/88. Will Mr. Stayton please look through the plans herewith, make a rough approximate estimate of cost, and prepare a comparison with the Departmental proposal, dealing with Mr. Cowdery's figures, and pointing out defects and discrepancies? —W.C.B., 30/7/88. Mr. Stayton, B.C. Report herewith.—G.H.S., 15/8/88.

Mr. Charles Cowdery's Report to the Burwood Council.

To the Mayor and Aldermen of Burwood,—

Gentlemen, 50, Castlereagh-street, Sydney, July, 1888.

I have much pleasure in laying before you for your consideration a scheme for the sewerage of Burwood, with plans, sections, &c., of the same.

I propose to take the whole of the sewerage by gravitation, following as nearly as possible the natural fall of the land to the Parramatta Road. Burwood is so situated that I have been able to divide the system under three sections, which I have coloured differently on plan; that going in an easterly and southerly direction blue, that in a westerly red, and that in a south-westerly yellow. By dividing the district in this way, I have been enabled to dispense with brick sewers; in all cases using glazed pipes.

From the Parramatta Road I purpose continuing the western and south-western sewers by two separate pipes through the Police paddocks into the Government reserve, to a point shown on plan, and where I purpose putting in a screening tank, after which the sewage will be taken to the sewerage farm. The easterly sewer will be conducted to the sewerage farm in a similar manner.

I propose reclaiming from Hen and Chicken Bay, some 40 acres of land, to be used as a sewerage farm, the sewage to be treated under the Intermittent Downward Filteration principle; this is carried out in the following manner:—The whole of the filtering area should be drained 6 feet under the surface, as shown on plan, and the surface properly prepared as per plan; the sewage should then be admitted on the surface through properly constructed channels, the ground being prepared for crops; all the liquid that the earth and crops do not absorb, must then pass through at least 6 feet of earth before it reaches the underground pipes; it will then be conducted by them to the effluent chamber, where it will be found to be quite bright and clear, and can be no nuisance whatever; the surface will be so arranged, and chambers made in the outfall pipes, so that the sewage can be conducted to any part of the farm at will.

In making my calculations, I have allowed for a possible population of 36,371, or at the rate of 33·065 per acre, but as there are now not more than from five to six thousand, the portion of the farm I have coloured red, will be ample for the present requirements. The other portion could be prepared as required, thus lessening the burden to the present population.

I may say that the reclaiming of this portion of the Bay will be a great boon to the inhabitants, for in its present state of mud and filth, it is an abominable nuisance, and as I purpose putting a bank or road across the Bay, 20 feet wide, it will be found of great convenience by the residents of the district. It will also immensely improve the Government reserve, which is now worthless, but will then become of value, as the tide will not be able to reach it.

In order to allow the surface of the farm to be kept as low as possible, I have allowed for an area inside the bank or road to be excavated to low water mark, with self-acting tide flaps and pipes through bank; into this all the effluent water will run, and not direct into the Bay. This area is sufficiently large to allow the effluent to be constantly discharging at any state of the tide, and will empty itself into the Bay as the tide lowers.

The material for raising the levels of the filtering areas could be procured—some from the surplus from the sewer trenches; and the rest out of the Government reserve, between Stanley and Gibbs streets, where I should think, the Government would allow it to be excavated in consideration of the immense improvement the works would be to the reserve.

Provision can easily be made for irrigating the Police paddock and Government reserve, which in dry seasons would be a great advantage.

I also purpose straightening the ditch now running through the reserve.

I have given this matter great consideration, and am of opinion that the "Intermittent Downward Filteration" is the best to meet all the requirements of Burwood. I feel sure the success of a sewerage farm here will be greater than at any place in England, as this country being so much drier, it will of necessity take more sewage per acre, and the crops will grow much more rapidly.

I cannot see that the Government can have any objection to this scheme, as I believe they purpose treating the sewage under Mr. Stayton's scheme in a similar manner. Now if there can by any possible means, be found any objection to the situation of the farm, as proposed by me, there must be an equal or greater objection to a larger one, situated at Botany. In

In Mr. Stayton's scheme he provides for a single brick sewer, running in an easterly direction through the borough, with a uniform gradient of one in 1500, the proportionate cost of which, for Burwood, will be £62,574, independent of which the whole of the reticulation pipes, some 22 miles, would have to be laid. The reticulation on my scheme I estimate at £28,995. Under Mr. Stayton's scheme it would probably cost more, as all that portion lying north of the line of the main sewer, would have to be carried against the natural fall of the land, and therefore taken to a greater depth, in any case the reticulation will have to be done, and must be added to the £62,574. Now the cost of my outfall works, that is from the Parramatta Road to and including the sewerage farm, should be taken as against Mr. Stayton's £62,574; the work actually required to be done at the present time I estimate at £14,160, but as the population increases that amount will have to be increased to £33,455. This taken from Mr. Stayton's scheme leaves a balance in favour of my scheme of some £29,119, or on the present expenditure of £48,414. The total cost of my scheme including the reticulation is £62,450, or as near as possible the same as Mr. Stayton's scheme for the main sewer only. You will also have some 40 acres of land.

It will be seen by plan that I drain the whole of the borough by gravitation, no portion of it requiring to be pumped. There is a portion of Burwood that lies too low to be drained by gravitation into Mr. Stayton's system, these on page 20 of his report, he proposes not to deal with at present. It is "considered that the actual volume of sewage to be dealt with below the gravitation level will not only be relatively small, but when diluted its discharge into deep water would be inoffensive; and as portions of some of the areas front the Parramatta River, it is quite possible that under proper arrangements, the drainage from the several houses thereon, might be so conducted as to discharge below low-water mark, and thus obviate considerable expense in the construction of sewers in extreme cases." This I contend should on no consideration be allowed, and would cause more nuisance than any sewerage farm, and as there are some 1,100 acres so situated in the western suburbs, I consider it not a very small matter, but altogether is of about the same area as Burwood.

In calculating the proportional cost for Burwood, of Mr. Stayton's scheme I have taken the total cost of the scheme £830,304 which is for a population of 482,608, the population which is possible for Burwood, 1,100 acres x 33·065 per acre equals a total of 36,371, the proportion for which will be £62,574.

My scheme could be carried out at once while Mr. Stayton's will be some years before it is in a state to admit the reticulation of Burwood.

In Mr. Stayton's scheme, the cost of main sewer for Burwood £62,574, added to the reticulation £28,995, gives £91,569 or £2 10s. 4d. per head of probable population. Total cost of my scheme £62,450, or equal to £1 14s. 4d. per head of probable population; thus showing a saving of 16s. per head in favour of my scheme.

One great advantage of my scheme is that the lengths of sewers being short the sewage matter is carried through them and treated on the farm before decomposition has had time to take place.

I will quote a few remarks from J. Bailey Denton, Esq., C.E., for whom I have carried out several works. He is, I believe, the greatest sanitary engineer using this principle.

Great Malvern.—There are 11½ acres prepared for intermittent filteration and 24 acres for surface irrigation. The filtering areas are 11 in number, each area approximately one acre in extent, and such is the absorbent character of the soil, now that it is thoroughly drained, that the whole of the present dry weather sewerage, some 350,000 gallons, has been disposed of for several days in succession on a single area, and effluent of a superior character obtained at the same time. Balance in favour of farm for 1884, £162 15s. 1d.

Kendal (Westmoreland).—Mr. Banks, Borough Surveyor, writes to Mr. Denton:—"I have now given up being Borough Surveyor, and have discontinued the management of the farm; a Committee have it in hand. I however take great interest in it, as I think it one of the most successful schemes for dealing with sewage that there is in the country."

The farmer who is farming the sewerage farm at Abingdon, Berkshire, objects to the solid ingredients of the sewage being removed from the liquid, saying, "the richer the sewage the better I like it."

Forfair (Scotland).—There was a balance in favour of the farm for the year 1882–3 of £247 6s. 2½d., and 1883–5 of £284/0/0.

The Rivers Pollution Commissioners said it would be difficult to decide between filteration and irrigation, but there are some reasons why the filteration process would seem to have the advantage. In the first place, the system and motive of working would be totally different, the purification being the principal thing aimed at, and the vegetation only secondary and subsidiary, so that the attention of the management would naturally be directed to the quality of the effluent as the chief aim.

Moreover in filteration ground properly laid out, there ought to be no communication between the influent and effluent channels, except through the pores of the land, so that the sewage, in order to get away must necessarily pass through the filter. By this means the process of purification becomes not optional (as in broad irrigation) but compulsory.

Dr. Frankland estimates that the sewage from 3,000 people can be used per acre, but Mr. Bailey Denton puts it at 1,000. This quantity has often been exceeded.

By this process no part of the crops above ground is ever touched by the sewage, the sewage being distributed by furrows of different depths so regulated as to feed the soil with the liquid and keep back the solid matter in the furrows or carriers, which solid matter after the sewage has been turned off that section quickly dries and is reduced considerably in the act of drying. It is then dug into the land and forms an excellent manure; the crops taking up what moisture they require through the roots only.

Flushing.

I propose to fix at the positions shown on plan, Doulton's Automatic Flushing Syphons. These I should advise being filled with the waste water from drinking fountains, the water running from the fountain into dog-troughs, and then to the flushing chamber; those at the head of 6 in. pipes, to hold 300 gallons, and those at the end of 9 in. 400 gallons, these to be emptied say once a day. For large sized pipes I use Disc Flushing Valves; in the manholes these will be manipulated by hand, and will effectually keep the sewers clean.

Sewers.

The sewers will all be in Glazed Stoneware, with the joints in tarred gaskin and cement, so that the joint will be perfectly watertight, the pipes to be laid in straight lines from manholes to manholes or manholes to lampholes and true to gradient. Manholes.

Manholes.

Manholes to be built at all intersections of streets and change of gradients.

Lampholes.

Lampholes to be built where manholes are more than 300 feet apart.

Ventilation.

This is a very important matter and cannot be given too much attention to. I purpose making the manhole and lamphole covers open to admit air, and air shafts to be carried up the houses, in any case; taken above the roofs or above any window of any adjacent house. This will cause a current of air to be constantly passing down through the openings in manhole and lamphole covers, and up through the air shafts, where the sewers of one line come above the level of the other sewers in a manhole. I fix a flap valve over the sewer end, this divides the sewers into sections and improves the ventilation; at ends of streets where there are no houses the air shaft can be carried up the inside of a lamp post, in fact a lamp post can be made to answer a triple purpose,—lamp, air shaft, and drinking fountain.

House connections.

In all house drainage I should recommend a combined automatic 20-gal. flushing tank, and grease interceptor, and allow the water from bath and slops to be discharged into it; this will always keep the drains well flushed.

Surface Drainage.

I keep as much surface drainage as possible out of the sewers, and it will be allowed to flow in its natural directions to the nearest streams.

Velocity.

To prevent deposit in sewers it is necessary to get a velocity of 3 feet per second or 180 feet per minute. In no case have I a less than this amount; the flatest gradient being one in 450 for a 24-in. pipe. This gives a velocity of 200 feet per minute.

Trusting you will give this your best consideration,— I am,

Yours respectfully,

CHAS. COWDERY,

Sanitary Engineer.

Letter from the Under Secretary for Works to the Burwood Council.

Sir, Department of Public Works, Sydney, 4 September, 1888.

Referring to your letter of the 25th July, forwarding the report and plans prepared by Mr. Charles Cowdery, C.E., for a system of sewerage for the Borough of Burwood, I am directed by the Secretary for Public Works to forward herewith, for the information of your Council, copies of reports thereon, which have been received from the Engineer-in-Chief for Sewerage, and I am to state that Mr. Sutherland scarcely thinks it necessary for a deputation to wait upon him in reference to the matter; but if, after considering the Departmental reports, the Council still think it desirable to adopt Mr. Cowdery's scheme, they had better take steps to appear before the Parliamentary Standing Committee in opposition to the scheme prepared by Mr. Stayton, which has, at Mr. Sutherland's instance, been referred to that body. So far as Mr. Sutherland is concerned, he has no doubt that the latter scheme is by far the more efficient and economical; but, notwithstanding this, he will be only too pleased to see the subject thoroughly thrashed out.

What, however, Mr. Sutherland desires to impress upon every Municipality is, that what is to be done should be done quickly, for every day's delay means valuable lives lost.

The report and plans forwarded by you are returned herewith. I have, &c.,

J. BARLING,

The Council Clerk, Burwood. ——— Under Secretary.

Minute from Engineer-in-Chief for Sewerage.

Sewerage Branch, Sydney, 22 August, 1888.

Subject: Forwarding Mr. Stayton's report on Mr. Cowdery's Scheme for the Drainage of Burwood.

In accordance with the Minister's instructions to supply report on Mr. Cowdery's scheme for drainage of Burwood, I have to forward a detailed report by Mr. Stayton on same. The objections as to the position and level of filter beds and appurtenances are in my opinion, as Mr. Stayton states, fatal to the project. They would be entirely inoperative, so that the project would, if carried out, ultimately have to be turned into a pumping scheme. All the appliances, filters, &c., are outside the limits of Burwood. Mr. Cowdery compares this farm or filter with that proposed by the Department at Webb's Grant, but the difference is great—one is to be clay debris or mud; the other is pure sand, and is a proved success.

Mr. Stayton points out that the outfall will discharge less than one-half the quantity stipulated for by Mr. Cowdery with maximum flow, and similar deficiencies in the adjoining main sewer.

For a length of over 4,000 feet the sewers, as proposed by Mr. Cowdery, are to be in tunnel which he does not propose to line, but simply lay an earthenware pipe along bottom of tunnel; the escaping sewage and gas would permeate the subsoil, and be a most fertile source of sewage gas and illness, and the tunnels would in time collapse, when it would be cheaper to abandon the pipes and excavate new tunnels for new pipes than to try to restore the old pipes.

It is also shown that the drainage of considerable areas within the limit is not provided for.

Mr. Cowdery, as far as can be seen, under-estimates the cost of his proposal, and over-estimates the cost of the Government scheme. Mr. Stayton shows that even by Mr. Cowdery's own estimates, the project designed by him, will cost more than that proposed by the Government.

The management of separate systems of sewerage and disposal, will inevitably cost more than a concentrated arrangement for all, and a separate staff must be provided for each; and, in addition, the real or imaginary evils of sewerage disposal will be repeated in several localities, instead of concentrated at one point as in the Government scheme. Finally,

Finally, large expense has been incurred to relieve Port Jackson from all chance of sewage defilement, both on the works to Bondi outlet and those proposed for North Shore, and all this outlay will be rendered nugatory if each separate locality is to pour its sewage after *quasi*-purification into the Parramatta River.

The Under Secretary for Public Works. WILLIAM C. BENNETT.

Report from Mr. G. H. Stayton to the Engineer-in-Chief for Sewerage.

Burwood Sewerage. Mr. C. Cowdery's Scheme.

Mr. Cowdery's scheme is stated to provide for the sewerage of Burwood by gravitation—no portion of it requiring to be pumped. He proposes to use pipes throughout, in order that the necessity for constructing brick sewers may be dispensed with. The sewage is to be conveyed by two outfall sewers to Hen and Chicken Bay, where it is intended to reclaim some 40 acres, which at low-tide consists of mud-flat and mangrove swamps, and to dispose of the sewage upon the "Intermittent-downward Filtration" principle. The scheme includes 24 miles of sewers, and the entire cost is estimated at £62,450.

I have examined the plans, sections, and report, and find that the scheme is so imperfectly prepared that if it were carried out it could only result in failure. The following remarks deal with so many important points that they are necessarily lengthy, but they have been condensed as far as practicable.

Several municipalities in the western suburbs (especially Burwood) apparently possess obvious natural facilities for drainage towards Parramatta River, but the difficulty is to secure efficient outfall sites locally, without causing nuisance to adjacent districts. This question was fully considered in connection with the general scheme for the western suburbs, and it was pointed out in the report that grave reasons exist for objecting to the discharge of sewage in any form into the Parramatta River. Apart from this, the additional expense incurred in separate management would be unnecessarily great. The proposed plan was not designed until local systems were found to be impracticable—unless at a largely increased aggregate outlay.

The fatal objection to Mr. Cowdery's scheme is the intended method of sewage disposal; but apart from this, the proposed system of sewers has evidently not received proper consideration, and it is obvious that they have not been designed upon the usual scientific principles.

The Borough of Burwood contains an approximate area of 1,100 acres, and an estimated population of 5,500 persons. The prospective population provided for in the "Western Suburbs" Sewerage Scheme is 33,000, being at a rate of 30 persons per acre. Mr. Cowdery's figures of 36,371, and his comparisons of cost deduced therefrom, are so far incorrect.

Outfall Works.

The intermittent-downward filtration process of sewage disposal has been described as similar to lung action—taking in and giving out—a "free" outlet being a *sine quâ non*. It can only be recommended where suitable land can be cheaply acquired, and where 6 feet of earth as a filtration medium can be ensured. Solids must be absolutely excluded from the filters, or the earth becomes clogged and efficient purification ceases. All authorities agree that the system does not pay commercially, except under the most favourable conditions.

Mr. Cowdery's scheme would not allow the filter beds to have full play, even if suitable and sufficient material could be obtained for their formation; neither would a free outlet be secured. The level of high water shown on his sections is 6 inches too low, and instead of the tidal range being 6 feet, the limit should not exceed 5 feet 6 inches. Low-water mark is therefore 1 foot higher than shown—an important factor in connection with the proposal.

The surface of the filter-beds, according to the sections, will be actually 6 inches below high-water mark spring tides, and as the filters are 5 feet deep, the bottom would be level with the low water springs. The tide is intended to be kept back by a bank to be formed across the bay, the top being 18 inches above high water.

The effluent from the filter beds is intended to be discharged into an area 5 or 6 acres in extent, to be formed behind the bank, by excavating to low-water mark; its final discharge into the bay at low-water being through the bank by means of two 30-in. iron pipes, fitted with tidal flaps.

The above area or reservoir would not, however, be restricted to the effluent from the river beds, for the reason that it forms the natural outlet for the storm waters from more than one-third of the Burwood watershed. During continuously heavy rainfalls, especially if such rains fell two or three hours before high water, the reservoir would fill up and the filters and bank would be seriously damaged, if not destroyed. The proposed outlet pipes would be insufficient to carry off such storm waters, even at low spring-tides; it is therefore obvious that the filters would be liable to back-flooding. The prospective maximum dry-weather flow at neap-tides would mean complete saturation of the lower part of the filter beds for several days at a time, because the entire effluent could not be drawn off as at low water spring-tides. A rainfall of 2-in. per day only, in addition to the maximum sewage flow, would rapidly fill the reservoir on a rising tide. The foregoing are some of the risks which would be incurred on the land side of the bank, but there is also a great probability that the tide flaps would occasionally fail in their action, in which case sea water would gain access to the filter beds.

The level of the filtration area is such that it would be impossible for the filters to constantly discharge a purified effluent "at any state of the tide," and instead of the beforementioned "lung action" going on, the frequent sealing of the effluent outlets by back waters would so completely drench the filter beds at the lower part as to render them utterly incapable of purifying the sewage. As the filters could not be effectually oxidised, they would speedily become congested or clogged, and thus create an intolerable nuisance—quite the reverse of the "boon" to the inhabitants which Mr. Cowdery asserts that the reclamation would effect.

The situation of the outfall sewers, the screening tanks, and the filtration areas, is entirely outside the municipal boundary of Burwood. It is in fact partly in Fivedock and partly in Concord; and the scheme could not therefore be effected without special Parliamentary powers, which would, no doubt, be opposed by both municipalities.

Neither the report nor the plans contain sufficient information to enable me to prepare any serviceable estimate of the cost of the proposed outfall works. The local conditions are unfavorable to construction

construction except at an excessive outlay. The excavated material for forming the filter beds would doubtless be of clay, shale, or other impervious nature, and it has long since been determined that the former can only be used in sewage filters, in the form of burnt-ballast. There are strong indications at the Fivedock end of the bank that rock would have to be excavated to enable filter beds to be formed, and it would be necessary to sink trial holes or make borings in other parts to ascertain the nature of the bottom and depth of mud. The greater part of the land marked "Government Reserve" on plan is too low and altogether of an unsuitable nature for irrigation as proposed, and it could not be so used unless efficient drainage is provided.

The intermittent-downward system of filtration has not been largely adopted in England on account of the expense. Mr. Cowdery states that his scheme would be successful; but can he point to an instance where such a farm has been established below high-water mark? I know of none.

From the foregoing observations it will readily be understood why the site is so strongly condemned as being utterly unfitted for the proposed process. Mr. Cowdery submits that "if there can by any possible means be found any objections to the situation of the farm, there must be an equal or greater objection to a larger one at Botany." There is, however, a most important difference in the respective schemes, inasmuch as the sewage would be delivered at Botany at a level of 9 feet *above* high-water mark instead of 1 foot *below*. Moreover, the filtration medium consists of a free sandy soil, and open subsoil of the most desirable description, entirely above sea level. The success of the farm at Webb's Grant, and its efficacy as a sewage purifier, has already been amply demonstrated. The maximum velocity of the sewers comprised in the Government scheme is such that only three hours would elapse before the sewage of Burwood would be delivered at Webb's Grant; a period sufficiently short to obviate any question of sewage decomposition during its transit, as referred to in Mr. Cowdery's report.

Outfall Sewers.

The total length of the eastern and western outfall sewers is nearly 8,000 feet, and, for an average distance of 400 yards north of the Parramatta Road, the sewers would be underground; but the remainder (5,600 feet) is entirely above the existing surface level, and would have to be formed in an embankment, the maximum height being 7 feet. The invert level of the outfalls at their extremities is 1 foot below high water mark spring tides.

The combined maximum discharge of sewage and rainfall which the outfall sewers should be capable of carrying off amounts to 1,320 cubic feet per minute, but the discharging capacity of the combined outfalls when flowing half-full, is 313 cubic feet only. The eastern outfall consists of an 18-in. pipe at an inclination of 1 in 453, and its discharging capacity when flowing half-full is 151 cubic feet per minute. It is intended, however, to carry off the contents of a 24-in. pipe sewer at 1 in 450, together with a 9-in. pipe at 1 in 74; the combined discharging capacities of which, when flowing hall-full, amount to no less than 382 cubic feet per minute. The western outfall sewer has a similar discharging capacity of 162 cubic feet, but the sewers emptying into it would deliver 483 cubic feet per minute when flowing half-full. It is therefore quite evident that in his anxiety to avoid brick sewers, Mr. Cowdery has failed to provide effective substitutes.

No extra fall has been allowed at the screening tanks or change of gradient, and no step in the invert is provided where the outfall sewers join the main sewers. In one instance this is especially remarkable, inasmuch as the junction is at a right angle, and yet the invert levels are precisely similar.

Main Sewers.

The directions and levels of the eastern and western main sewers have not been skilfully designed. In its course, the eastern main sewer contains no less than fifteen right angles, and the diameter diminishes from 24 to 6 inches. The western main has from 18 to 20 right angles and similarly diminishes. While credit is apparently taken in every case for the discharge due to the gradients shown on the sections, no allowance whatever is made for the difference in the size of the pipes, the gradients being calculated on the uniform inclination of invert; nor is there any allowance for the number of right-angled junctions, which would absorb an additional 8 or 10 feet of the fall to secure the calculated velocity. The amendments which are therefore absolutely essential would materially affect the dimensions and inclinations of the entire system of sewers shown on Mr. Cowdery's plan.

Subsidiary Sewers.

There can be no doubt whatever that the construction of the subsidiary sewers would be more costly than under the Government scheme, in consequence of the greater facilities offered by the latter in the intended main intercepting sewer which runs through Burwood and the branch sewers which extend to Parramatta Road.

Similar defects as to invert levels and absence of steps at the manholes are also apparent in the proposed lateral sewers, as already explained in reference to the main sewers. In several streets the sewers are too deep to admit of a convenient and inexpensive mode of connecting house drainage, and in others, sewers would be laid at so shallow a depth as to be useless for house drainage purposes. In some instances, the sewers would be above the existing surface-level, whilst in several parts of streets no sewers whatever are provided, the surface being too low to permit of drainage by gravitation.

In such a case as the Parramatta Road, where a portion of the sewer is over 30 feet deep, a supplemental sewer at a shallower level will be required for house drainage connections, the same as intended in similar instances in the Government scheme. The other streets, where sewers are from 20 to 33 feet deep, are Railway Parade, Conder-street, Hornsey-street, Lang-street, and Willie-street. The total length of sewers in these streets at a greater depth than 20 feet is nearly 4,000 feet, and tunnelling must necessarily be resorted to in construction. Such provision has been made in the Government scheme, and, except where the headings are in rock, they will be lined so as to provide permanent access in case of necessary repair or accidental stoppage. The sewer in Fitzroy-street, although 5 or 6 feet deep, would not be at a sufficiently low level to drain the back yards of the houses on the south side, and in Milton-street and part of Lucas Road, the sewer is about 2 feet deep only. Before devising a system of lateral sewers it is always essential to ascertain particulars of the levels of back yards, where the adjacent land is below the street level.

Sewers are shown to be above the street-levels at Parramatta Road, near the Avenue, the Avenue, Crogan-street, Lang-street, and Belgrave-street, and on the south side of Parramatta Road, towards Esher-

street. This would necessitate raising the surface level of the streets and the land before house drains could be connected. At the east end of Ethel-street the sewer is shown to pass through a house at a depth of about 4 feet.

Areas Omitted.

Mr. Cowdery submits that "by his plan he drains the whole of the borough by gravitation." I find, however, that no sewers are provided for the following streets, the levels being presumably unfavourable for gravitation, viz.:—

Shaftesbury Road, Brooklyn-street to Railway, for a distance of about	400	feet.
,, south of Parramatta Road, ,,	500	,,
Parramatta Road, lowest parts, ,,	1,600	,,
Burwood Road, north end, ,,	1,300	,,
Lang-street, part of, ,,	300	,,
Russell-street, west part, ,,	700	,,
Norwick-street, west part, ,,	600	,,
Lyon-street, west part, ,,	500	,,
Parnell-street, west part, ,,	300	,,

With regard to the proposal to ventilate certain sewers by means of street lamp-posts, I have only one remark to make, viz., that in England the plan has been found useless and dangerous, and that the idea has long since been abandoned. And with respect to Mr. Cowdery's statement that in no case would the velocity of the sewers be less than 180 per minute, I would call attention to an instance in Parramatta Road where the velocity of a 12-in. pipe does not exceed 158 feet per minute.

On page 6 of Mr. Cowdery's report he condemns an alleged proposal to drain some 1,100 acres of the low-lying areas of the western suburbs direct into the Parramatta River, and quotes a portion of a paragraph in my report. Had he carefully read the entire paragraph he would have seen that there was not the slightest intention of doing any such thing. Burwood is distinctly referred to as containing *two* low-level areas to be hereafter dealt with in such manner that the sewage therefrom would be carried away to Botany, for which purpose provision has been made in the intercepting sewers, as described in a previous sentence in the same paragraph.

Cost of Works.

Mr. Cowdery estimates the total cost of his scheme at £62,450; but, in the absence of details of construction and other particulars upon which estimates are usually based, I am not in a position to state what the probable cost would amount to. I have seen sufficient, however, to enable me to form the opinion that his outfall and sewage farm works would entail a very large outlay. Mr. Cowdery's mode of comparing the cost of the Government scheme according to the prospective population is entirely wrong; but even on his principle the figures should not exceed £56,776 for the main sewerage, or £85,776 in all. It will be seen by the accompanying extract from the *Sydney Morning Herald* that Mr. Cowdery recently gave the proportional cost of the Government scheme as £109,222 (instead of £56,775), and he asserted that a local scheme could be carried out at one-third of the cost of the former. Now, one-third of £85,770 is £28,590, whereas his local scheme is now estimated to cost £62,450. Mr. Cowdery entirely omits any reference to working expenses and maintenance.

Annual Cost.

The proper basis on which the cost of sewerage works should be apportioned is the annual ratable value of the district in question. The expense of the sewerage of London and suburbs and of all large cities in England has been satisfactorily decided on this principle. The ratable value of Burwood was recently returned at £55,000, or about 1-26th of the entire ratable value of the western suburbs. If, on completion of the works, the ratable value is 1-26th of the estimated total of £2,000,000, it will have increased to £77,000.

Annual cost of Mr. Cowdery's scheme.

6 per cent. on £62,450	£3,747
Add working expenses and general maintenance	400
Total	£4,147

Estimated annual cost of Government scheme.

Rate of 6·68d. in the £ on £77,000	£2,143
Add interest and repayment on cost of subsidiary sewers, 6 per cent. on (say) £25,000	1,500
Add proportional cost of pumping sewage from low-level area ...	350
Total	£3,993

Assuming therefore that Mr. Cowdery's scheme could be carried out at his estimate, and setting aside for the moment the question of its impracticability, the financial question proves beyond doubt that the annual cost of the Government scheme compares favourable with a local one.

GEO. H. STAYTON,
M. Inst. C. E.

Sewerage Branch, August 15th., 1888.

Letter from the Burwood Council to the Under Secretary.

Council Chambers, Borough of Burwood, 25 September, 1888.

To the Under Secretary for Public Works, Sydney,—

Sir,

Sewerage Scheme for Western Suburbs.

I have the honor to give you below copy of a resolution passed at a special meeting of this Council held last night on the above subject: "That this Council having considered the sewerage schemes of the Government and of Mr. Cowdery, gives its hearty support to the comprehensive scheme of the Government."

I have, &c.,
HENRY LIPSCOMB,
Mayor.

Letter

Letter from the Burwood Council to the Under Secretary.

Council Chambers, Borough of Burwood, 22 October, 1888.

To the Under Secretary for Public Works, Sydney,—

Sir,

By the request of Mr. C. Cowdery, C.E., to this Council, and under a resolution carried thereon, I have the honor, by direction of His Worship the Mayor of Burwood, to forward you, under a separate cover per book post, Mr. Cowdery's reply to the criticisms of Messrs. Bennett and Stayton upon his sewerage scheme for the Borough of Burwood, and to ask that you will kindly submit same to the Honorable the Minister for Works for his perusal.

I have, &c,

W. REDFEARN.

Council Clerk.

Roads.—J.B., B.C., 24/10/88. Mr. Stayton for reply. The best course in this case will be to prepare a paper for the Committee.—W.C.B., 26/10/88. Mr. Stayton, B.C. Memo. submitted.—G.H.S., 27/11/88.

Mr. Cowdery's reply to the Departmental criticisms.

50 Castlereagh-street, Sydney, 24 September, 1888.

To the Mayor and Aldermen of the Borough of Burwood,—

Gentlemen,

I now beg to lay before you my reply to Mr. Stayton's criticism on my scheme for the sewerage of Burwood. I could not have expected a very favourable report from the author of a rival scheme, and think the criticism should have come from some independent person; but I will endeavour to answer any objections Mr. Stayton has made. I should therefore be glad if you would read Mr. Stayton's report with this as I purpose taking each item as they appear.

Mr. Stayton states the question was fully considered in connection with the general scheme, and it was pointed out that grave reasons exist for objecting to the discharge of sewerage of any form into the Parramatta River. Why, may I ask, under these conditions, does Mr. Stayton terminate his sewer at Strathfield? What is to become of Rookwood, Auburn, Granville and Parramatta, all having a watershed toward the Parramatta River, and with a considerable population? I suppose that it was not convenient to go farther than Strathfield, where his sewer ends at a level of 36·76 feet, above high water, the sewer ending at a size of 3 ft. 9 in. by 2 ft. 6 in. He evidently does not intend to continue this farther. If, therefore, it is not intended to include the abovenamed places, why should he include Burwood at such an enormous cost.

The separate management will not cost so much as the proportional cost of pumping it. In fact there will be a profit from the farm. This I will show further on.

Mr. Stayton accuses me of not properly considering my scheme, and that I have not designed it upon the usual scientific principles. I will call Mr. Stayton's attention to the old proverb: "Those who live in glass houses should not throw stones," and leave it with you to judge which is the more suitable scheme.

Population.

This is too trivial, the difference in population is so small. I have taken the average prospective population of the western suburbs. (See p. 8 of Mr. Stayton's Report.) Mr. Stayton has taken Burwood alone.

Outfall Works.

Mr. Stayton states that the system does not pay commercially, except under the most favourable circumstances, therefore he spends some £56,775 to take it to what he considers a most suitable place. Wouldn't it be more advisable to spend £14,160 now, or £33,455 distributed over (say) 20 or 30 years, in the neighbourhood, to make a suitable place, and thus save £42,615 and £23,320 respectively?

Solids, Mr. Stayton states, must be absolutely excluded from the filters. We will see what Mr. Bailey Denton says on this matter. "Experience has not warranted these fears; but at the same time, it appears to be advisable previously to separate the solids" to some extent. It is certain that the more the liquids approach clarification the less land will be required, and the less danger will there be of unpleasant odours. For a small number of people (say 500 to the acre), the sewage may be applied as it comes, leaving the grosser matter to become amalgamated with the soil; but if the number be increased the previous removal of the sludge would be desirable, and for 1,000 or more, it would probably become absolutely necessary.

Levels.

Mr. Stayton is in error here. He has evidently not tried the levels, and should not make statements without first proving them. My high water is taken from actual high-water in the Bay, the levels being connected to the levels of streets in your possession. Mr. Stayton has evidently taken high-water at Sydney, which is not the same as at Hen and Chicken Bay. It will thus be seen that he is in error about the levels of filtering areas. I may also state that the surface of each bed towards Burwood is 3 inches higher than the one more remote.

Mr. Stayton states that the area for water inside the bank is not restricted to the effluent from the filter beds, but is the natural outlet for more than one-third of Burwood. Again Mr. Stayton is in error. It is a fourth, and this is not intended to be allowed to run into the water area. The major part will be conducted outside the filter area. This will reduce the area which will drain into the water area to about 50 acres, or a twenty-second part of the area of Burwood. Now, as the area inside the bank is 5¾ acres, it is obvious that if the 50 acres are subject to the very heavy downpour of 1 inch per hour it could only raise the water in the reserve a little under 9 inches per hour. At the same time, the effluent would be discharging at the rate of about 4 inches per hour, so that it would be seen that if the pipes through the bank were not discharging at all it would take something like five hours before any damage could possibly be done; but as the outlet pipes will be discharging (say) half that time, they will be reducing the water at the rate of about 4 inches per hour. This amount of rainfall is never likely to occur; but even if it did it could not damage the irrigation works, as all the effluent chambers will be provided with tidal valves.

It

It will be seen, Mr. Stayton states 2 inches per day; I have allowed 5 inches in five hours. If, providing the flap-valves on tide side of bank fail—a very improbable case—no damage would be the result. It would simply stop the action of the lower filter-beds whilst the tide was up.

Mr. Stayton seems to harp about the level of the filter areas, but, as I have previously shown that he is not correct, it is unnecessary for me to refer further to it. The filters can act at any state of the tide, and in the event of a heavy rainfall the beds at the higher level would be used, and nothing would cause "an intolerable nuisance." The ordinary fine-weather discharge from the effluent chambers will not raise the water area more than $1\frac{1}{2}$ inches per hour.

The filter area is, I take it, in neither Five Dock or Concord, but on neutral ground, and I do not anticipate much opposition from either. I have lately had an interview with the Mayor of Five Dock, and he stated that they should only be too pleased to have a farm there; and I believe one of the aldermen wished they had several of them in their neighbourhood. They would also be pleased to join with Burwood to drain a portion of their borough situated near Burwood. This would cheapen Burwood's work, and be a convenience to Five Dock. From Concord I do not anticipate much opposition, for only at the last meeting of the Council one alderman proposed that they should oppose a sewage farm, but could not get a seconder.

Again, I will refer to Mr. Bailey Denton as to material for filters:—"Withington, Lancashire.—The land situated for the treatment of the sewage is situated close to the Mersey, at a point where Charlton Brook joins that river. Before embanking, this land was subject to frequent floodings. The soil is an alluvial deposit, partly of a free character, well adapted for filteration, and partly of a loam, inclining to clay, which, though porous as clay, is very much less active than the remainder of the farm. The whole of the utilised land has been drained about 5 feet deep at intervals between the drains, varying according to the porosity of the soil." This is very similar to what we shall have to contend with. Again, speaking of Merthyr, he says: "No arbitrary law applicable to all soils was intended to be laid down at Merthyr. Every day's experience since that work has served to prove that with the most suitable free soils it is hardly possible to overcharge them with liquids, or to overtax their cleansing powers; whereas in less suitable clayey and peaty soils the limit of absorptive power is reached before one-quarter of the liquid that would be absorbed by gravity, and sandy land is applied." If we avoid the denser clays as altogether unsuitable (unless they are so altered in their condition by mixing, burning, &c., as to lose their natural character), and regulate the application of the sewage to other soils within the limits of 1,000 persons to the acre of those most suitably constituted, and 250 persons to the acre to those least suitably constituted, all other descriptions of cultivatable land may be made capable of filteration, and the advantage of being able permanently to cleanse the sewage of a district where any land more or less suitable is to be purchased or leased in sufficient quantity to meet these limits cannot be over estimated.

The intermittent downward filtration has been largely used in England. Mr. Stayton evidently knows very little about the country towns in England. I certainly cannot point to a similar place in England, because I know no place geographically the same; but a man is no engineer who cannot adapt himself to the material to hand, and there are many engineers who would only be too glad to reclaim some 40 acres for the purpose at a comparatively cheap cost, especially when the only alternative scheme would cost the borough £56,775.

Mr. Stayton states that the sewage is discharged (under his system) in three hours. How does he make this out? His western sewer begins with a size of 6 feet 10 inches by 5 feet 10 inches, and is reduced to 3 feet 9 inches by 2 feet 6 inches. He does not give lengths of each, so I will take it as 5 feet 6 inches by 3 feet 8 inches new form as the average. This, if we turn to Baldwin Latham's on Sewerage, the velocity when running one-third full, at 1 in 1,500, will give 126 feet per minute. This, for a distance of 5 miles 240 yards, or 27,120 feet, will take three hours fifty-one minutes, to which, added the outfall 6-ft. sewer 11,700 feet long, at 1 in 1,700, gives a velocity of 177 feet per minute, equal to one hour six minutes, or a total of four hours fifty-seven minutes as against Mr. Stayton's three hours or nearly two-thirds longer. Now that I am on the question of velocities, Mr. Stayton continues his sewer for the western suburbs at a uniform gradient of 1 in 1,500 without the *slightest regard* to the size of sewer. I will therefore take the sewer on the last length which he gives at 3 feet 9 inches by 2 feet 6 inches. This, when running full, only gives 128 feet per minute. Now, as the sewer for many years is not likely to be running one-third full it will only have a velocity of about 100 feet. Now what will be the result? The velocity will be totally insufficient to prevent deposit, which will quickly accumulate, and the district will be saddled with an elongated cesspit which will require a large expenditure to keep clean. If the sewer should by any possible means ever run full it will then not be capable of removing deposit.

Mr. Stayton seems fond of running into error. He states the greatest depth of embankment to carry pipe to outfall would be 7 feet, whereas it is 5 feet.

It is my intention of separating the storm water from the sewage before it is carried to the filtering area. An 18-inch pipe will therefore be sufficient for many years. Should another eventually be required it could be laid by the side of the other. All this would be shown on detail drawings.

It is not necessary to put steps in manholes. Thousands are put in without them. I have put in hundreds during the last fifteen years. Steps are only necessary where flap-valves are required, or where a gradient wants checking.

What does Mr. Stayton mean by complaining about the sewers being at right angles to each other? Does he mean that streets should not be laid out at right angles to each other, or does he wish to increase the cost by introducing more manholes, or by curving the sewer—which is not now done? Neither of the above are necessary or desirable: the direction being given on the invert of the manholes where the sewers join.

I have certainly not supplied Mr. Stayton with any of my calculations respecting gradients, &c. Although he asserts no allowance is made in the difference in the size of pipes, I fail to see how he has arrived at this conclusion, and must treat it as merely an assertion on his part.

I do most emphatically deny that the reticulation under my scheme would cost more than under his. It does not require an engineer to tell that. It will be the other way about, as all that portion of Burwood lying to the north of his main sewer will have to be carried against the natural inclination of the land.

Parramatta Road—Where deep, does not require a supplemental sewer, as the houses can be drained into Burwood-street and Park Road. There is also a private road running in a southerly direction and which I take it must be sewered by the proprietor. *Railway*

Railway Parade,—As there will eventually be a sewer up the proposed road this will obviate an additional sewer.

Conder street—There will only be the school, which will be drained into road at back, and the Council Chambers, which can be taken to manhole.

Hornsey street—Portion of this is only 11 feet deep.

Lang street—About 5 chains of this is more than 20 feet deep.

Willie street—Is under 4 chains, and this can be drained into Henry-street.

Fitzroy street—Does not require sewer deeper than shown, as there is a sewer at the back of the south side and it would be folly to put the sewer deeper.

Lucas Road—Nearly all 4 feet deep and not 2 feet as stated by Mr. Stayton.

Milton street—Is shallow for a very short distance, but the houses can be drained.

It will thus be seen that I have disposed of the question as raised by Mr. Stayton for additional sewers. At the same time I wish to state that the plans as prepared by me were done at my own expense, and are only intended to show you that it is practicable to sewer the district as shown, and I have no doubt that in some cases it would be necessary to deepen the sewers and in some cases to make them shallower—the cost being practically the same. I have worked the streets from the levels in your possession.

I believe there is a new house built at the end of Ethel-street, but there is plenty of room at the side for a sewer.

What Mr. Stayton terms "areas omitted" are Shaftsbury Road. Brooklyn-street to railway does not require a sewer as part will be drained into Park-street, and the remainder into Railway Parade.

Shaftsbury Road, south of Parramatta Road, can be drained when required down Parramatta Road to Lucas Road. This also takes the lower part of Parramatta Road, but is not required at present, as there is only an old brickyard.

Burwood Road (north end) not required. No houses on west side. East side can be drained into private lane at back.

Lang-street.—The houses on this are, I believe, very near, and can be drained into manhole at Crogan-street. [This part, in the event of Burwood joining with Five Dock, will be slightly altered.]

Russell, *Norwick*, *Lyons*, and *Parnell Streets* are intended to go with Strathfield if arrangements can be made.

Lamp-post ventilators are used at Slough, near Windsor. It is not my intention to use these permanently, but only at the highest points of sewers, where there are no houses near.

The sewer in Parramatta Road will have to be increased from a 12 in. to a 15 in. pipe, which will give a velocity of 178 ft. per minute.

Why does Mr. Stayton make the assertion that he is of opinion that my sewage farm will cost more than I have estimated it at? All I can say is, I can get a contractor to do the work at the price named; and may I ask—How are we to know that his scheme will cost as little as he states? We have no detail plans to base an estimate upon; but simply a plan with a line of sewer drawn down it, for which we are told we shall have to pay £85,770. Before receiving Mr. Stayton's report, we had not the least idea what proportion would be charged to Burwood. I am very glad he has been able to estimate it £5,859 less than I estimated.

Respecting my previous estimate, as published in the *S. M. Herald*, I acknowledge I was wrong. The error arose in this way: in Sands' Directory the area of Burwood is given as 1,920 acres.

What I quoted in my report respecting drainage direct into the Parramatta River, will be found on page 20 of Mr. Stayton's report. He distinctly states that the pumping of this low-lying area can be postponed.

Annual Cost.

The way Mr. Stayton has worked this out is, I should think, enough to condemn his report entirely. He endeavours to show that his total cost of £85,770 should be at a less yearly cost to the borough than my £62,450. This he very easily does by working his one way and mine another. This is very convenient for him. This, I think, everyone will admit is a very unfair way of placing the relative cost before the public. We now know what his calculation of cost in his scheme is. I see he has allowed £350 cost of pumping, &c. This is for night and day men, coal, oil, and deterioration of plant (duplicate engines, pumps, etc.). This item, I should think, will be nearer £1,000. We will now see what my yearly cost will be. In the first place, I don't require £62,450, but £48,414, which, at 4½ per cent. at which price your clerk informs me you can get money, will amount to £2,178 12s. 7d. Mr. Stayton has put my working expenses as £400. Why it should be more than his, I fail to see, without it is to make the yearly difference more. I shall be able to pay more than working expenses off the farm. I can thus cut out the £400, which will leave a balance in favour of my scheme of £1,814 7s. 5d.

List of some farms at Home, with profit on same.

	£	s.	d.
Merthyr Tydvil (South Wales)	1884=452	9	7
" "	1883=247	6	2½
Forfair (Scotland)	1884=284	0	1
Great Malvern	1884=162	15	1
Kendal	1875=289	0	0
Abingdon (Berks)	1880=225	0	0
Oakham (Rutland), 3,000 inhabitants to 2½ acres of land ...	1878= 41	1	0
7,	1,701	11	11½
	£243	0	0

an average of £243 above expenses.

I fail to see why better results cannot be obtained here.

Trusting I have explained matters to your satisfaction,—

I am, &c.,
CHARLES COWDERY.

MEMORANDUM

Memorandum to the Engineer-in-Chief for Sewerage *re* Mr. Charles Cowdery's Sewerage Scheme for Burwood.

Mr. Cowdery's reply, dated 24th September last, to the departmental criticisms upon his proposed Sewerage System for the borough of Burwood has received consideration.

Only the more salient points will be dealt with in the following rejoinder; in which, for convenience, Mr. Cowdery's remarks and the replies thereto are placed in juxtaposition.

I venture to assert that he has entirely failed to satisfactorily answer the objections to his scheme. There is absolutely no necessity to modify any of the remarks in my former report, but on the contrary I have again to correct errors on Mr. Cowdery's part.

Outfall Works (1).

From Mr. Cowdery's Report.	Remarks thereon.
"Mr. Stayton spends some £56,775 to take the sewage to what he considers a most suitable place."	This assertion has no foundation. The error is fully explained under the headings "Cost of Works" and "Annual Cost" (13 and 14).

Levels (2).

"My high-water is taken from actual high-water in the Bay. Mr. Stayton has evidently taken high-water at Sydney, which is not the same as at Hen-and-Chicken Bay. It will thus be seen that he is in error about the levels of filtering areas. The surface of each bed towards Burwood is 3 in. higher."	In the report in question it will be observed that I referred to high-water *spring* tides, not to ordinary high-water. A series of levels extending over spring and neap tide periods would confirm the accuracy of the departmental figures. Assuming that Mr. Cowdery's contention, that the range of tide at Burwood is *less* than at Sydney, is correct, the argument is obviously against his own scheme. The plan shows three filter beds only on each side of the area, consequently the beds nearest to Parramatta Road are 6 in. higher than the lowest. This variation in level makes no practical difference in the objections to the proposed filters, and Mr. Cowdery appears to entirely ignore the serious question of their ineffectiveness at neap-tides.

Effluent Area inside Bank (3).

"The area of the watershed is not as Mr. Stayton says, *more* than one-third; it is a *fourth* of Burwood. It is not intended to allow the storm-waters to run into the water area; the major part will be conducted outside the filter area."	The area of the watershed contains over 400 acres. The area of Burwood is 1,100 acres, but a part of the 400 acres is in Concord and Five Dock. Further comment is unnecessary. Mr. Cowdery's detail plan and sections show most distinctly that the storm-waters referred to are intended to be discharged into the head of the area by means of a new direct channel. It would be a very costly matter to properly and effectually conduct such waters outside the filtration area. It is impossible to reconcile his more recent statement with his former plans and report.

Situation of Filtration Area (4).

"The filter area is neither in Five Dock or Concord, but on neutral ground." "From Concord I do not anticipate much opposition, for only at the last meeting of the Council one alderman proposed that they should oppose a sewage farm, but could not get a seconder."	The portion of the area at the bank-end is doubtless outside the boundaries of Five Dock and Concord, and within the waters of Port Jackson, but a considerable part of the land proposed to be dealt with is within these municipalities. The facts of the case are as follows:—At the meeting referred to a resolution was moved as stated, but on the Mayor remarking that he was under the impression that action was not required, as the Government would not be likely to sanction the proposal, the question dropped.

Withington Sewage Farm (5).

"This land is close to the Mersey. Before embanking it was subject to floodings. It has been drained about 5 ft. deep."	It must not be overlooked that the tidal-range in the Mersey is 27 ft. 6 in. for spring tides instead of 5 ft. 6 in. as in the Parramatta River, and there is nothing to show whether the site is at the outlet of a large watershed as at Burwood, or what the levels are. Obviously a tide five times greater than that at Hen and Chicken Bay, would enable the land to be more effectively drained to a depth of 5 ft.

Period of Discharge in Western Main Sewer (6).

"Mr. Stayton states that the sewage is discharged in three hours. His western sewer begins with a size of 6 ft. 10 in. × 5 ft. 10 in. and is reduced to 3 ft. 9 in. × 2 ft. 6 in. I will take it as an average of 5 ft. 6 in. × 3 ft. 8 in., the velocity of which when running one-third full at 1 in 1,500, is 126 ft. per minute. This for 27,120 ft. will take 3 hours 51 minutes, and the 6 ft. outfall, 11,700 ft. long, and 1 in 1,700, with a velocity of 177 ft. per minute, makes a total of 4 hours 57 minutes."	I stated in the report that "the maximum velocity is such that only 3 hours would elapse before the sewage of Burwood would be delivered at Webb's grant." This is perfectly correct, and refers of course to the conditions for which the sewers were designed. Mr. Cowdery's figures are wrong and his method of reasoning is absurd. The distance from Burwood to the outfall sewer is 16,840 ft., not 27,120 ft., and the velocity for the prospective dry-weather flow averages about 164 ft. per minute. This equals a period of 1 hour 42 minutes for the main sewer, to which must be added 1 hour 6 minutes for the outfall sewer, making 2 hours 48 minutes in all. If Burwood road be considered as the commencing point instead of the eastern municipal boundary, thirty-three minutes should be added.

Velocity

Velocity of Western Main (7).

From Mr. Cowdery's Report.

"Mr. Stayton continues his sewer at an uniform gradient of 1 in 1,500 without the slightest regard to the size of sewer. The sewer on the last length, 3 ft. 9 in. × 2 ft. 6 in., when running full, gives 128 ft. per minute. Now as the sewer for many years is not likely to be running one-third full, it will only have a velocity of about 100 ft."

Remarks thereon.

This statement is absolutely incorrect. Mr. Cowdery must have observed in the report that the sectional areas and gradients of the sewers, together with steps at intersections, are so regulated as to ensure uniformity of surface gradient. He ought also to have noticed on page 18 that the fall of the 3 ft. 9 in. × 2 ft. 6 in. sewer is 1 in 1,200; the velocity of which, when flowing one-third full, is 117 ft., and when two-thirds full, 149 ft. per minute.

Outfall Sewers (8).

"Mr. Stayton seems fond of running into error. He states the greatest depth of embankment to carry outfall pipe would be 7 ft., whereas it is 5 ft."

The report states that "the sewer would be formed in an embankment, the maximum height being 7 ft." Mr. Cowdery's statement is obviously wrong; moreover, his sections show that the embankment is 7 ft. high, as asserted.

"It is my intention of separating the storm water from the sewage before it is carried to the filtering area. Should another pipe sewer eventually be required, it could be laid."

The plans and report make no mention of this intention. The cost of constructing a proper storm water outfall, together with the two additional sewer outfalls, should be added to the estimate.

Manhole Steps and Junctions (9).

"Steps are only necessary where a gradient wants checking."

Mr. Cowdery seems to be unaware that the term "step" (sometimes called "drop") is a mere technicality for increased fall to compensate for sudden changes of direction or increased sectional area. Mr. Cowdery's sections clearly show that no such allowance has been made in the invert level at the numerous junctions. This is emphatically wrong.

"What does Mr. Stayton mean by complaining about the sewers being at right angles to each other?"

"Neither steps nor curves are necessary, the direction being given on the invert of the manholes where the sewers join."

No *complaint* was made against the principle of right-angled junctions; it was the neglect to provide the extra fall for the change of direction on the invert of the manholes which was referred to.

Calculations for Gradients (10).

"I have certainly not supplied Mr. Stayton with any of my calculations respecting gradients. Although he asserts no allowance is made in the difference in the size of pipes, I fail to see how he has arrived at this conclusion."

From the manner in which the sections have been designed, it is quite obvious that Mr. Cowdery "failed to see" why I arrived at the conclusion that it was improper to have a continuous invert level where the size of pipes diminished. The "inverts" shown on the sections so clearly demonstrated the reason for my statement that calculations were unnecessary.

Cost of Subsidiary Sewers (11).

"I most emphatically deny that under my scheme the cost would be more than under his. It will be the other way about, as all that portion of Burwood north of the main sewer will have to be carried against the natural inclination of the land."

In five or six instances only will the sewers require to be carried as Mr. Cowdery states. It is, therefore, incorrect to include *all* the portion to the north of the main sewer.

Mr. Cowdery has made no reference to the fact that, in addition to the main sewer (which runs right through the borough), two submains are continued to Parramatta Road. These will give greater facilities for street sewers, consequently the latter will be less costly than under the three systems which he proposes.

Depth of Sewers, and Areas omitted (12).

Sewers over 20 ft. deep.

Parramatta Road, Railway Parade.

Conder-street, Hornsey-street, Lang-street, Willie-street.

It is admitted by Mr. Cowdery that additional provision must be made.

The explanation is extremely vague and unsatisfactory, and entirely fails to meet the objections named in the report.

Shallow Sewers.

Fitzroy-street.

The sewer referred to by Mr. Cowdery would be on private land some 300 ft. away, and constructed entirely for another purpose.

Milton-street.

No specific reply given.

Lucas Road.

The level of the road at the part in question has been recently raised, and is now above the level of the adjoining land.

Sewers above existing street surfaces.

Parramatta Road (part of), The Avenue, Crogan-street, Lang-street, Belgrave-street, Parramatta Road, near Esher-street.

Mr. Cowdery has made no comment or explanation whatever on this question.

Areas omitted.

Shaftesbury Road, near Railway; Shaftesbury Road, north end; Parramatta Road (part of), Burwood Road, north end; Lang-street, Russell-street, Norwick-street, Lyon-street, Parnell-street.

Mr. Cowdery has failed to prove that the levels will allow these places to be sewered by gravitation. The fact remains, notwithstanding his observations, that no provision is made in his estimate for their effectual drainage.

Cost

Cost of Works (13).

From Mr. Cowdery's Report.

"We have no detail plans to base an estimate upon; but simply a plan with a line of sewer drawn down it, for which we are told we shall have to pay £85,770. Before receiving Mr. Stayton's report we had not the least idea what proportion would be charged to Burwood."

Remarks thereon.

There is not the slightest foundation for this statement. My report distinctly explained that the principle on which that amount was ascertained was Mr. Cowdery's (viz., on the prospective population instead of the annual ratable value—an entirely wrong basis), and it showed that £56,776 was for the main sewerage; or, £85,770 for the complete system. It is obvious from further remarks in my report that there is not the slightest intention of charging Burwood £85,770, and that Mr. Cowdery's version is a complete distortion of the facts.

Annual Cost (14).

"The way Mr. Stayton has worked this out is, I should think, enough to condemn his report entirely. He endeavours to show that his total cost of £85,770 should be at a less yearly cost to the borough than my £62,450. This he very easily does by working his one way and mine another."

I have already explained that the cost would not be assessed at £85,770, and that it would be apportioned *pro rata* on the annual ratable value. Under these circumstances it did not appear possible to work out the comparative cost in a clearer manner. Taking the ratable value of Burwood at one twenty-sixth of the entire western suburbs, the proportional cost would be £31,935 only for main sewerage, instead of £56,776.

"I see he has allowed £350, cost of pumping, &c.; this is for night and day men, coal, oil, and deterioration of plant. This item I should think will be nearer £1000."

The sewage would be raised from the low level areas under the "Shone" pneumatic system. A central station at Burwood would also supply the necessary power for low-level areas at Ashfield, Five Dock, Concord and Strathfield, at a gross annual charge of £4,516. The £350 was stated to be the proportional cost.

"The yearly cost of my scheme for interest at 4½ per cent. on £48,414 will amount to £2,178 12s. 7d. In the first place I don't require £62,450."

Mr. Cowdery has made no provision for repayment of loan. At the 28 years period this alone would amount to £1,729 for the smaller outlay. At 4 per cent. for 28 years the annual charge on £62,450 is shown to be £3,747.

"I shall be able to pay more than working expenses off the farm. I can thus cut out the £400, which Mr. Stayton allows, leaving a balance in favour of my scheme of £1,814 7s. 5d."

I would call attention to the following words in my report, viz.:—"All authorities agree that the system does not pay commercially, except under the most favourable conditions." I re-affirm that under Mr. Cowdery's scheme it is proposed to do here more than has ever been attempted in England to my knowledge, and that the conditions would be most unfavourable. A provision for working expenses is therefore most essential.

The financial question, however, can be best illustrated as follows, and it is obvious that by participating in a joint-sewerage scheme for the whole of the western suburbs, Burwood would have not only a sanitary but a financial advantage. According to a calculation which has been carefully prepared for the Parliamentary Standing Committee on Public Works, it is shown that a drainage rate of about 8d. in the £ throughout the suburbs would pay interest and repayment, together with working expenses for the main and subsidiary sewers and the low-level systems complete. At similar rates for interest and repayment, under Mr. Cowdery's scheme, Burwood would have to pay at least £3,160 per annum, which would be equivalent to a local drainage rate of 10d. in the £. Mr. Cowdery's balance of £1,814 is therefore a complete myth.

Of course it will be understood that under either scheme the ratepayers would have the present cost of emptying the earth closets (about £1 per house per annum) as a set-off against the new rate.

Sewerage Branch, Sydney,
November 27th, 1888.

GEO. H. STAYTON,
M. Inst., C.E.

C 7.

THE LIERNUR SYSTEM OF SEWERAGE.

[*Extract from Sydney Morning Herald*, 16 *July*, 1888.]

SUBURBAN SEWERAGE.

To the Editor of the Herald.

Sir, Sydney, July 11.

In the public interest I beg to call the attention of the suburban municipalities to the enclosed letter from Captain Liernur to Dr. Mackellar, sent through me in answer to one from the latter asking for information as to places on the Continent of Europe where the system is in operation. It is now published with Dr. Mackellar's assent, as it explains how any public body or company should proceed to obtain specifications and estimates of works required for small or large districts. I assert confidently that relief can be obtained this way in perhaps one-fifth of the time, and at one-fifth the cost of the methods proposed in the reports already submitted for treating the suburbs. If I can be of any service in explaining or affording documentary evidence of the Liernur system I shall do so with pleasure; and before closing this letter I desire briefly again to epitomise some of the advantages of this system.

1st. It requires no costly main sewer to be first constructed, but can be applied at once to a single street or a populous section of a district.

2nd. Pollution of the atmosphere by foul gases is impossible.

3rd. Excrementitious and deleterious matters are dealt with, harmlessly and in a cleanly manner; a valuable manure, made conveniently portable, is saved.

4th. The cost is less than the water-carriage system.

5th. Some of the best sanitarians and civil engineers of the day declare that in the pneumatic system alone we have the solution of the sewerage system, the combined water-carriage system being wrong in principle, cumbrous in working, costly and wasteful.

I am, &c.,

BENJAMIN BACKHOUSE.

"Berlin, 78 Thurmstrasse, 10 December, 1887.

"My dear Dr. Mackellar,—I gladly would have answered your favour of December 1 at once if only you had not forgotten to give some address to forward the letter to. Having, however, been daily disappointed in hearing from you from some Continental town, I will not wait any longer, but answer under cover to Mr. Backhouse in the hope he will know your whereabouts, or will meet with you before leaving for Australia.

"My system is introduced in Amsterdam (at present to about 85,000 inhabitants) and in Leiden to portions of the city; in Riga (Russia) and Hanau (Germany), to the county hospitals; in Prague, Brunn, and Olmutz (Austria), to a number of military barracks; and in St. Petersburg, to the Zemenosky district. In all these instances the arrangements are different, a standard form being, as a matter of course, impossible.

"Only the principle is in all cases alike—namely, the removal of excremental matter and putrescible fluids by means of suction through a subterranean network of iron air-tight pipes.

"By these means I remove (which no other system does) with the substances also the gases and micro-organisms contained therein and developed in the pipes, and I discharge these in the hearths of my vacuum-engines at the pumping-station, so that all that is dangerous or noisome is destroyed by heat.

"At the same time, the matter itself is collected at the pump-station in large vacuum-reservoirs in order to be converted into a dry manure powder. This has now become financially possible on account of the manurial ingredients being neither mixed with large masses of worthless street detritus nor diluted with enormous quantities of valueless rain-water, as is the case with the very stupid so-called 'combined' system in use in England, this resulting in all sorts of abominable stinks in the town, a horrible pollution of the rivers and harbours outside of it, and perplexities of the most embarrassing kind for State and town authorities.

"As to the comprehensive description of the plant required for my system, I am happy to be able to point to the pamphlet recently published by Mr. Backhouse, which contains everything required for giving a general idea. With questions of detail of the plant the thing stands differently to non-professional men, who naturally are not versed in the various ways in which physical and mechanical laws can be made subservient to our purposes. The applicability of the system to a special case can only be made evident by a plan exhibiting the application in that particular case. It suffices for this to have prepared a few drawings showing the leading features of the principal apparatus, and a so-called skeleton plan showing their general disposition. This, in conjunction with an approximate estimate of cost, goes further towards proving the fitness of the system for any particular place in question than thousands of descriptions in the most eloquent language, and does not cost much besides. If, therefore, there is at Sydney an actual want for the sanitary improvement effected by my system, I cannot practically give any better advice than to get the authorities to order me to make for them a general plan, with approximate estimate of cost. I assure you it will be very promptly attended to.

"I remain in the meantime, my dear doctor, yours very respectfully,

"CHARLES T. LIERNUR."

[*Extract from Sydney Morning Herald*, 6 *August*, 1888.]

SUBURBAN SEWERAGE.

To the Editor of the Herald.

Sir, Sydney, July, 1888.

Referring to my letter under the heading "Suburban Sewerage," and with a view to the avoidance of future mistakes and wasteful outlay with regard to sanitary and sewerage matters, I now ask you to insert for the information of the public the undermentioned extracts:—

The Secretary of the State Board of Health, Maryland (C. W. Chancellor, M.D., member of the American Public Health Association, Fellow of the Society of Science, Letters, and Art, London, &c., &c.), a man fully qualified to make the inquiries sought, was not long since directed by resolution of that board to proceed to Europe to investigate the most recent plans in practical operation for the disposal and utilisation of household sewage, and I desire to prominently bring under notice the conclusions which he arrived at, believing them to be worthy of serious consideration. They were presented by him in May, 1887, to His Excellency Henry Lloyd, the Governor of the State of Maryland, U.S. "1. That the proper disposal of sewage involves the beneficial appropriation of refuse matters, so as to make them actually productive, avoiding interference with those domestic uses of inland waters for which they are properly adapted. 2. That sewage matters should be made available for agricultural purposes, and the results in this respect are limitable only by considerations of expense as weighed against the value of the result. 3. That the great importance of avoiding all sources of unhealthy and offensive effluvia, and of preserving the foundations of buildings and the sub-strata of towns and cities in a dry and clean condition, creates an absolute necessity for relinquishing cesspools and all receptacles for sewage connected with any building or other place, except such as are thoroughly water-tight and, for the most part, air-tight. 4. That all unhealthy putrescible matter should be removed at short intervals from within the limits of centres of population, either by means of air-tight pipes or in vessels or tanks hermetically closed. 5. That privy pits, unless they are perfectly water-tight, will infect (*a*) the surrounding soil by transudation of their liquid contents; (*b*) the air by exhalations or gaseous emanations through a polluted soil; (*c*) the sources of domestic water supply by percolation through intervening strata of earth. 6. That the use of water from dug wells should be prohibited for drinking and culinary purposes in every instance where privy pits not absolutely water-tight exist in proximity to or within 1,000 feet of such wells. 7. That, without considerable fall or grade, flushing is utterly inefficient for cleansing sewers, except where the matter is carried by pneumatic pressure or aspiration, even in the case of small sewers with large quantities of water. 8. That the impermeability of brick sewers can never be absolute; and, therefore, should they convey excrementitious matters, the surrounding soil and the water of the neighbouring wells will be at all times liable to dangerous contamination. 9. That excrementitious matters ought to be rigidly excluded from all storm-water sewers. 10. That the epuration of sewer water by soil alone is not efficient in a sanitary point of view, as has been demonstrated by both experience and chemical analysis.

11. That no system of sewage can be approved which permits the pollution of either air, water, or soil; and that, in order to fulfil the requirements of proper sanitation, all excrementitious matters and kitchen slops should be conveyed from towns by pipes absolutely air-tight, or in hermetically-closed vessels to a point sufficiently distant, where they may be manufactured into a dry manure powder without offence."

I have advocated from time to time in your columns, during the past five years, the adoption of the pneumatic system of Liernur, because it appears to fulfil more completely than any other the conditions required by the above extracts; but any system that will do this will have my hearty support. Look to it, ye suburban authorities and low-lying untouched city districts, ere it is too late. Let the proposed oppressive water rates (mild by comparison) warn you against the adoption of a cumbrous, extravagant, costly, old world system of sewage removal.

I am, &c.,

BENJAMIN BACKHOUSE.

Mr. Sutherland would like a report from Mr. Bennett on this.—J.B., 7/8/81. Mr. Stayton.—W.C.B., 8/8/88.

I have given this to Mr. Stayton to deal with. He has not yet had time. I think the best thing would be for the Minister to have him down to deal with Mr. Backhouse. Mr. Stayton is the last authority from England, and dealt extensively with such questions there.—W.C.B., 8/8/88. The Under Secretary, B.C.

Return to Mr. Bennett.—J.B., 9/8/88. Mr. Stayton.—W.C.B., 10/8/88. Report herewith.—G.H.S., 21/8/88. See 88-6,075.

Report by Mr. G. H. Stayton, M.Inst.C.E., upon the Liernur Pneumatic System.

Suburban Sewerage.

I have perused the letters which Mr. Backhouse recently wrote to the *Sydney Morning Herald*, in which he strongly advocated the adoption of the "Liernur Pneumatic" system of sewerage for the western suburbs of Sydney. I have also read his latest pamphlet, containing an account of his inspection of the system at Amsterdam in August, 1887. These papers do not, however, contain much serviceable information concerning the details and working of the system in the several continental towns in which it has been adopted, other than that which has previously appeared either in pamphlets or in the public press; neither are the necessary figures supplied as to the actual cost of constructing the complete system where no sewers already existed; nor are any official statements quoted showing the financial and other results of recent operations. It appears, however, that Captain Liernur's system of evaporating the liquid excreta into *poudrette* has not been adopted in Amsterdam, owing to the opposition of the City Council.

The Liernur pneumatic system is certainly an ingenious invention for the removal of excreta and urine from dwelling-houses; but, however well-fitted it may be for flat and thickly populated cities in Holland or for other continental towns, it cannot be recommended as being applicable to the conditions of the western suburbs, where the existing population only averages about twelve persons per acre, and where the estimated prospective population does not exceed an average of 35·41 persons per acre. The density of the population in that part of Amsterdam which is drained by the Liernur system (about one-quarter of the entire city) averages no less than 121·5 persons per acre.

The latest information of practical value which has appeared in print, so far as I am aware, is a paper by Dr. R. Blasius, of Brunswick (*vide* the German quarterly papers for Public Health) who in 1885 had recently inspected the operations of the Liernur system at Amsterdam. After describing the nature of the works and explaining the *modus operandi*, he gave the cost of the treatment as set forth in an official report of the City Engineer, by which it appears that the working expenses of removing and evaporating the excreta (including interest on cost of construction, renewals and repairs, &c.), amount to 4s. 10d. per head per annum. It should, however, be particularly noted that the quantity of sewage treated and evaporated is only 385 gallons per head per annum, and this is supposed to represent the excreta and urine of each person, together with the water used for ablution in bed and dressing rooms, and a small quantity for keeping the closet pans clean. With regard to this small allowance per head, I might here remark that Professor Tidy, F.R.S., has recently shown that the annual quantity of urine and fæces amounts to over 300 gallons per head. It is obvious, therefore, that either the quantity treated has been understated or else a large volume of impure water must have passed into the sewers, in which case the expense of evaporating it would be avoided.

Dismissing for the moment all question as to the alleged superiority of the Liernur system over the scheme proposed for the western suburbs, the greatest objection to the former is in the unnecessarily large outlay it would entail. The system requires—

(1.) Cast iron airtight sewers and house-drains for the removal by pneumatic force of all excreta and urine from closets, together with bedroom slops and sedimentary products of kitchen sinks.

(2.) Sewers proper for removal of rainfall from street gullies, together with a second system of house-drains for carrying off by gravitation the rainfall from roofs and back yards, the sub-soil waters and all liquid refuse from kitchen, scullery, and wash-house sinks, and from baths, dairies, stables, &c. The excreta is evaporated and converted into *poudrette*, and sold as an agricultural manure, but the liquid sewage and waters carried off by the sewers proper are passed through filters of gas-coke before being allowed to pass into streams. Where the supply of water is limited, a specially shaped "pneumatic" or "air" closet is recommended, in which no water is used for cleansing.

The social habits of the majority of the inhabitants of the suburbs are similar to those in the old country, but they greatly differ from those in many of the continental towns in respect to the quantity of water made foul in their dwelling-houses. And as the relative population covers so much larger an area here, it is apparent that the cost per head for collecting and evaporating the excreta and liquid refuse would be greatly in excess of the figures quoted for Amsterdam. It has already been stated that the cost of the Liernur system in that city is 4s. 10d. per head per annum, but neither Dr. Blasius nor Mr. Backhouse has given the amount of the annual receipts from the sale of liquid manure. Mr. Backhouse explains that time did not allow him to obtain such particulars from the city authorities; but Dr. Blasius states that from the experience gained at Dordrecht, where the complete system is in operation, the value of the *poudrette* is £6 8s. per ton. He therefore assumes that as each person yields 50 kilograms per annum, its value is 6s. 5d., showing an estimated annual profit of 1s. 7d. per head.

In

In order, however, to ascertain the probable cost of the Liernur system, if adopted in the suburbs of Sydney, I have compared the Amsterdam statistics with the local conditions, and find—

(1.) That the working expenses and interest on cost of construction (inclusive of evaporation) instead of being 11·23d. per head would be relatively increased to 39·87d., in consequence of the smaller prospective population per acre; and as these items are at the Amsterdam rates it is tolerably certain that the prices for material and labour in Sydney would amount to at least double.

(2.) The value of sulphuric acid instead of being 4s. 1d. per cwt. is quoted at 16s. per cwt. in Sydney, an increase of 1s. 6d. on the allowance per head.

(3.) That the labour item ought to be at least doubled, labourers wages in Holland being from 3s. 6d. to 4s. only per day of ten hours; and that as the cost of construction, together with maintenance and renewals would amount to at least 100 per cent. more here than in Amsterdam, the item of interest should be similarly increased. Labour and materials should, therefore, be 18·72d. more. The total working expenses and interest would thus amount to 13s. 6d. per head, which, after crediting the assumed value of the *poudrette*, leaves the annual cost per head at 7s. 1d. nett.

On the other hand I estimate the cost per head on the prospective population of the southern and western areas of the Government scheme, including interest and repayment of loans for constructing the main and subsidiary sewers and low-level systems, and the working expenses of the sewage farm at 3s. 10d. per annum or about one-half the estimated cost of the Liernur system. After a few years of efficient management at the farm this amount should be reduced by the profits derived from the sale of crops.

It would take too long to refute the errors advanced by Dr. Chancellor and various advocates of the Liernur system. I have shown that the cost is greater instead of less than the water-carriage system, and that costly main sewers would be necessary for the western suburbs. And as to pollution by foul gases being impossible, I do not hesitate to assert that unless the sewers proper and house-drains are disconnected and ventilated as in an efficient water-carriage system, the stinks in them would be unbearable. I cannot admit that a system by which excreta, urine, and fouled waters are retained in closet pipes and traps on the premises for nearly twenty-four hours, or which fails to purify liquid refuse through land can be regarded as pre-eminently sanitary. These are doubtless, some of the reasons why the Liernur system has not been adopted in any city or town in England, where sanitary engineering has achieved the leading position throughout the world, and where the most eminent sanitarians have deemed it unsuitable and too costly.

The modern systems of water-carriage sewerage and house drainage in England are perfect in principle and in action, and I can imagine no arrangement more convenient, cleanly, or healthy than some of the recently constructed sewers and house-drains which I have seen. And with respect to the purification of sewage, it must be remembered that the Farm at Webb's Grant will not only purify the sewage in the best manner, but will utilize it under most favourable circumstances.

21 August, 1888. GEO. H. STAYTON, M. Inst. C.E.

The Engineer-in-Chief for Sewerage.

It is hardly necessary that I should add to all that has been written on this. Papers herewith contain information extending back to 1877. There is really nothing new of any importance. The question was exhausted by the old Sewage and Health Board. I personally conferred with Sir Robert Rawlinson when in England in 1881, and he advised me not to waste time going to Amsterdam to see what had been done there.—W.C.B., 24/8/88. The Under Secretary.

Submitted.—J.B., 24/8/88. Send copy to Mr. Backhouse with my compliments.—JOHN SUTHERLAND, 27/8/88. Write.—J.B., 27/8/88. B. Backhouse, Esq., 31/8/88. Roads.—D.C.M'L. (for U.S.), B.C., 1/9/88. File.—W.C.B., 3/9/88.

C 8.

SCHEMES FOR SUBURBAN SEWERAGE.

[*Extract from Sydney Morning Herald, 27 February, 1888.*]

GOVERNMENT SCHEMES FOR SUBURBAN SEWERAGE.

(Communicated.)

THE problems which had to be dealt with by Mr. Stayton in his reports on suburban sewerage are so difficult and so urgent that critics may well hesitate about raising objections. Still, it is for the express purpose of eliciting the fullest possible light that these reports are now under consideration by the suburban councils concerned; and, for obvious reasons, the municipal authorities will be the better of independent suggestions. For years past the vexed question has pressed upon them like a night-mare, and the temptation will be strong to welcome with scant scrutiny any scheme that offers relief. In the first place, it ought to be noted that whereas the question of city sewerage was maturely considered by a board of no fewer than fifteen experts before the country was committed to an estimated expenditure of a quarter of a million, this much larger and more complicated matter, involving an estimated expenditure of nearly a million, has been left in the hands of a single engineer. It may be said that Mr. Stayton had the advantage of the board's inquiries and conclusions, and that, having these, time and money were economised by a single authority. But, as a matter of fact, it will be found that in one of his schemes Mr. Stayton has greatly developed the proposal of a sewage farm, which the board only admitted into their recommendations as an experiment to be tried on a moderate scale; and that in the other he has relied upon chemical treatment, in the face of the board's strong opinion as to its impracticability on any thing like a large scale. * * * * * * * * * * * * * * * * *

With regard to the much larger questions covered by Mr. Stayton's recent report on the sewerage of the western suburbs, similar difficulties present themselves in a still more aggravated form. An area of 31 square miles has to be provided for with a respective population of nearly half a million within eighteen or twenty years, according to Mr. Stayton's estimate. For nearly half the area the altitudes admit of connection with the Bondi sewer, but the remaining 17 square miles present difficulties which seem to have driven Mr. Stayton to adopt a system, which in the nature of things, can only serve as a temporary recourse. The "Sewage Farm" at Webb's Grant, which seems to have been reluctantly turned to by the board of 1875, as an outlet for the sewage of the southern parts of the city, is now to be deliberately fixed upon as a receptacle for the sewage of all the southern and the low-lying western suburbs. An immense volume of sewage is to be concentrated in a swamp, from which, after such processes of filtration as are possible, the liquid portions will flow into Cook's River. This is what the board of 1875 said of such a scheme:—"Such systems may be well-adapted to large establishments, whether private or public, but are obviously inapplicable to the sewage of a populous city." The probability is that if this extensive experiment is tried at Botany the term "farm" will serve as a mere euphemism to cover, as long as the rapidly extending population will allow, a huge sink of disease-breeding matter. At best this scheme can only serve as a temporary relief for the perplexed authorities of the southern and western suburbs. Shea's Creek was endured a long time, too long for the health of hundreds of families, but it had to be dealt with at last. So will it be with any attempt at a sewage farm after the fashion of Webb's Grant, in the neighbourhood of the city. Till science finds a better way, the example of London and other British coastal cities will have to be followed as closely as possible, in sending all sewage to the sea. As

As to questions of cost, effective works must be paid for at a proportionate rate. But less the municipal authorities who are now considering Mr. Stayton's figures should forget the lessons of experience in their natural anxiety to find a solution of sewerage problems, it may be as well to remind them that for Government works of this kind the actual cost usually exceeds the estimate by 50 to 100 per cent., as witness the Bondi Sewer and the Nepean Waterworks.

Mr. Stayton in the first instance. Urgent.—W.C.B., 3/3/1888. Memorandum submitted to Engineer-in-Chief.—G.H.S., 12/3/88.

MEMORANDUM upon the Government Scheme for Suburban Sewerage.

THE principal objections to the proposed scheme for the sewerage of the western suburbs of Sydney, as contained in a communicated article to the *Sydney Morning Herald*, on the 27th ultimo, appear to be based upon the report of the Sewage and Health Board of 1875.

The evidence which the Board procured, the opinions which they expressed, and the recommendations which they submitted, were thoroughly and entirely in accord with the practice and experience of the most eminent authorities at the time, but since that period the science of sewage treatment has undergone considerable modification. Subsequent experience has proved, that several points which were then considered doubtful and processes which the Board deemed somewhat experimental, have satisfactorily emerged from that stage.

Since the publication of the report of the Local Government Board in 1876, several lengthy and important investigations have taken place in England, and the reports of the Royal Commission (Lord Bramwell's) on the London sewage discharge in 1883, the Thames Valley Main Sewerage inquiry in 1884, and the papers and discussion at the Institution of Civil Engineers in 1887, have been issued, and contain most valuable information.

The intention of the following remarks is to demonstrate the groundlessness of the objections to the proposed processes of sewage treatment at Botany. I venture to remark that it is obvious that the writer has no practical knowledge of modern sewage treatment; in fact, his own observations support this assertion. My recent reports show that due consideration was given to the question generally, and that the treatment recommended is in full accord with modern practice.

Nearly the whole of the more recently executed sewerage systems in England (not on the sea coast) have comprised either irrigation or precipitation combined with earth filtration. It is therefore manifest that both "sewage farming" and "chemical treatment" have made great headway, the local conditions entirely determining which is the better system to adopt. These methods of disposal are recommended by such eminent engineering authorities as Sir Robert Rawlinson, K.C.B., Sir Joseph Bazalgette, Mr. Thomas Hawksley, F.R.S, Professor Robinson, M. Inst. C.E., and Mr. Baldwin Latham, and by chemists of the highest eminence, including Sir Frederick Abel, F.R.S., Professor Tidy, F.R.S., Dr. Odling, Dr. Dupré, and Mr. Dibdin.

The Board's hesitation to recommend experimental sewage farming on a large scale had special reference to the sewerage of Sydney, and they very properly decided to adopt the Bondi outlet in preference. At the same time they reported that the land at Botany was well adapted for sewage farming, and that this climate would produce results far more favourable than in the north of Europe.

The science of sewage farming as then practised in England had been subjected to much hostile criticism, partly because it had been greatly abused by improper management, and next by the false hopes which certain enthusiasts had raised as to the agricultural value of liquid sewage.

The Board of 1875 had evidence before them as to the results of sewage farming at Croydon, Bedford, Dantzic, Carlisle, Romford, Doncaster, Rugby, Banbury, Cheltenham, Warwick, and Leamington. These farms are now administered with much better financial success, and create no nuisance. There are also sewage farms at Worthing, Tunbridge Wells, Northampton, Norwich, and Birmingham, and since the Board's report was issued the towns of Nottingham, Wolverhampton, Reading, and Oxford have laid out large farms, and as recently as 1886 an irrigation farm of 1,375 acres was established at Leicester. These facts ought to convince the most sceptical that sewage farming is growing in public favour—the result of being better understood.

That the Board were right in their view as to the Australian climate being favourable for sewage farming is very apparent, inasmuch as the recently established farm at Adelaide has proved successful—both practically and financially. The probabilities of a sewage farm proving remunerative depend mainly upon capable and experienced management, and upon local conditions, such as suitable soil and the absence of pumping.

I cannot recall any place in England where so favourable a site exists for a sewage farm as at Webb's Grant. My opinion is that if the municipal authorities of any city elsewhere had so available a site for sewage purification, they would literally have jumped at it. The quality of the sewage delivered at the farm would be of the most favourable class for treatment, because the greater part of the rainfall is to be excluded, and no noxious-trades refuse—such as dyes or chemicals (which caused so much trouble in English manufacturing towns), will be discharged into the sewers. I feel confident that if the area is judiciously laid out, drained, and skilfully managed, it will prove to be one of the best natural sewage-filters in existence.

The article infers that Webb's Grant is a swamp. This is incorrect, the greater part being a sand bank averaging at least 8 or 9 feet above the level of the sea. It has also other advantages for purification, as explained on page 8 of the report.

The system of filtration proposed to be carried out is very different to the filtration process which the Board of 1875 reported as inapplicable to a populous city. The Board's final report (paragraph 34) had special reference to such processes as were then in use at the Stoke-upon-Trent workhouse. The extent of the drainage area favourable for Bondi is only 5 and not 15 square miles as inferred, the area draining to Webb's Grant being 17 miles.

The late Mr. W. Clarke, M. Inst. C.E, agreed with the principle of utilising the sewage of the southern part of the city and suburbs by irrigation, and thoroughly believed in its possibility. In his report he stated "I am however unable to point to any instance where this is accomplished without some loss to the community, and where an alternative of discharging the sewage at once into deep water, without nuisance, presents itself, I should have no hesitation in adopting it. Botany Bay is too shallow a basin to receive the sewage without causing great nuisance, and the necessity for some process of dealing with the sewage, either by irrigation or otherwise, would be imperative. The

The process of precipitation which the Sewage and Health Board considered and reported upon as undesirable in 1876, is entirely different to the combined system of "straining, precipitation, aeration, and earth filtration," now in use in England. The modern process is carried on without creating nuisance, the effluent is purified and clear, and the sludge is reduced to one-fifth of its bulk by the use of "filter-presses," and is thus rendered fit for agricultural purposes.

Prior to 1875 various processes had been tried; in fact, over 400 patents for sewage purification had been taken out during the previous ten years, very few of which had any practical value. For several years past, however, the systems adopted have become more consolidated, patent processes being generally avoided.

One of the latest proposals for the defecation of sewage is the use of electricity. The outline of such a process has recently appeared in the London newspapers, and according to the *Standard*, satisfactory experiments have been made, and enough has been demonstrated to gain for the new process a respectful consideration, if not something more; but the financial part remains to be proved. In addition to steam engines and dynamos, the system necessitates outfall works, tanks, and machinery, as in an ordinary precipitation process, the practical difference being the substitution of electricity for chemicals.

Lastly, as to the estimates; the accuracy of which has been doubted. In this matter I desire to point out that they have been most carefully prepared, that the prices are based upon the Contract Schedules and experiences gained by the department in the construction of the Bondi and other sewerage works, and that they will bear the most critical investigation. It is certainly incorrect to assert that the cost of the Bondi sewerage system has exceeded the estimate by 50 to 100 per cent., but doubtless this question will be dealt with by the Commissioner and Engineer-in-Chief.

GEO. H. STAYTON, M. Inst. C.E.

Department of Public Works, Sewerage Branch, 12 March, 1888.

[*To Evidence of J. Ashburton Thompson, Esq., M.D.*]

D.

METROPOLITAN DISTRICT—1885—RECORDED RATES.

Year.	Population estimated at middle of year.	Density	Natural increase per cent.	Birth rate.	Death rate.	Deaths under 1 to 1,000 births.	Death rate from principal zymotic diseases per 10,000.							Zymotic death rate per 10,000.	Death rate from typhoid and diarrhœal diseases per 10,000.	Percentage of deaths—typhoid and diarrhœal—to total deaths.
							Small-pox.	Measles.	Scarlet Fever.	Diphtheria and Croup.	Whooping Cough.	Enteric Fever.	Diarrhœal diseases.			
1875 ...	161·126	...	1·09	37·67	26·80	176·93	·000	16· 32	13· 65	6·14	·124	7· 19	26· 06	69·51	32· 25	12· 43
1876 ...	167·294	...	1·31	38·06	24·96	169·91	·000	· 06	27· 67	6·33	·119	7· 65	18· 41	59·71	26· 06	10· 44
1877 ...	176·419	...	1·88	37·66	18·82	156·20	·226	· 00	·452	6·17	1· 02	5· 66	18· 76	32·32	24· 43	12· 97
1878 ...	187·635	...	1·69	38·14	21·16	173·37	·000	· 00	·213	6·76	9· 00	9· 06	20· 30	45·35	29· 36	13· 87
1879 ...	200·604	...	1·97	39·18	19·46	153·41	·000	·049	·099	5·38	·448	5· 73	19· 88	32· 5	25· 62	13· 16
1880 ...	214·221	...	1· 6	38·99	22·96	192·24	·000	9· 93	1· 02	3·92	4· 57	4· 15	18· 71	42·38	22· 87	9· 95
1881 ...	227·731	...	2·	39·14	19·11	162·02	·746	·614	·395	1·97	2· 1	4· 08	15· 63	25·55	19· 71	10· 31
1882 ...	241·761	...	1· 9	39·83	20·77	183·23	·951	.124	·206	2·56	·744	6· 9	21· 17	32·72	28· 08	13· 52
1883 ...	258·514	...	2· 1	39·80	18·75	163·26	·000	.889	·386	5·02	·309	6· 57	16· 24	29·43	22· 82	12· 16
1884 ...	278·999	...	2·13	42·62	21·24	171· 9	·107	·250	2· 11	3·29	3· 98	7· 49	17· 52	34·78	25· 01	16· 36
Average for ten years—																
1875-84	211·430	...	1·81	39·33	21·17	170·47	·222	2·487	3·831	4·54	2·284	6·419	18·999	38·79	25·444	12·005
1885 ...	301·426	...	1·91	40·69	21·54	186·08	·033	·099	2· 02	4·54	·862	7· 39	18· 77	33·73	26· 17	12· 15

[*To Evidence of J. Ashburton Thompson, Esq., M.D.*]

D 1.

REMARKS ON THE SEPARATE SYSTEM OF DRAINAGE, MADE BY DR. J. ASHBURTON THOMPSON AT THE ANNUAL MEETING OF THE ENGINEERING ASSOCIATION OF NEW SOUTH WALES, DECEMBER 19TH, 1888.

Sir, Health Department, 21 December, 1888.

I enclose with this note a copy of a speech I made by invitation at the annual meeting of the Engineering Association last night, upon the comparative merits of the separate and combined systems of sewerage, for the consideration of the Chairman of the Parliamentary Standing Committee. I venture to do this both on account of the importance of the subject in connection with the Western scheme, and because I have observed that it is one but ill-understood by some engineers who have remarked upon Mr. Stayton's proposals.

Faithfully yours,

J. ASHBURTON THOMPSON.

The Secretary, Parliamentary Standing Committee on Public Works.

Mr. President,

I thank you for your invitation to be present this evening and to join in the discussion this Association has initiated on a most important subject. I have read Mr. Henson's communication with great care and close attention; and I find that he deals with a good many technical points very fully. Upon these I have not the least intention of saying much before this Association. But his criticisms are so sweeping and so energetic—in some cases even so novel—that I must mention one or two of these points, which in fact pass my comprehension. I am at a loss to conceive, for instance, what he means when he refers to a standard velocity of 180. It is impossible to refer to a standard velocity except in relation to a sewer of specified dimensions. But then, if he is speaking of that standard in relation to the western outfall sewers, I am obliged to remember that no engineer with whose works I am acquainted ever has recommended a velocity of 180 for sewers at all resembling in their dimensions those of Mr. Stayton's plan. Nor do I understand, for another instance, the objections he raises to the employment of syphons. I fail entirely

entirely to feel their force on the one hand, while on the other I know very well that syphons are used successfully in several parts of the world, and indeed that in some situations they are practically indispensable. He does not pretend to show how they may be dispensed with here. He relies entirely on theoretical objections to them; and this being the case he makes a most serious omission in neglecting to refer to the working of a syphon which he might easily watch, and in failing to tell us what amount of practical support to those objections is furnished by this contrivance as it stands in use to-day on the southern outfall sewer. There are other points to which I take exception; but I conclude that as far as I am concerned—as far that is as it is suitable for me to join in a discussion between civil engineers—the paper before you resolves itself into an advocacy of the separate system. Now, Mr. Henson concludes with a very judicious remark; he observes that it will not be safe in planning sewerage for Sydney to trust too much to English practice. I entirely approve of that, as must every man with the least pretension to thoughtfulness. English principles—the principles of engineering science as they are taught by English professors—those are applicable all over the world, for they are deduced from a right appreciation of natural laws; but English practice merely exemplifies the manner in which those professors are guided by universal principles under the special circumstances in which they work. Those circumstances are in very many respects different to ours, and the so-called separate system finds in them much to recommend it. But Mr. Stayton has just considered our circumstances; and after deliberate study he has rejected the separate system, and has adopted the partially separate plan. This—unless, indeed, Mr. Henson is prepared to show that Mr. Stayton has not given the matter careful and intelligent consideration—this course, I say, one would expect to meet with the approval of a gentleman who crowns his essay with the sentence just quoted. But he falls into the very error which he points out for avoidance; his whole argument advocates the separate system—a theoretical plan which, in practice, is nowhere to be seen.

I wish to be quite clear; and I must therefore ask you to excuse me if I define the sense in which I use certain expressions. By the word "sewer" then, I understand a conduit to carry off liquid filth; by "drain" I mean a conduit designed to collect liquid of which filth is an accident; by "separate" system I understand the exclusion from sewers of all clean-water, whether that be rainfall or water from land; and by "partially separate" system I understand that plan by which the greater part of the rainfall, surface-water, &c., is excluded from the sewers, but by which a small proportion is admitted to them. Those are the meanings usually attached to the several expressions; and it is necessary to bear them in mind, for a very great deal of tedious argument would have been saved the world had they not too often been forgotten. Now the separate system finds its chief advocates in England; they first appeared there, and not less than forty years ago in the persons of the late Mr. J. O. Ward and of Mr. Edwin Chadwick. You are acquainted with Mr. Ward's aphorism "the rainfall to the river and the sewage to the soil." It is an excellent aphorism, sound in principle; we are, I do not doubt, to go as near to realizing it as we may; but we can only do what is possible—we work under limitations. What gave rise to this idea? Why, the circumstances of the country suggested it; the laws, the physical configuration, the moist and cold climate of England. Until about 1813, you will remember, it was penal to turn sewage into drains; and then as population increased it was found absolutely necessary to provide for sewage, and in 1847 it was made penal, on the contrary, not to turn sewage into those drains. But the majority of the important towns of England stand on rivers; and the consequence of turning sewage into surface-drains which very properly fell into the rivers was that presently pure drinking water was hardly to be got. Hence the Rivers Pollution Commission and its several reports; and thence the enactment under which it became penal to turn crude sewage into rivers—the enactment under which, in fact, it once more became penal to turn sewage into drains. Then, local authorities being compelled to bring their sewage to a certain degree of purity before they could get rid of it by means of natural channels—of the rivers—all that long and expensive series of experiments on the practical scale began, which yet are far from being concluded, to ascertain the best, speediest, and cheapest way of effecting the necessary purification. These soon showed that there were but two plans worth serious attention—precipitation and filtration; and while it was at last found that the best effluent could be got only by a combination of these two, it was learned that the filtration could be sufficiently well done by a plan which allowed of the use of the sewage as a fertilizer. Then a new problem presented itself, namely, how most money could be made out of sewage by farming, and how the heavy expenses incurred by local authorities could be best lightened. But, you see, as soon as sewage farming became a feature in the sewerage schemes of those authorities, as soon as they began to look to the farmer to lighten their expenses, the latter became a factor in the problem, and his convenience had to be consulted. He found that he could not utilize the immense volumes of combined sewage and drainage which in that cold and moist climate were brought to the farm by the combined system; and indeed, besides that, it was found that these immense volumes of very dilute sewage could not by cheap processes of irrigation be sufficiently purified. Besides, to reduce even expenses out of pocket it became necessary to reduce the volume. Hence, in towns to be newly sewered, systematic attempts began to be made to exclude drainage; so that the farms—or I may even add the filter-beds—instead of receiving variable quantities of fluid often in quite unmanageable volumes, might receive a nearly steady flow of sewage of tolerably constant constitution, and so that the farmer might get a chance to raise his crops with reasonable certainty. These, in fact, are the considerations which led to the prosecution of the search for an effectual means of separating drainage from sewage; and they are considerations to a large extent not furnished by our conditions. Now I may be thought thus far to have referred to rainfall alone, in speaking of drainage; and at all events I have not yet specifically mentioned subsoil waters. But it is not the rainfall alone which on the combined system dilutes sewage. England has a much smaller rainfall than we have; but the manner of its fall is vastly different. It falls so that the tendency is to keep the subsoil saturated; and since not all that falls finds its way into the ground, for even in England the loss by evaporation is very considerable, that saturation is there ensured by defect of heat. Are our circumstances then so similar to these that we should advocate the separate system here, merely because it has much to recommend it there? I think not. We have (I speak of the neighbourhood of Sydney which is the area to be sewered) for the most part a comparatively shallow soil which overlies the sandstone and the shale; we have a country of good surface grades, consisting in part of a series of anti-clinal ridges with ample falls by valleys to the sea; we are not environed by rivers whose waters must be kept pure; and we have a sun which sometimes we think almost too brilliant, too constantly seen in his splendour. Under these circumstances we are not at all likely to be embarrassed by the excessive volume of our sewage as compared with our cultivable area. We may safely reckon on evaporation for much. Our climate—I do not say our soil—is more like that of Italy than of England; and perhaps

the

the difference may be pointed by a reference to sewage farming as it has for very many years been successfully carried on at Milan. There no attempt is made to separate drainage from sewage. The sewers converge to an open canal called the Vettabbia, and thence the sewage is drawn off to the surface of about 4,000 acres of land arranged for broad irrigation, which for very long it has fertilized in a remarkable manner. Notwithstanding the extremely dilute character of the liquid it is actually possible from time to time to pare down the surface of several meadows, not to preserve the levels, but in order to sell the parings which are carted away as manure to more distant estates. We have, I say, a climate—and we are to make use of a soil—which renders the dilution of our sewage of small consequence; we are better placed in these respects than the Milanese, successful as they have been. And how much more fortunately situated than the people of Berlin; yet the new sewers of that city are calculated to carry off a rainfall of $\frac{5}{16}$ of an inch per hour, and that although every drop of it has to be raised to a vertical height of no less than 33 feet before it can run on to the several farms. I believe I have now said enough to show that the choice between the separate and the combined systems is one which must be guided by the circumstances of the place to be sewered; that like a good many other things which here we have to decide upon for ourselves it is not by its essential qualities absolutely good or absolutely bad; and therefore is not to be advocated in any place merely because it has been found suitable to some other different place. Thus, in fact, it happens that at Portsmouth, where the area to be sewered is in small part raised, and in a larger part is below the level of ordinary spring-tides—actually within this one area in the very birth-place of the separate system—both the separate and the combined systems are exemplified. For it was thought necessary to relieve the lower levels of the surface water running off the higher level, and therefore to the sewers of the latter all surface waters were admitted; but as the sewage from the lower level had to be pumped it was thought desirable there to exclude *as far as possible* all rain-water from the sewers. That appears to me to be a truly scientific application of principles, and to form a striking contrast to a course which involves the irreflective adoption of mere practice.

It is to principles that I have thus far addressed myself; but, even at the risk of being tedious, I cannot sit down without saying something upon the degree of separation which hitherto has been found practicable. I concluded a sentence just now by observing that the separate system should not be adopted here just because it has been successfully employed elsewhere. But what do I say? Has it ever been, not successfully employed, but has it ever been found possible anywhere? I do not know of any place—at least not any place in area and population at all resembling Sydney—where it exists.* But such a place might be known, though not to me; and I will therefore repeat what is said by its very advocates. You are acquainted I have no doubt with the name of Mr. Lemon; and perhaps you know that the city of Winchester, sewered by him, is often referred to as an example of the working of the separate system. Well, here is what Mr. Lemon said about Winchester at the annual meeting of the Association of Municipal and Sanitary Engineers, held in London in 1879:—He said, "In the city of Winchester there is not a single gully connected with the sewers * * * some people called that the separate system, but he said it was nothing of the kind; it was impossible to prevent houses being connected with the sewers in all directions, or to prevent houses being drained into the sewers in all directions; if they carried out the separate system in its integrity they must have a double set of conduits, and that in his opinion was an absurdity and could not be carried out." And again he said—he is often regarded as a main advocate of this system—"He had little difficulty in carrying out the separate system, and it is astonishing how that system is growing, but he had not yet been able to keep the water of back-yards out of the sewers, and did not consider that practicable." So also Mr. Angell, at one time borough engineer for Portsmouth, said,—"The separate system can, of course, only be carried out in its general features and not in every detail; it would be a mistake to have a duplicate set of drains to each house; back yards would usually drain into sewers, but for the most part roofs can be drained into road-channels or surface drains; about 90 per cent. of surface waters can be diverted without causing difficulties of detail." Professor Robinson is an eminent authority on all matters of sewerage, and this is what he says of the separate system:—"Its advantages appear chiefly where sewage is disposed of by irrigation, and where it is absolutely necessary to lift sewage by pumping; for irrigation it appears desirable to have sewage as concentrated as possible, but when pumping is unnecessary dilution within certain limits is not detrimental—a duplicate system involves greater cost—it would also exclude from the sewers street and road-washings which are unfit to be admitted to streams, and it would also prevent natural flushing." Some of these objections have but little force here; as I said before we are not in danger of fouling streams, from which drinking water might be taken; and it would in my opinion be a mistake to consider our extended road-surfaces from just the same standpoint as the less extensive road-surfaces in England. With proper catch-pits intervening there can be no objection to the passage to the harbour of such surface-water. I don't wish to continue these quotations with which most of you are already doubtless familiar; but I cannot conclude them without repeating the following lines from Mr. Denton's invaluable work:—"If," he says, "we recognize, as we certainly ought, a difference between towns situated in districts of rapid inclinations, impervious surfaces, and heavy rainfalls, and those where the reverse conditions prevail, it will be considered advisable to admit into the sewers of the former only such rain as falls on the back parts of dwellings, on impervious surfaces so situated that there would be a difficulty in connecting them with any system of surface drainage, and on those streets and courts which from their position collect refuse almost as foul as sewage itself; in the latter having flat inclinations, porous surfaces, and smaller rainfalls, it is better to admit such additional quantity as may be advantageously turned to account in flushing." To which of these sets of conditions do you think ours are most like?

I conclude my quotations with this one, apologizing to you indeed for detaining you to hear their twice-told tale. Now, what do they amount to? Why they amount to this, that the separate system is a practical impossibility however desirable it may be thought on theoretical grounds. Whenever an author speaks of the "separate system" you may find that he is speaking loosely, and that in fact he means the partially separate system. The difficulty is a purely practical difficulty; and although it is inadvisable for a hundred different reasons to admit all waters to sewers, it is not possible either to exclude all. As for subsoil waters, you know that unless you are prepared to lay iron pipe-sewers with gas-tight joints you cannot entirely keep them out except by laying in the same excavation a special drain for them. This it is often very

* The separate system was adopted by Colonel Waring at Memphis. Granting that it exists there in the strict sense, this city contains but 35,000 inhabitants altogether, and a very large proportion of them are concentrated on a single square mile of country.

very necessary to do in the case of pipe-sewers but not necessary in the case of main-sewers; while as for rain-water, although the greater part can easily be excluded, the exigencies of house-building simply render it impossible to keep the whole of it out. In the latter case there is also the difficulty which arises under the general heading of working errors. The separate system demands a double set of conduits and a double set of yard-gullies; besides the very great expense of the former there thus arises an intolerable confusion beneath the soil of the two sets of pipes; and in the very few places where these have been laid it has been found by practical experience that even authorized workmen inevitably confuse the two and from time to time connect the sewers of houses with the drains and *vice-versa*. And then in respect of the two yard-gullies you import into the elaborate scheme the domestic servant, and place it entirely at his mercy; for wherever yards slope towards houses there the two must be side by side, and wherever yards are already formed they are so graded that any gully to take their water must be placed next to the present gullies, unless you are prepared to cause all the yards to be relevelled. Now I have drawn illustrations on other points from several different parts of the world; but on this I believe I need not go farther than our own Surry Hills. I ventured to find fault with Mr. Henson just now for not availing himself of the opportunity of watching the action of a syphon as it may be watched in Sydney; and now I must ask Mr. Trevor Jones, who I see supports Mr. Henson's views why he did not detail to the Association his own experience of the working of the separate system as instituted by himself at Surry Hills? For, sir, although you may not know it, Mr. Jones, with the courage of his opinions, has initiated the separate system in this very city; and I want him to tell you whether it is not the case that in the district mentioned there are to be found in back-yards two gullies, and whether it is not the case that those two gullies are confused in the manner I have just suggested, so that although the houses I refer to are sewered, sewage from them not infrequently still finds its way by the drain to the road gutter?

I am afraid that I have addressed you on this subject at unconscionable length; its importance must be my excuse for one part, and for the rest its inherent difficulty. The drift of my argument has been first to show that the separate system has been advocated in England to meet that country's special requirements; secondly, that our circumstances differ from those to an extent and in a manner which renders it unnecessary to seriously consider the separate system here; thirdly, that the separate system is deemed by the best practical authorities to be impossible of execution, and, as a matter of fact is nowhere carried out, or at least in no city at all resembling ours in the matters of area and population; and lastly, that the partially separate system is both practicable, economical, and wise. But then the partially separate system is exactly what Mr. Stayton adopts. "About 90 per cent. of surface-water may be diverted without causing difficulties of detail," says Mr. Angell. Well, Mr. Stayton proposes to divert exactly that amount over a part of his area, and over the rest 85 per cent. In short he adopts the approved practice.

[*To Evidence of T. A. Coghlan, Esq.*]

E.

RATES OF MORTALITY IN SYDNEY AND ITS SUBURBS, AND IN THE COLONY OF NEW SOUTH WALES.

Sir, Government Statistician's Office, Sydney, 2 January, 1889.

In accordance with the desire expressed by you at the conclusion of my evidence before the Parliamentary Standing Committee on Public Works, I beg to transmit herewith returns showing,—

(1.) The density of population in the city and suburbs of Sydney.
(2.) Rates of mortality in the city and suburbs for the past 18 years.
(3.) Tables showing the rate of mortality, per thousand of population, of the suburbs of Sydney, for the year 1887.
(4.) Tables showing mean death-rate of the colony, city and suburbs of Sydney, as well as country districts, for the period 1872–79 and 1880–87.

I have, &c.,
T. A. COGHLAN,
Statistician.

The Honorable John Lackey, M.L.C.,
Chairman, Parliamentary Standing Committee on Public Works.

No. 1.

RETURN showing approximately the density of population in the city of Sydney and the principal suburban Municipalities, June, 1888:—

Municipalities.	Approximate population in June, 1888.	Area in acres.	Population per acre.	Municipalities.	Approximate population in June, 1888.	Area in acres.	Population per acre.
City of Sydney	125,896	*2,200	57·2	Marrickville	11 528	1,638	7·0
Alexandria	10,306	998	10 3	Newtown	16,215	442	36·7
Ashfield	9,204	1,984	4·6	Paddington	16,569	403	41·1
Balmain	22,219	576	38·6	Petersham	9,098	762	11·9
Burwood	5,442	1,050	5·2	Randwick	3,859	8,320	0·5
Camperdown	5,496	435	12 6	Redfern	20,136	412	48·8
Canterbury	2,378	7,104	0·3	Rockdale	3,084	4,442	0·7
Concord	1,170	2,560	0·5	Ryde	2,302	8,640	0·3
Darlington	3,645	49	75 0	St. Leonards	6,303	3,360	1·9
Five Dock	1,322	1,626	0 8	St. Leonards East	5,451	544	10·0
The Glebe	14,009	461	30·4	St. Peter's	4,433	640	6·9
Hunter's Hill	2,002	1,139	1 7	Strathfield	1,042	1,280	0·8
Hurstville	772	7,010	0·1	Victoria	3,054	211	14·5
Kogarah	1,601	3,648	0·4	Waterloo	9,029	736	12·2
Leichhardt	13,575	1,242	10·9	Waverley	8,223	1,965	4·3
Macdonald Town	7,701	198	38·8	Woollahra	8,864	2,355	3·8
Manly	2,870	2,272	1·3	Mean of Suburbs	.....	.....	3·4

* Excludes Moore Park.

No. 2.

No. 2.

Deaths and Death-rate of New South Wales, 1872–1887.

Yearly death-rate of the colony, city and suburbs of Sydney, and country districts, 1872–87.

Year.	Deaths per thousand of the population.				Year.	Deaths per thousand of the population.			
	Colony.	City of Sydney.	Suburbs.	Country.		Colony.	City of Sydney.	Suburbs.	Country.
1872	14·18	23·03	14·15	12·37	1881.....	15·17	21·50	17·07	13·48
1873	13·99	22 37	14·63	12·15	1882.....	16·12	23·30	18 71	14·09
1874	15·33	25·16	16·59	13·12	1883.....	14·68	19·76	18·65	12·68
1875	18·42	31·65	21 47	15·23	1884.....	16·14	21·36	21·14	13·78
1876	18·52	28·87	20·79	16·05	1885	16·41	21 58	21·46	13 97
1877	15·69	22·43	15·13	14·47	1886.....	14·89	17·99	20·15	12·69
1878	16·36	25·05	17·37	14·44	1887.....	13·15	15·52	16·57	11·62
1879	14·76	23·47	15·83	12·82					
1880	15·47	27·26	19·16	12·34	Mean	15·40	22·09	17·83	13 28

Death-rate per 1,000 of the mean population of persons over 5 years of age in the colony, city and suburbs of Sydney, and country districts, 1872–87.

Year.	Colony.	City.	Suburbs.	Country.	Year.	Colony.	City.	Suburbs.	Country.
1872	9·68	14·89	7·64	9·31	1881.....	10·25	15·42	8 94	9·52
1873	10·28	15·79	8·53	9 44	1882.....	10 86	16·38	9·90	10 00
1874	10·31	16·30	8·65	9·38	1883.....	9·75	13·11	10·02	9·00
1875	11·81	19·43	11·23	10·35	1884.....	10·60	14·26	11 25	9·68
1876	12·78	19·70	11·02	11·71	1885.....	10·86	14·86	11·46	9·89
1877	10·47	15·38	7·91	9·98	1886.....	9·86	12·02	11·01	9·08
1878	10·51	16·20	8·85	9·71	1887.....	8·92	10·67	9·58	8·39
1879	9·90	16·35	8·22	8·97					
1880	10·21	16·61	9·12	9·07	Mean	10·34	15·31	9·48	9·49

Death-rate per 1,000 of the mean population of children under 5 years of age in the colony, city and suburbs of Sydney, and country districts, 1872–87.

Year.	Colony.	City.	Suburbs.	Country.	Year.	Colony.	City.	Suburbs.	Country.
1872	37·16	69·26	46·95	29·58	1881.....	43·63	61·79	71·00	35·21
1873	32·97	59·91	46·02	25·84	1882.....	46·61	70·27	74·93	36·66
1874	41·37	76·51	59·18	32 07	1883.....	43·46	65·32	73 43	33·12
1875	53·64	105·64	80·35	40·37	1884.....	48 92	71·49	82·22	36 98
1876	49·66	86·55	80 71	38·52	1885.....	49·86	69 59	81·50	37·84
1877	44·41	67·42	61·56	37·83	1886.....	45·42	60·91	74·92	34·03
1878	49·39	82 08	73 91	39·77	1887.....	38·66	50·50	57·05	30·82
1879	42·75	69·34	67·13	33·88					
1880	45·83	95·30	86 09	31·62	Mean	43·90	72·19	68·56	34·01

Deaths of children under 1 year of age per 1,000 births, in the colony, city and suburbs of Sydney, and country districts, 1872–87.

Year.	Colony.	City.	Suburbs.	Country.	Year.	Colony.	City.	Suburbs.	Country.
1872	104·4	176·1	139·1	85·0	1881.....	115·2	162·5	161·6	94·4
1873	92·5	158·8	123·4	74·0	1882.....	131·2	196·3	174·9	106·2
1874	109·4	188·4	144·6	88·3	1883.....	114·7	177·8	154·8	90 9
1875	119·6	193·8	158·5	98·4	1884.....	126·2	186·2	164 2	101·6
1876	112·8	169·4	170·3	91·3	1885.....	131·1	200 7	180·4	101·1
1877	116·7	165·3	146·6	101·5	1886.....	127·7	183·1	169·2	101·9
1878	123·4	186·5	160·8	103·7	1887.....	105·9	151·7	136·6	86 3
1879	107·1	164·7	143 2	83·0					
1880	113·6	210·1	177·7	80·4	Mean	114·2	178·1	154·6	92·0

No. 3.

RETURN showing the rate of mortality per thousand of the population of the suburbs of Sydney, 1887. (Deaths in Public Institutions not included.)

Districts.		Estimated population on 30th June, 1887.	Rate of mortality per 1,000 persons.
North-western	Balmain, Leichhardt, Glebe	46,665	14·44
West-central	Newtown, Camperdown, St. Peter's, Macdonaldtown	31,713	15·26
East-central	Redfern, Darlington, Waterloo	41,304	16 63
Eastern	Paddington, Randwick, Waverley, Woollahra	35,156	12 69
Western and Southern	Ashfield, Burwood, Canterbury, Five Dock, Hurstville, Kogarah, Marrickville, Petersham, West Botany	43,703	14·35
North Shore	St. Leonards, Manly	18,806	11·69

No. 4.

MEAN death-rate of the colony, city and suburbs of Sydney, and country districts, for the periods 1872–1879, 1880–1887—all ages.

Periods.	Deaths per thousand of the mean population.			
	Colony.	City of Sydney.	Suburbs.	Country.
1872–1879	15·91	25·25	16·99	13·83
1880–1887	15·25	21·03	19·11	13·08
	Persons over 5 years of age.			
1872–1879	10·72	16·75	9·01	9·86
1880–1887	10·16	14·17	10·16	9·33
	Children under 5 years of age.			
1872–1879	43·92	77·09	64·48	34·73
1880–1887	45·30	68·15	75·26	34·53
	Children under 1 year.			
1872–1879	110·74	175 37	148·31	91·27
1880–1887	120·70	183·55	164·92	95·35

F.

ELECTRICAL PURIFICATION OF SEWAGE.

Report by RICHARD THRELFALL, Esq., Professor of Physics, University of Sydney.

Dear Sir, University of Sydney, 25 June, 1889.

I send herewith my report on the Webster's process; it would have been sent in much sooner had I obtained the information asked for at an earlier date, but I daresay it was tiresome to get together. I have estimated the cost of a large experiment, but there is no reason why one should experiment on such a large scale, except that other things being equal the larger the scale of the experiment the more reliable and instructive the results. You will perhaps be kind enough to let me know at what time the Committee would like to examine me. Wednesday is my best day.

Yours very truly,
RICHARD THRELFALL,
Professor of Physics.

I enclose papers containing answers to my questions, for which I desire to express my thanks.—R.T.

J. Barling, Esq.

Report

Report on William Webster's process for the electrical purification of sewage.

University of Sydney, 23 June, 1889.

Limitation of Report.

THE general question of the treatment of sewage has been admirably dealt with by so many authorities that it will be only necessary to refer to the properties of sewage in so far as is necessary for the elucidation of the problem under discussion. A sufficient account of other chemical processes is given in a book on "The Treatment of Sewage," by Dr. Meymott Tidy, published by Van Nostrand, of New York. The book in question is an abridgment of an essay on the subject, originally published in the "Journal of the Society of Arts," and is as good a concise account as I have seen.

Conditions of Problem.

Sewage may be roughly said to consist mainly of water carrying in suspension flocculent organic and granular inorganic matter; and in solution organic matter of indeterminate composition, inorganic and ammonium salts; gases—chiefly nitrogen, carbonic acid, and ammonia—and the germs of organisms capable of producing putrefaction of the organic matter. There may also clearly be contained germs of organisms capable of producing changes in the constituents of the human body—the amount of these depending on local and variable sanitary conditions. Larger bodies, such as cats, dogs, rats, walking-sticks, &c., can be separated by strainers before the sewage comes up for treatment. Any system of purification has for its object the removal or oxydation of the organic matter present in the sewage, as well as the destruction as far as possible of the lowly organisms existing in it. The separation of the suspended matter is in all cases the first step towards purification, the second step being the oxydation of the soluble organic matter—which otherwise is liable to subsequent putrefaction—accompanied if possible by the direct killing of the living constituents. The precipitated flocculent organic matter, together with its precipitant and any inorganic insoluble matter separated from sewage with it, is generally called "sludge." The liquid flowing away from this precipitate is called the "effluent." In some chemical processes it is claimed that the sludge has a manurial value, but it is now a matter of experience that this value is almost proportional to the cost of the chemicals used to produce it, and it remains questionable whether any chemical process has yet been devised capable of producing manure profitably (except under very exceptional circumstances) when all costs are taken into account. Mr. Webster does not claim any marketable value for the sludge produced by his process; but on the other hand, shows tolerably clearly that the amount produced is as near as may be an absolute minimum.

Statement of Webster's Process.

The process of Mr. Webster depends on the decomposition of the components of sewage by subjecting the sewage itself to electrolysis between iron electrodes. The sewage as it flows through a long shoot, passes backwards and forwards between the iron plates, between which the current is passing. Briefly, part of the iron is dissolved, and reappears as hydrated ferric oxide in the liquid; as the treated sewage flows into a settling tank this ferric oxide sinks to the bottom, carrying with it all suspended matter. A certain amount of oxydation of the soluble organic matter has also been brought about through the action of the chlorine and oxygen, liberated by the electrolysis. Hydrogen is given off. If the effluent is not now sufficiently purified to become completely oxydized through exposure to atmospheric oxygen, it may be run through a second shoot, where the electrodes are of iron and carbon, or of carbon only, and there receive the complete oxydation which nascent oxygen, ozone and chlorine habitually bring about.

Electrical Principles Involved.

A liquid capable of being decomposed by an electric current is called an electrolyte; the conducting plates, by means of which the current enters the liquid are called electrodes. With sewage the chief primary products of decomposition are oxygen, hydrogen, chlorine, caustic soda, and ammonia. The current to be used is supplied by a dynamo driven by a steam engine; the brushes of the dynamo require to be connected to the electrodes by copper conductors generally called "leads." In order to arrive at an estimate of the most efficient way of coupling-up the plates to the dynamo, as well as of constructing the latter and setting up the leads, we refer to fundamental principles. Faraday long ago discovered that the amount of decomposition produced in a given electrolyte depends only on the time-integral of the current. The time-integral of a current is called for convenience, "a quantity of electricity." So that we may say a given quantity of electricity always produces a given amount of decomposition when forced through a given electrolyte. Now, the purification of sewage depends on the amount of electrolytic decomposition produced in it, and consequently our object is so to arrange matters that we get the greatest quantity of electricity forced through the electrolyte with the least expenditure of coal in the boiler of the steam engine. Without going into details it will suffice to state that this condition is fulfilled when the "resistance" of every part of the installation is reduced to a minimum. In practice this may be taken to mean that the iron plates in the electrolysis tanks, or shoots, should be large, numerous, and close together, and that the leads should be as short and thick as possible (within limits determined by the price of copper), and that the dynamo should be so built as to have a resistance small—say 5 per cent.—compared with the resistance of the rest of the arrangements. For the sake of economy in the leads, &c., I should recommend that the dynamo have an electro-motive force of about fifty volts, and that the plates in the shoot be arranged in groups, and these groups put in series. The electro-motive force required to get the current through each group will then be about two volts, plus the product of the current used by the resistance of the groups. As Mr. Webster's plant is at present arranged, these principles have not been very carefully attended to, and consequently he is using more coal than would be used in treating the same quantity of the same sewage with a properly thought out installation. It is clear from what has been said that the efficiency of the process will depend in a measure in keeping down the resistance. Now, there can be no doubt that samples of sewage from different sources will not all have the same specific resistance (resistance of a cube of unit size). By this I mean that with plates of a given size and at a given distance apart, more electro-motive force will be required to produce a given current,—and hence a given amount of decomposition

and

and purification—in some cases than in others. Roughly speaking, the more dilute the sewage the higher will be its specific resistance, or looking at it from another point of view, the worse the sewage the greater will be the comparative economy of its treatment. The quantity of salt in solution will also greatly affect the specific resistance. The more salt the lower will the resistance become, and consequently the more efficient the process. The quantity of salt is also a very important consideration from a chemical point of view, as will be shown directly.

Chemical Actions.

Roughly speaking the chief ultimate results of the chemical electrolysis process are as follows :—Hydrogen is given off at the negative pole ; and iron is dissolved from the positive pole. I have some reason for thinking that the iron is dissolved first as chloride, and it certainly appears as hydrated ferric oxide in the liquid—probably as a result of the subsequent decomposition of the chloride by the trace of caustic soda present as the product of another part of the reaction. Common salt is thereby reformed. Whatever the details of the chemical process may be, however, we find that after the electrolysis has gone on for a certain time, we have a flocculent precipitate of ferric hydrate buoyed up in the liquid by entangled bubbles of gas—chiefly hydrogen. As the sewage rests in the precipitating vats the hydrogen is given off, and the ferric hydrate subsides, carrying with it the flocculent suspended matters of the sewage and thus forming the sludge already noticed. It will thus be seen that the employment of *iron* plates is a very essential feature of the process, and it fortunately happens that iron is on merely economical grounds about as good a material for electrodes as can be obtained. The plates should be roughly and strongly cast from ordinary pig iron, the graphite crystals of which will do no harm, but quite the contrary, as will be shown directly. The positive plates will require renewing every now and then, as there is a continual and essential solution of them going on. Mr. Webster considers that London sewage is sufficiently treated by the solution of about two grains of iron per gallon. In order to carry the purification still further, Mr. Webster has a further device. The last few sets of plates are formed of lumps of carbon (gas-coke) cast in the iron, so that the plates expose a mixed carbon and iron surface. The result of this is that some free chlorine is evolved, and has an opportunity of acting in its characteristic violently oxydizing manner on the sewage, especially as it is presented to it in the nascent state. In this part of the process the free chlorides will diminish in amount, and a corresponding oxydation of the organic matter will take place. Personally I am of opinion that this part of the process had better be effected on the effluent after it has left the sludge, for then all the oxydation would take place in the soluble matter, and I should suggest that the final portions of the shoot be fitted with gas carbon plates of large size and thickness free from iron ; at all events the positive electrodes should be so. The negative plates may be of iron or carbon, according to considerations of economy. I venture to add the further suggestion that in cases where the chlorides are deficient a certain amount of sea-water might be advantageously run in with the sewage to help the final treatment. The effluent after passing through this process is very good indeed—a good deal better, I fancy, than is ordinarily required. If this be so the latter portion of the process may be suppressed. If, on the other hand, the effluent be required for drinking or similiar purposes it is advisable to allow it to filter through a tract of sandy country ; or an artificial filter made of broken ironstone.

It must be remembered that though great stress has been laid on the precipitating action of the iron it corresponds to a small part only of the chemical changes taking place in the shoot. There is a good deal of free oxygen given off, as well as some chlorine, and these together produce a very energetic oxydizing effect on the organic matter in solution. In the analyses which follow the latter part of the process here described (with the carbon electrodes) has not been used. The purification is simply due to the two grains per gallon iron plate electrolysis.

Description of Crossness Apparatus.

The plant at work at Crossness has been put up and is being maintained in action by Mr. Webster at his own expense, and is therefore of a temporary and experimental character, though large enough to allow of the treatment of about a million gallons of raw sewage during the twenty-four hours. The engine is an ordinary portable engine of the kind generally in use for agricultural purposes, and capable of working up to, or rather over, 30 h.p. The dynamo was built specially by Messrs. Mather and Platt, of Manchester, and has a capacity of 1,600 ampères at 20 volts. Mr. Webster considers that it would be advisable to use a higher E.M.F. for reasons already given. The sewage is passed through a coarse straining arrangement consisting merely of a hurdle, and then flows direct into the electrolysis shoots. These shoots are in the form of long wooden troughs of square section (or nearly so), and measuring somewhere about 18 in. by 15 in. The shoot is not continuous but in several sections, each section being rather lower than the preceding one, as will be seen by a glance at the picture contained in the appendix. The plates of the electrodes are arranged alternately at a distance of about an inch from one another ; arrangements are made for letting the electrolysed product flow without too great disturbance into the settling vat. The troughs in which the electrolysis took place were perhaps somewhere about 100 yards long in all. The settling pits were two in number, so that one could be cleaned out while the other was in use. The sludge was black and very nasty looking, but it had not much smell at the time I visited the works. This was possibly due to the weather being very cold, for there is no reason why the sludge should not be foul under ordinary circumstances. The quantity of sludge appeared to be comparatively small, but the sewage was rather dilute when I saw it, owing to continued rain. Each pit was about 65 feet long by 28 feet wide, and deep enough to hold about 6 feet of sewage. The size of the pits depends, like all the other arrangements, on the average composition of the sewage, but is probably considerably less for this than for other chemical processes. The effluent was clear to look at, and almost free from smell. I should certainly call it a good effluent. I saw no signs of frothing or subsequent putrefaction, and was informed that the experimenters had not been troubled by anything of the kind. Possibly a visit at another time of year and during warm weather, might have been more instructive on this point. On the other hand it is fair to recollect that with a rise of temperature the electrolytic resistance would be diminished, and consequently rather more electrolysis might be done for the same money in hot weather than in cold.

Mr. Webster drank half a tumbler of the effluent to show me that it was safe, but I did not consider it any part of my duty to accept a courteous invitation to join him. I did, however, accept a sample which I saw prepared from the raw sewage in the laboratory, and found the taste suggestive of

" warm

"warm flat-irons," but otherwise not unlike that of ordinary brook water. Some attention requires to be given to the running of the treated sewage into the settling pits. A certain amount of agitation is necessary to enable the gas bubbles to escape from the flocculent precipitate; and consequently to promote deposition of the latter. On the other hand, if the agitation is too violent, the flakes get broken up and the settling takes longer. The rate at which the sewage runs through the shoots is also a matter depending on circumstances. It is clear that the flow must be strong enough to prevent settling in the vats (shoot) themselves, and in the case of sewage heavily laden with inorganic sediment (as at the beginning of heavy rain) would require to be more rapid than under ordinary circumstances. But this is just the time when the sewage is in other respects most foul, and comes down in greatest quantity. In any complete system therefore, it would be necessary on all accounts to have some precipitating tanks in reserve, for I do not consider it desirable to have spare reservoirs to catch an unusual flow of sewage during stormy weather. As I have not, however, had any practical experience in treating sewage, I offer the above remark as a suggestion merely, which must not be taken for more than it is worth. Mr. Webster was good enough to perform a good many laboratory experiments before me, whereby I saw the way in which the precipitate is produced, and had an opportunity of judging of the efficacy of a coke filter, together with several other matters of analysis which would be out of place in this report. The sewage treated was drawn from the main sewer draining South London, and falling into the Thames at Crossness, on the south bank of the river. I may, perhaps, be permitted to add that I found Mr. Webster extremely anxious to give every kind of information, and dwelling at least as much on his difficulties as on his successes. Two letters which I received from Mr. Webster in answer to various questions appear in the appendix. The following analyses, however, may be fitly introduced here. It will suffice to say that they were taken in the interest of a Company against Mr. Webster. The degree of purification, as I take it, represents the degree fixed by the Metropolitan Board of Works for sewage passing into the Thames, or, for all I know, may exceed that degree by any amount.

For comparison there is also added an analysis of average Sydney sewage, for which I am indebted to the kindness of Mr. William M. Hamlet.

Parts per 100,000.

	Appearance.	Odour.	Sulphuretted Hydrogen.	Nitrogen.		Oxygen required to oxydise organic matter.	Chlorine as Chlorides.	Suspended matter of which			
				Ammonia.	Albuminoid.			Total.	Organic.	Mineral.	Iron oxide.
Crossness sewage, 15/11/88, untreated.	turbid.	bad.	0	5·51	0·58	3·08	25·46	46·57	28·86	17·71	2·57
The same, after 10 minutes treatment, 1·5 amperes and settling.	slight turbidity.	slight.	,,	5·13	0·35	1·75	25·46	0·56	0·20	0·36	0·28
Crossness sewage, No. 15, untreated.	turbid.	bad.	,,	5·33	0·63	5·72	27·94	48·85	31·42	17·43	2·60
The same, after 10 minutes treatment with 3 amperes	slight turbidity.	slight.	,,	5·03	0·40	2·43	27 59	0·74	0·25	0·49	0·34

E. J. MIDWINTER, F.S.C., &c.

EFFLUENTS ONLY.—Parts per 100,000.

THE sewage was treated by the continuous-flow process, 9,000 gallons passing per hour – 2,000 amperes.

	Appearance	Odour.	Sulphuretted Hydrogen.	Nitrogen.		Oxygen required to oxydise organic matter.	Chlorine or Chlorides.	Nitrates free chlorine or iron in solution.	Suspended matter.		
				Ammonia.	Organic matter.				Total.	Organic.	Mineral.
From tank after settli g three hours..	slightly turbid.	slight	none	3·14	0·33	1·49	15·01	0	1 49	0·43	1·06
From tank the day after treatment ...	,,	,,	,,	2·86	0·29	1·30	13·79	,,	1·22	0·39	0·83

9/1/89.

E. J. MIDWINTER, F.S.C., &c.

SEWAGE.—Parts per 100,000.

	Appearance.	Odour.	Sulphuretted Hydrogen.	Nitrogen.		Oxygen requisite to oxydise organic matter.	Chlorine or chlorides.	Matter in suspension.		
				Ammonia.	Organic matter.			Total.	Organic.	Mineral.
Crossness sewage	very turbid.	bad.	0	3·57	0·61	4·03	14·61	14·52	8·57	5·95
Effluent from the above taken from the tank. Immediately the flow stopped	slightly turbid.	slight.	,,	2·96	0·28	1·34	13·39	2·26	0·68	1·61
Effluent from the above taken from the tank. One hour after stopping	,,	,,	,,	2·90	0·31	1·58	13·96	1·48	0·43	1·05
Effluent from the above taken from the tank. The next morning	,,	,,	,,	2·88	0·30	1·39	13·96	0·81	0·14	0·67

15/1/89.

E. J. MIDWINTER, F.S.C., &c.

ANALYSES

ANALYSES of raw sewage and effluent obtained from the Sewage Farm, Webb's Grant, Botany (Shea's Creek).

Description.	Grains per Imperial gallon.					
	Chlorine.	Free Ammonia.	Albuminoid Ammonia.	Oxygen absorbed in three hours.	Total solid matter.	Loss on ignition of the total solids.
Unpurified sewage before treatment, as it comes from the sewers.	11·25	2·67	·388	2·512	48·25	12·15
Effluent	6·30	·007	·042	1·08	24·19	7·42
Another sample of effluent	7·6	·280	·105	2·06	30·45	7·02
„ „	*12·3	·260	·072	1·086	38·50	7·00

* Contaminated with tidal water.

Taking Mr. Webster's estimate of 2 grains of iron per gallon as a basis, I will proceed to calculate roughly the plant and expenditure required to treat a million gallons per twenty-four hours. When the quantity treated is greater the relative expense will be less. The outline of the calculation is given so that the results may be easily checked. Mr. Webster's estimate, based on his practical experience of London sewage, will be found in his letters and notes contained in the appendix; they approximate very closely to the theoretically calculated results.

Calculation of engine-power and plant required to precipitate 1,000,000 gallons of sewage per diem, on the basis of 2 grains of iron being required per gallon of sewage.

2 grains = ·1296 grams.

Hence 129,600 grains of iron have to be brought into solution daily.

Now, from the known Electro-chemical equivalents of silver and iron, and from the experimental fact that one ampère of current will deposit 4·025 grains of silver per hour, we find that if the iron is dissolved in the ferric state the amount per hour will come to 1·042 grams, while if the iron goes into solution as a ferrous salt an amount of ·692 grains only will be removed from the plates. The action being rather indefinite, we will assume that the smaller quantity is taken and call it ·7 grams, which will be near enough for the purpose.

Hence 1 ampère per diem will dissolve 16·8 grains of iron.

Hence to dissolve 129,600 grains of iron per diem, we shall require 7,715 ampères, nearly.

The electro-motive force required is 2 volts per cell, consequently the horse-power required is $\frac{2\times7715}{746}$ which comes to 20·7.

To this must be added, say, 20 per cent. for loss in leads, dynamo, shafting, &c., bringing up the total horse-power required to 25 horse-power.

Mr. Webster's experiments show that 27 horse-power is requisite, an agreement which in itself is very satisfactory, and tends to show that his figures are probably reliable.

I shall assume that it is proposed to erect a plant capable of dealing with 1,000,000 gallons daily, and will proceed to estimate the cost of plant on the assumption that a 34 horse-power indicated engine is requisite. The cost of the items is as follows, assuming that the plates must last one year :—

PLANT.

	£
Two portable high pressure steam engines to deliver 34 horse-power (indicated) each	1,000
Two settling tanks, 65 x 28 feet, to hold 6 feet of sewage, concreted lightly ...	1,100
1,000 feet of wooden shoot 2 ft. x 18 in. redwood boards 1½ inch thick £60, fitting £14	74
100 tons iron castings for plates at £8	800
(50 tons of these plates will be left at the end of the year, worth perhaps £300.)	
Coal at 5 lb. per horse-power per hour, and margin 700 tons at 17s. per ton, say	600
Wages, three engine-tenders at 12s. per diem	657
Wages, three labourers at 7s. per diem	383
One Manchester dynamo to give 50 volts and 360 ampères, at Sydney, with spare brushes, tightening gear, &c., about	250
Copper leads, fixing plates, &c., say	150
Engine-shed and store, and sundries, say	200
	£5,214

After a year's experimenting, the engine, dynamo, and about 50 tons of iron plates would remain as an asset. The settling tanks would probably be as good as ever but would be of no further service except for further experimenting.

To the above would be added cost of superintendence; this I do not think could be adequately obtained under a salary of say £600 for the year's work. I should not advise apparent economy in this item.

It would be premature to estimate the cost in detail of a large permanent plant, subject to a depreciation of 10 per cent. per annum, as it so much depends on the nature of the sewage and on the degree of purity required for the effluent. Local conditions also would greatly affect the price of settling pits and the cost of sludge removal. In the face of these uncertainties it seems to me unadvisable to endeavour to form an estimate. In addition to which, Mr. Webster's estimate for London sewage is available, and I have no reason to think it too favourable. The estimate is about 13s. per million gallons; if we add 50 per cent. to this for Sydney—though on what grounds one should do so except for the higher price of labour and machinery it would be hard to say—the cost would seem to be of the order of £1 per million gallons.

This

This would give as cost for—

	£
North Shore with 15,000,000 gallons	5,400 per annum
Parramatta with 4,000,000 gallons	1,440 „
Newcastle with 30,000,000 gallons	10,800 „

It must be borne in mind that these prices are 50 per cent. higher than Webster's estimate, and we can only hope to form a really reliable judgment in the matter after a proper experiment has been made. Throughout this report I have endeavoured to look at the process in the most unfavourable light.

Various details will be found in the appendix. A good account has been published in the "Engineer" for March 28th, 1889.

APPENDIX.

Letters from Mr. Webster.

8, St. Martin's-place, Trafalgar Square, London, W.C., 14 February, 1889.

Dear Sir,

Enclosed are copies of analyses of the sewage before and after treatment. The E.M.F. necessary for treatment varies with the quality of the sewage, that is, the percentage of chlorides present; but taking the average of the London sewage, the actual E.M.F. is 2 volts, and this multiplied to the number of sections will give the total E.M.F. required, subject to a slight allowance in loss of leads, the said sections being in series. For instance, at Crossness we have been able to run with a total loss in the leads, &c., of 2 volts—for instance, 14 volts at the terminals of the dynamo, and 12 at the terminals of the shoot—and this loss can easily be reduced to a minute amount, as the present works should have had the dynamo working in the centre, instead of one end of the shoot; this of course would shorten all the leads and reduce the resistance. The dynamo I use at Crossness has a capacity of 20 volts and 1,600 amperes, but, after a multitude of experiments, I find that the E.M.F. of this machine is too low; it is better to arrange more than six sets in series, but Dr. J. Hopkinson recommends at least twenty—this would mean a dynamo with the E.M.F. of 42 volts. The quantity of current required under the above conditions is only 200 ampères delivered from the dynamo, which passing through six sections, gives a total of 1,200 in the shoot.

In reference to the secondary decomposition, I find that the effluent I produce is particularly free, and if properly treated by this process no secondary decomposition will take place. I have in some cases kept effluent for months without any decomposition taking place, but of course this is only the case when the effluent is separated from the precipitated organic matter. This goes without saying. I have treated putrified sewage on a small scale, obtained from a cesspool, with the result that 97 per cent. of the suspended matter was precipitated. In some cases of treatment on a large scale I have obtained an effluent entirely free from suspended matter, but in this case the sewage acted upon was protected from the wind, so as to prevent any particles of dust, &c., blowing into it.

The analyses enclosed have been taken in the interests of the Electrical Association against me. Please note that the number in one of the analyses, the total of 48·85, was reduced to ·74, which goes to prove that the larger the quantity of suspended matter in the crude sewage the better the quality of the effluent obtained. You will notice there is no reduction in the chlorides. This I have reason to believe is entirely due to the fact that the surface of iron was reduced to about 1 foot per gallon, for in every other case there is a reduction in the chlorine, and a corresponding larger reduction of the organic matter in solution. This will show you that it is necessary to have a larger surface of electrodes if the organic matter in solution is to be reduced by at least 50 per cent. With respect to the sludge I am trying a new process, which I hope will prove suitable for all conditions.

The consumption of iron, as far as we have been able to obtain results, does not exceed 2 grains per gallon. If shoot is arranged with plates 1 inch apart, then 1 horse-power = 1,000 gallons per hour; if half inch apart, 1 horse-power = 1,500 gallons. This applies to London sewage, which requires ·25 ampère hours per gallon, and contains only an average of 10 grains of nacl per gallon. Better results can be obtained from stronger sewage.

The above has been delayed, as I wished to give you the results of experiments tried at Crossness, when you visited the works. Only the matters in suspension are given, as that portion of the analyses is very important.

Yours, &c.,
WILLIAM WEBSTER.

Professor Threlfall.

Parts per 100,000.

	Matters in suspension.		
	Total.	Organic.	Mineral.
Feb. 7. From tank, top flow, after 3 hours	2·01	0·29	1·72
„ „ From tank, bottom flow, after 6 hours	2·14	0·28	1·86

8, St. Martin's-place, Trafalgar Square, London, W.C.,
7 March, 1889.

Dear Sir,

I have waited until your return to England before replying to your note of the 17th ultimo.

In reference to the quality of the sewage in Australia, I think your suggestion of erecting experimental works there a very good one. The average reduction of organic matter in solution you may take to be somewhere about 60 per cent., but by special arrangement of electrodes it is possible to exceed that, although on a large scale, I should imagine, this is not necessary, as the oxygen of the air would do all this, especially as by running the effluent through an artificial channel containing broken rocks or ironstone the said effluent is churned up with the air, which, of course, oxidises the organic matter left in solution. One of the reasons why aeration will not oxidise sewage is due to the fact that the large amount of organic matter in suspension prevents any sensible reduction of the organic matter in solution, for, if particles of organic matter are churned up with pure water, the result is that a certain proportion becomes dissolved, but, if suspended matter is removed first of all, one can easily understand that oxygen will purify, as there is nothing to supply fresh organic matter to replace that which is oxidised. As to the horse-power required per million gallons it will be possible to work with twenty-seven, but, of course, this very much depends upon the quality of the sewage. I think you had better deal with depreciation of plant as 10 per cent. per annum. The cost per million gallons for London sewage should not exceed 14s. per million gallons. You will, of course, understand that this cost is taken at per 1,000,000, treating at least 20,000,000 gallons per diem. At foot I hand you the average results of forty analyses.

Yours, &c.,
WILLIAM WEBSTER.

Professor Threlfall.

	Organic Free ammonia.	Organic Solution.	Oxygen.	Suspended.	Chlorides.
London sewage	4·34	·55	2·83	33·35	21·64
Effluent	3·22	·28	1·23	1·56	18·62

Oxygen means amount required to oxidise organic matter before and after treatment.

SECOND

SECOND SERIES OF NOTES ON SEWAGE PURIFICATION BY ELECTROLYSIS.

By W. Webster, F.C.S.

Since writing my former notes on the above question I have carried out a long and exhaustive series of experiments at my Experimental Works at Crossness, which have proved beyond doubt that I can produce on a commercial scale results at least equal to those obtained in the laboratory, and probably better. The mode of treatment adopted is the same, with the exception that for the slight motion of the electrodes, which was found necessary to bring the sewage into intimate contact with the plates, a movement of the liquid to be treated is substituted, the sewage being acted upon as it passes through the electrolytic channels leading from the sewer to the reservoirs or settling tanks. The enclosed plan shows the arrangement of the Experimental Works referred to.

Starting with the engine shed, the engines, of an old type, made some twenty-five years ago are each 20-horse power nominal. By the arrangement of gear, one engine is only used at any one time, both for pumping and for driving the dynamo.

The dynamo is an Edison-Hopkinson, capable of developing an energy of 43-horse power. From the dynamo the leads run through resistance frames, by means of which the amount of current can be regulated without varying the speed of the engine. These are then connected with the iron electrodes in both the precipitating tanks and the shoot. The precipitating tanks are used for taking experimental measurements, so as to discover the best mode of arranging the electrodes, hereinafter called plates, made of cast iron, run direct from blast furnaces, a quality of iron commonly known as "pig."

Owing to want of space I have found it desirable to fit the shoot with wrought iron plates, which of course are more convenient for experimental work, as they are thinner and weigh less than if made of cast iron.

The shoot is of wood; but in any permanent work it would be built of bricks, concrete, or iron, and the bottom would be lined with asphalte or other suitable material.

The sewage is discharged into the shoot from the pump connected with the main sewer. The shoot is fitted with plates, as shown in the accompanying drawing. In travelling along the shoot every particle of the sewage comes in contact with the plates, and finally the whole is received into one or other of the settling tanks.

The plates in this shoot are divided into twelve sections. All the plates in each section are connected in parallel, and the sections can be connected either in parallel or in series, as may be most convenient.

I find it best in this instance to run them arranged as six sections in series, as, owing to the low tension of the dynamo, it is inconvenient to split them up into a greater number of sections. I may here casually observe that the dynamo should be near the centre of the shoot, and practice has proved * that it must be so constructed that as many sets of plates as possible may be arranged in series; but the space at my command in these works does not admit of the most effective arrangement being adopted.

It is not my intention to enter into any electrical technicalities. I therefore content myself by stating that my experiments prove that with 27-horse power it is possible to treat one million gallons of sewage in twenty-four hours. With this statement I must couple the remark, that the figures relate to average London sewage.

As to the cost of the engine power, I need hardly state that the newest type of engines suitable for driving dynamos may be taken to consume two pounds of coal per horse power hour, and according to the price of the coal will be the working cost. The experiments carried out with reference to the amount of iron consumed by this process tend to prove that the consumption in continuous working should not be more than two grains per gallon. Here again the cost entirely depends upon the position of the works, or more properly speaking, the district in which the works are situated. The prices in the pig iron market are so well known that I need not enlarge on this point. The plates are one inch thick, and if used in sufficient numbers would last for many years when once fixed. For instance, I will take a town with a flow of ten million gallons of sewage per day, corresponding to a population of 330,000 at 30 gallons per head. To treat this amount of sewage, the consumption of iron should not exceed 464 tons per annum.

On calculating the amount of mechanical power required per head of the population, I find it represents $\frac{1}{12\frac{1}{2}}$ of a horse power, or 8-horse power per 10,000.

It will be seen that the above plant is practically in lieu of the mixing tanks, machinery, and chemicals employed in chemical processes for the treatment of sewage, and if such electrical plant is designed to meet the peculiar requirements of any particular district it must, in my humble opinion, cost less and have a greater efficiency than any other process known, for not only does this electrical method precipitate the matters in suspension, but it also removes organic matter in solution, and forms a precipitating and disinfecting process in one operation.

The cause of any successful precipitation of suspended matters in sewage is entirely due to the formation of flocculent particles by means of chemical action. In the ordinary processes used this is obtained by the introduction of chemicals in a liquid form, and a large amount per gallon of sewage must be used to produce the necessary flocculency. Electrolysis with oxidizable plates produces this effect, with a consumption of material ranging from one grain per gallon, and the stronger the sewage the less the power required to produce the effect. The action that takes place manufactures the necessary precipitating agent in the sewage, whereas precipitation with solutions of chemicals means a consumption of several grains per gallon of sewage, if the action is intended to cause an adequate deposition of matters in suspension, and the resulting effluent requires further treatment with some oxidizing agent to remove the organic matter in solution.

With my electrolytical process, at the same that the precipitation of the suspended matter is taking place, the organic matter in solution is being oxidized by means of free nascent chlorine and oxygen given off at the positive plate.

The appended analyses of sewage and effluents show the reduction of both suspended and soluble matters by means of one treatment and also at the smallest possible cost.

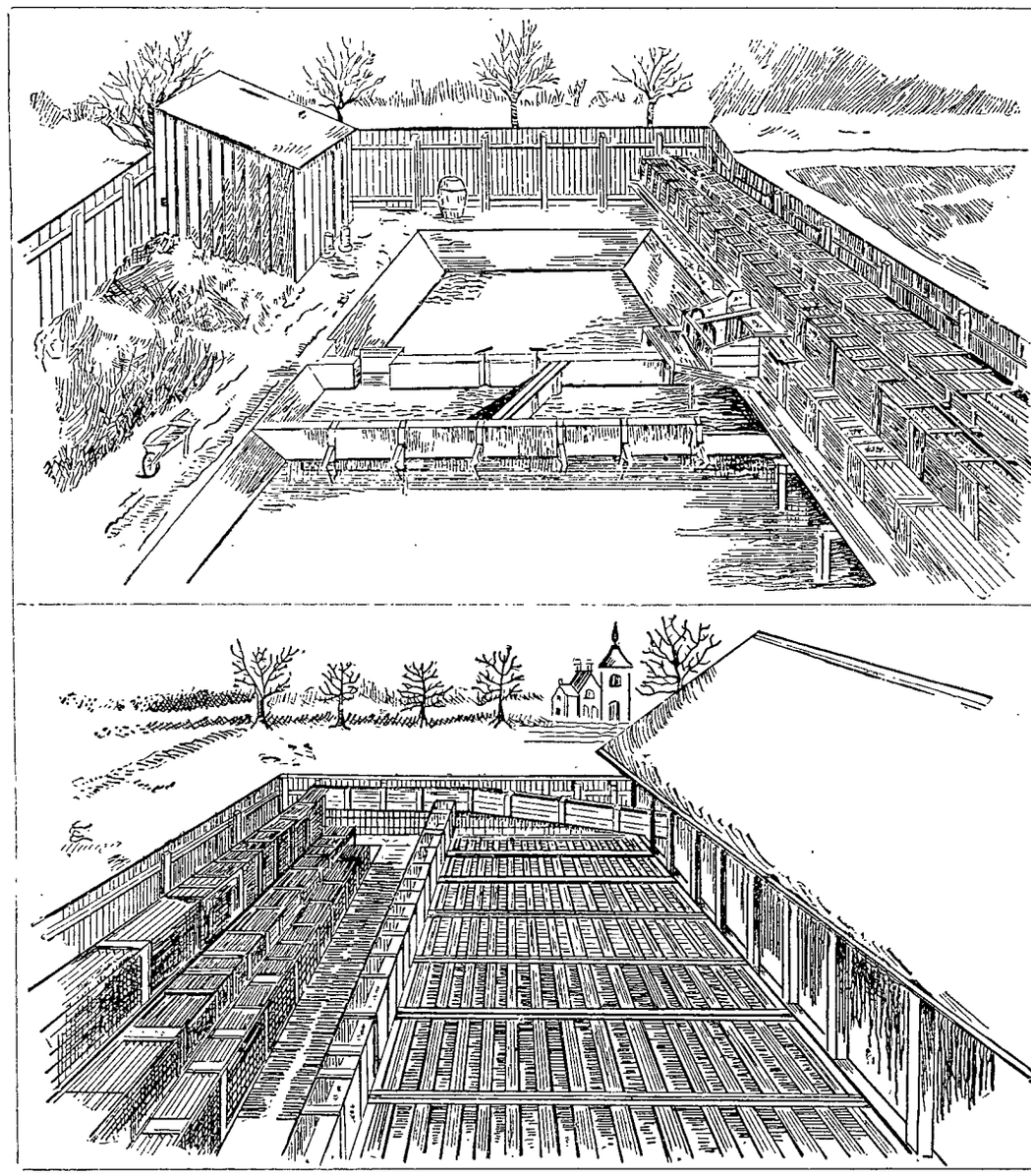
ELECTRICAL

* Theory would have shown this at once.

ELECTRICAL TREATMENT OF SEWAGE.

[From *The Metropolitan*, March 30, 1889.]

FOR nearly 130 years past the question of the disposal of sewage has occupied the attention of scientific and practical men. As a rule, some kind of chemical process has been the form chosen, and up to a certain point it was successful. Sewage can easily be deprived of its noxious qualities by the addition of chemicals, but it has been found that in most cases when the combination so formed came in contact with certain other salts, &c., in clear water, some other chemical result was produced as objectional as the original sewage. The use of lime and other ingredients has the effect of increasing the bulk of the sludge, which in the case of large quantities, as in London, is not desirable. Since the year 1762 upwards of sixty processes have been introduced, but no one can say any of them is entirely satisfactory. The great, though occult, power of electricity is, however, a feature in sewage treatment which has not wholly escaped the notice of scientific men; but till lately no practical step has been taken in the matter. For some ten years Mr. William Webster, F.C.S., of St. Martin's-place, has been engaged in experiments with electricity in connection with sewage treatment; but a decade since there was not that perfection of current-producing apparatus which is now available. He has succeeded in perfecting a process of sewage treatment by which the necessary chemical changes requisite to render the sludge and the effluents innocuous are effected by electricity, or, scientifically speaking, by electrolysis.



It is not our purpose to make this article too theoretical or technical, but it is necessary before describing the mechanical part of the matter to touch upon the principles which are brought to bear upon it. Electrolysis is the operation of decomposing a compound substance—in other words, of separating the component parts of a liquid or other material. Despite all assertions to the contrary, it is quite possible to decompose water by electricity, provided the currents be strong enough; but it does not require so powerful a current to electrolyse other substances, such as sewage, that may be found in water. Thus the chemical changes which takes place in electrically-treated sewage are based upon the fact that the water and sodium, magnesium, and other chlorides are split up into their constituent parts. At the positive pole chlorine and oxygen are set free, and in such a powerful condition that the organic matter in the sewage is burnt up or oxidized, and thus rendered inorganic and harmless. At the negative pole ammonia, potass, soda, magnesia, &c., are freed. These electrodes have pieces of carbon cast into them, so as to secure a supply of ferrous hypo-chlorous acid, which is most powerful oxidizing agent. As some of the iron is dissolved at the positive pole, these electrodes are of thick cast iron, but the negative plates

may be of thin rolled sheet iron. The consumption of iron occurring at the positive poles is equal to about one grain per gallon, but upon the negative plates there is no deterioration. Successful precipitation of suspended matters in sewage is entirely due to the formation of flocculent particles by means of chemical action. In the ordinary processes used this is obtained by the introduction of chemicals in a liquid form, and a large amount per gallon of sewage must be used to produce the necessary flocculency. Electrolysis with oxidizable plates produces this effect, with a consumption of material ranging from one grain per gallon, and the stronger the sewage the less the power required to produce the effect. The action that takes place *manufactures the necessary precipitating agent in the sewage*, whereas precipitation with solutions of chemicals means a consumption of several grains per gallon of sewage, if the action is intended to cause an adequate deposition of matters in suspension, and the resulting effluent requires further treatment with some oxidizing agent to remove the organic matter in solution. Analysts and statisticians will note with interest the subjoined table, showing analyses of raw sewage, and subsequent effluents, showing the reduction of both suspended and soluble matters.

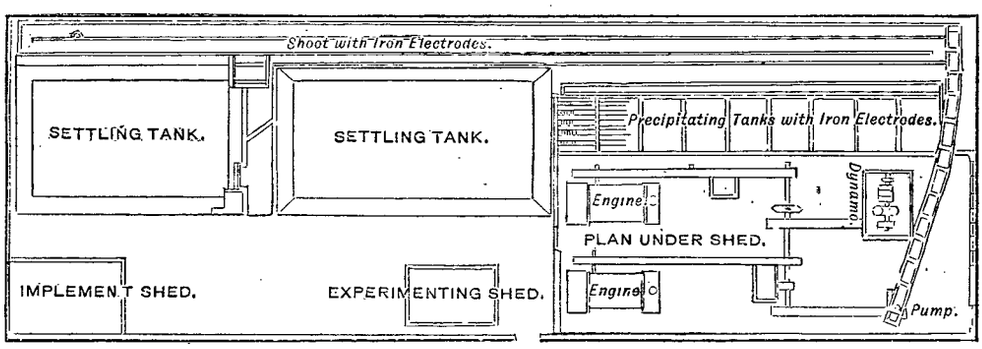
PARTS per 100,000.

	Appearance.	Odour.	Nitrogen as		Chlorine as Chlorides.	Oxygen required to oxydise organic matter.	Suspended Matters.		
			Free Ammonia.	Albumenoid matter.			Total.	Mineral.	Organic.
	Raw sewage, very turbid and opalescent.	Bad ..	3·57	0·6	14·61	4·03	14·52	5·95	8·57
(A)	Effluent, clear raw sewage,	None.	2·9	0·28	13·39	1·34	1·48	1·05	0·43
	very turbid and opalescent.	Very bad.	1·89	0·54	29·5	2·57	15·43	7·43	8·00
(A) Average of 20 Analyses	Effluent, clear raw sewage,	None.	1·8	0·24	29·0	1·21	2·20	1·91	0·29
	very turbid and opalescent.	Slight	4·34	0·5	21·64	1·24	33·35	not estimated	
	Effluent, clear.	None.	3·22	0·2	18·62	0·52	1·56	not estimated	

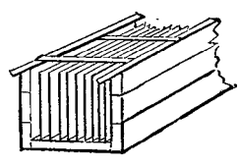
(A) Time of Settlement 1 hour in open reservoirs.

We fear we must not go further into the chemistry of the matter and treat of precipitated hydrates, &c., but will content ourselves by saying that to such a degree can sewage be purified that it will become itself a disinfectant by reason of the hypo-chlorous acid produced.

In order to show that the system is practicable outside the laboratory, Mr. Webster has erected, at considerable private cost, some experimental works at the Crossness pumping station, the accompanying sketches showing the general arrangement. On Wednesday last a number of gentlemen visited the works and witnessed the process in operation, the amount of sewage under treatment being 14,000 gallons per hour. So that the visitors might the better understand the action of his invention, Mr. Webster also performed the operation upon a small scale. A glass jar was filled with crude London sewage and a pair of electrodes plunged therein, the poles being connected with a small battery. In a few seconds a com-



motion was perceptible in the black turbid liquid. Small bubbles began to rise, and soon film was apparent on the surface. This increased in thickness, while the lower part of the liquid was visibly becoming clear. In about two minutes the electrodes were withdrawn, sufficient electric action having been set up. The ilquid was now found to be of a straw colour, but thickly interspersed with light flocculent matter, which soon found its way to the top, leaving the liquid clear, the chemical action described in the preceding paragraph having taken place. Although "precipitated," the solids were, however, at the surface, being held there by the bubbles of hydrogen that had been formed, but in about an hour they began to descend to their proper position at the bottom of the jar. This is precisely what happens on the larger scale in the precipitating tanks and shoot, as seen in the engraving. The sewage is discharged into the shoot from a pump connected with the main sewer; the shoot is fitted with iron plates or electrodes, and the sewage, in travelling along the shoot, comes in contact with the plates, and the electrolysed liquid then passes into one of the settling tanks. The dynamo employed is an Edison-Hopkinson, and the leads run through resistance frames, by which the amount of current can be regulated.



Detail of Shoot, with Iron Electroides.

Naturally the cost is an important item, and is generally the crucial point in all systems. This will compare most favourably with any chemical system, for it averages, for cost of working, abont 13s. per million gallons; so that the cost of treating the sewage of London, which is about 160 millions per day, would be about £37,960 per annum. What is to become of the sludge is another matter, this being a puestion for the consideration of the local engineers. What Mr. Webster professes to do is to rapidly precipitate a sludge that is harmless and to produce an effluent which cannot set up any deleterious chemical action when discharged into the river. In this he has unquestionably succeeded, and there is now a prospect of settling one of the most vexed questions of the day—namely, how to dispose of the sewage of great cities and towns.

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NOTES ON SEWAGE PURIFICATION BY ELECTROLYSIS.

By WILLIAM WEBSTER, F.C.S.

[Proceedings of the Association of Municipal and Sanitary Engineers and Surveyors, Vol. XIV, 1887-8.]

THE question of the disposal of sewage has occupied the attention of engineers and chemists for many generations past, and regarded from a hygienic point of view cannot be too thoroughly considered.

Before entering into the particular subject upon which I have the honour of being invited to address you, I should like to turn your attention to the various processes tried, and found wanting, since the year 1762.

We have lately heard a great deal about the treatment of sewage with sulphate of iron, lime, sulphate of alumina, permanganates, &c., &c.; it is a most remarkable fact that claims have lately been made *in re* the sulphate of iron process as if it were entirely new. The following list will show the fallacy of this :—

Names of Substances.	Inventor.	Date.
Sulphate of iron	Deboissieu	1762
Chlorine	Hallé	1785
Lime	Estienne	1802
Powdered charcoal	Giraud	1805
Chlorine and chloride of lime	Guyton Morveau	1805
Ashes	Chaumette	1815
Sand	Duprat	1818
Sulphate of iron	Briant	1824
Chloride of soda	Labarraque	1824
Waste chloride of manganese	Payen and Chevalier	1825
Sulphate of lime	Siret	1827
Animal charcoal	Frigerio	1829
Peat	Guibourt and Sanson	1833
Charcoal and calcined marl or river mud	Pottevin	1836
Sulphates of iron and zinc with tan and tar	Siret	1837
Earth, lime, and waste substances	Rossier	1837
Peat ashes	D'Arcet	1840
Metallic oxides and carbon	Krafft and Suequet	1840
Chloride of zinc	Sir Wm. Burnett	1840
Schist coke	Hompesch	1841
Trade refuse, charcoal, and ashes	Albert	1842
Powdered lignite	Jourdan	1843
Impure alum	Siret	1843
Sulphate of zinc, charcoal, and clay	Gagnage and Regnault	1844
Persulphate of iron	Baronnet	1845
Schist coke	Du Boisson	1845
Chlorides of iron and zinc	Dubois	1846
Lime and precipitating tanks	Higgs	1846
Nitrate of lead	Ledoyen	1847
Waste salts of iron, lead, zinc, &c., with pyrolig matters, ashes, &c.	Brown	1847
Pyrolignate and perchloride of iron	Ellerman	1847
Impure chloride of manganese	Young	1847
Dried seaweed, lime, and sulphate of lime and zinc	Salman	1848
Peat charcoal	Rogers	1848
Charcoal, soot, mineral salts, &c.	Legras	1849
Spent tan, carbonised	Tarling	1850
Fresh bark, sulphate of iron, and peat charcoal	Angely	1850
Metallic sub-salts, as of iron, alumina, &c.	Browne	1850
Milk of lime and collecting the deposit	Wicksteed	1851
Acids and metallic salts, and filtrations through charcoal, clay, peat, gypsum, &c.	Dover	1851
Lime, sulphates of alumina, and zinc and charcoal	Stothert	1852
Lime, magnesian earth, sulphate of zinc or iron, and vegetable charcoal	Gilbee	1852
Sifted ashes, breese, or peat charcoal	Perks	1852
Sulphate of zinc, potash, alum and sand with waste tan, ashes, lime, soot, &c.	Pinel	1853
Metallic sulphates, metallic chlorides, or charcoal and magnesian salts	Herapath	1853
Salts produced in working galvanic batteries	Dering	1853
Peat or bog earth containing salts or oxides of iron	Dimsdale	1853
Peat and other charcoal and chloride of sodium, &c.	Macpherson	1853
Animal charcoal, alum, carbonate of soda and gypsum	Manning	1853
Magnesia and lime with sulphurous and carbolic acids	Smith and McDougall	1854
Lime and finely-divided charcoal	Wicksteed	1854
Boghead coke	Herapath	1854
Soft sludge from alum works with lime and charcoal	Manning	1854
Peat charcoal carbonised with oil of vitriol	Longmaid	1855
Alum schist or shale, and other aluminous minerals, with lime and charcoal	Manning	1855
Manganates and permanganates	Condy	1857
Superphosphate of lime with magnesia and lime	Blyth	1858

To this list may be added others containing combinations of the above, ringing the changes upon iron, lime, alumina, &c., which illustrate the reckless way in which inventors endeavour to apply their knowledge without first ascertaining what has been previously done in the matter, and how far it has been found to be successful.

In

In the year 1844 lime, mixed with water, was used for the precipitation of sewage: the sewage precipitate was called sewage guano, and, to cut a long story short, it was found that the product had little or no agricultural value. The late Dr. Letheby (whose pupil I was) in the year 1857 recommended the Metropolitan Board of Works to adopt the lime process to precipitate the sewage of London. He also suggested that sulphate of iron might be tried. In this short paper it is not my intention to criticise the many processes in use at the present time, as there is no doubt all are doing their best to solve the question; but I must protest against sewage farms, where sewage is allowed to percolate through the land without previous treatment. Rye-grass is grown and ultimately eaten by cattle; sewage contains myriads of ova; they become attached to the grass and other green fodder. This affects the cattle, produces measly meat, and I need hardly enlarge upon the results of eating it.

It may perhaps seem curious that I should say so much about chemical treatment, when the special subject of my paper is electrolytical; but electrolysis is nothing more than a chemical action produced by an electric current.

It is quite ten years since I carried out my first experiments in electrolysis, but in those days the available electric apparatus had not attained such completeness as we now have it. I first of all wish to remove an impression which, I have been given to understand, is lurking in some minds—that it is impossible to electrically decompose pure water. Water is easily decomposed provided the current of electricity is of such intensity that it can overcome the resistance. Nicholson Carlisle decomposed water in the year 1800; the decomposing effects produced are precisely in accordance with the chemical equivalents of the substances electrolysed; for instance, the same amount of electricity that would reduce 56 parts of iron from its solution would reduce 207 parts of lead, or 16 parts of oxygen, &c., &c. This is practically the explanation of the whole system; for the chemical changes which take place in sewage when it is electrolysed depend chiefly on the well-known facts that water and sodium, magnesium and other chlorides (which are always present in sewage) are split up into their constituent parts. Thus we have at the positive pole chlorine and oxygen set free, and these elements are liberated in a nascent state, a condition in which they are intensely active, so that the organic matter in the sewage is rapidly oxidised and burnt up to innocuous compounds. So rapid is this action that I will now act on a little Crossness sewage, and produce a disinfecting liquid, which is nothing more nor less than hypochlorous acid, the strongest oxidising agent that is known. To obtain this quickly I must separate the positive action from the negative by a porous diaphragm. At the negative pole I obtain ammonia, potass, soda, magnesia, &c. So strong is the action of oxide of chlorine that I have found no pressed carbon plates would stand its action; I am therefore compelled to use cut carbon or coke.

It was this fact that made me investigate the cost, and the result was, knowing that iron salts were of great use in precipitating organic matter in solution, that I experimented with iron electrodes, for the oxidising acids produced by this action being probably 100 times more active than any acids produced by chemical processes alone, it necessarily followed that the iron salt produced must have similar properties. The nascent chlorine and oxygen generated partly unite, and, with the water, form hypochlorous acid, the positive iron plate being attacked, and ferrous hypochlorite formed; but a portion of the hypochlorous acid attacks the organic matter, for it is well known that putrefying sewage has a strong affinity for oxygen.

To still further strengthen this action I have lumps of carbon cast into the iron plates, thus securing a supply of the before-mentioned acid.

The iron plates are common casts run direct from the furnace into this form instead of pigs, and are used for the positive poles, the negative plates being thin rolled sheets. The positive plates are gradually acted on by the acids produced, but the negative plates are not acted on, and will remain in the same condition for years; this is so well known that I need not enlarge upon it. I have estimated that the waste of iron at the positive pole is about one grain per gallon, but of course this entirely depends upon the electric current used. The hypochlorite of iron formed at the positive pole is acted on by the free ammonia, sodium, potassium, and magnesium hydrates and the ferrous hydrated oxide precipitated. This particular oxide of iron has the property of combining with organic matter, and it is a peculiarity of this salt to take a white hue, and then by exposure to the atmosphere to become green, and ultimately an ochrey red colour.

This action can be seen almost daily in any dye-house during the dyeing of buffs; the cotton goods (representing organic matter) are dipped into an iron solution, and then passed through an alkaline bath; the shade is green, but slight exposure to the air produces the buff colour; the oxide of iron being precipitated within the fibres of the cotton. The ferrous hydrate or protoxide of iron is so beautifully precipitated, one may say, in its most active condition by this electrolytic process, that it takes up more organic matter than if precipitated chemically, for by chemical precipitation the iron oxide carries a large part of the suspended matter in the sewage with it, but only traces of the dissolved organic matter. In the electrical process the whole of the matter suspended is carried with the oxide of iron, together with a considerable portion of the organic matter in solution, and, if necessary, the whole of the soluble organic matter can be oxidised. The precipitate itself is carried to the surface by the numerous bubbles of hydrogen issuing from the negative pole, and the effluent may be run off quite clear from below, or may be run with the precipitate into settling tanks, where the deposit will take place in from half an hour to two hours; the precipitate being exceedingly flocculent subsides readily. The sludge formed does not hold so much water as by chemical process, and presses without any addition of lime. The effluent is less alkaline than the natural sewage, and, if necessary, can be rendered neutral by passing through coke filters arranged in such a way that the electric current can be applied, thus further purifying the effluent and delivering it in such a state that, personally, I should have no objection in drinking it. The reason of the alkalinity being reduced is that a small quantity of free ammonia is carried off with the hydrogen gas at the negative pole, and also by the formation of hypochlorous acid. It is by means of this coke filter that potable water can be purified either on a large or small scale, and the treated sewage is not liable to secondary fermentation, nor does it form a precipitate when mixed with ordinary river water. The chlorides are slightly diminished in quantity owing to the escape of nascent chlorine at the positive pole. The amount of soluble mineral matter is not increased in quantity as in ordinary precipitating processes,

The

The chloride of lime of commerce is really hypochlorite of lime. It has been suggested that the hypochlorous acid may possibly be as objectionable in its after effects as the salts of lime, but this is not the case, as hypochlorous acid is an unstable compound, which, having delivered up its oxygen in oxidising organic matter, changes into hydrochloric acid, which neutralises the alkalinity of the sewage.

As I have already demonstrated that hypochlorus acid can be obtained in quantities by means of a porous cell enclosing positive pole, so likewise by enclosing the negative pole a solution of ammonia, &c., can be obtained from the raw sewage.

I have brought with me a weak solution of the disinfecting fluid obtained from sewage twelve months ago, also a sample of an effluent eight months old. I have shown that the sewage can be purified to any extent, even to conversion into a disinfectant; it therefore only remains for me to enter into the question of cost, which I will do as briefly as possible, and it is just as well to mention that this will be partly ruled by the particular state of purity you require in the effluent.

The chief expense is the engine-power. My experience up to the present time is limited to treatment of about 100 gallons of sewage at any one time; and from a large number of experiments I found it would be possible to treat this quantity with about one-third horse-power. The dynamo and engine were unsuitable for my experiments, as the dynamo was only fit for electric lighting, and the engine twenty-five years old, without a governor; I should therefore prefer to think the horse-power over-estimated. The time occupied in treating every 100 gallons varied from 5 to 10 minutes. The consumption of iron was 1 grain per gallon. The cost of this is easily estimated when one knows the market price of pig-iron. By kind permission of the Metropolitan Board of Works I have erected works at my own expense at the Crossness Outfall of sufficient capacity to treat sewage at the rate of 1,000,000 gallons per diem, as I have sufficient confidence in this process to risk the large outlay entailed. For this I have had an Edison-Hopkinson dynamo specially constructed, giving an output of 1,600 ampères and 20 volts.

Unfortunately the electrical portion of the works is not yet completed, or I should have hoped to have had the pleasure of inviting you to inspect them.

The question of cost resolves itself into this: The more iron plates you introduce into the system the greater the surface and the lower the resistance, consequently the less horse-power required. The increase of the iron plates is only an increase of prime cost, and does not mean a greater waste of iron. This means a saving of labour, as the more iron originally used the less frequently it would require renewal.

I hope to prove that by using positive plates 1 in. thick their duration will be from five to ten years. If the proportion of one-third horse-power to 100 gallons in 10 minutes holds good, as I am inclined to think it will, then twenty-five actual horse-power would be capable of purifying 1,080,000 gallons of sewage in twenty-four hours. I should much have liked to have gone into more minute details connected with these experimental tests, but until I have verified the present results on a practical working scale I feel it would be premature to quote figures.

Appended are the results of a few Analyses of Sewage before and after treatment:—

PARTS PER 100,000.

Date of Experiment.	Appearance.	Odour.	Nitrogen as			Chlorine as Chlorides.	Oxygen required to oxydise organic matter.	Total Solid Matter in Solution.	Loss on incineration of total Solids.	Suspended Matters.			
			Free Ammonia.	Albumenoid matter.	Nitrites and Nitrates.					Total.	Mineral.	Organic.	Ferric Oxide Fe_2O_3
1883.													
a. Mar. 26...	Raw Sewage, very turbid and opalescent.	Bad	2·59	0·47	None.....	9·74	1·95	61·72	12·57	65·28	39·47	25·79	7·09
	Effluent, clear	None.....	2·30	0·30	None.....	9·19	1·07	57·43	9·14	None	...	...	...
b. April 20...	Raw Sewage, very turbid and opalescent.	Slight ...	1·88	0·19	Trace	5·27	1·17	42·43	7·90	47·31	33·01	14·30	6·13
	ffluent, clear	None.....	1·63	0·14	0·029	4·67	0·53	38·60	4·10	2·01	1·74	0·27	1·69
a. April 27...	Raw Sewage, very turbid and opalescent.	Slight ...	2·65	0·42	None.....	16·43	1·24	41·95	5·86	Not estimated.			
	Effluent, clear	None.....	2·28	0·18	0·017	13·79	0·52	37·40	2·85	None	...	...	...

a. a. Time allowed for settling, two hours.
b. „ „ „ half an hour.

CANAL WATER CONTAMINATED WITH SEWAGE.—LABORATORY EXPERIMENTS.

CARBON PLATES.

AVERAGE OF 40 ANALYSES.

	Per gallon. Free Ammonia.	Albumenoid Ammonia.
Before treatment	·073	·037
After treatment	·053	·014

IRON AND CARBON PLATES.

AVERAGE RESULT OF 5 ANALYSES OF SEWAGE.

	Per gallon.
Before treatment	·431
After treatment	·08

H.

H.

THE ELECTRICAL TREATMENT OF SEWAGE.

(From *The Engineer*, March 29, 1889.)

On Wednesday Mr. William Webster gave a practical demonstration of his electrical method for the purification of sewage, at the main drainage outfall at Crossness. The electro-chemical features of this process have already been described in our columns, and the physical success of the method invented by Mr. Webster seemed sufficiently proved some time back. But it was necessary to show that the process could be carried out on a working scale at a cost that should not be excessive. For this purpose permission was obtained from the Metropolitan Board to erect temporary experimental works on a piece of vacant ground at Crossness, the expense being defrayed by the inventor, who had his sewage for nothing, except that he bore the cost of pumping. On the present occasion Mr. Webster showed how he could deal with a flow of sewage equal to 12,000 gallons per hour. The works were avowedly not the best that could be devised for the purpose, the ground being limited in extent, and experience being wanting at the outset. By the time the works were finished it was easy to propose some better mode of setting them up. The dynamo was not in the best place. The two portable engines, used alternately, were made a quarter of a century ago, and the provisional nature of the works showed itself in various ways. On Wednesday one engine was absent, having been removed for a temporary purpose. The experimental works have a capacity for dealing with half a million gallons of sewage per day.

Mr. Webster describes his invention as consisting of an improved mode of electrolysis for oxidising and precipitating organic matter, and decomposing inorganic salts, such as chloride of sodium, potassium, magnesium, &c., and all salts contained in sewage. For this purpose, in treating sewage and similar impure liquids, he subjects the liquid, while flowing through channels or reservoirs, to the electrolytic action of positive and negative electrodes made of iron and having very extended surfaces. Ammonia and other alkalies are evolved at the negative electrode, and assist the precipitation of the iron salts formed at the positive pole, where at the same time nascent oxygen and chlorine are evolved, partly acting on the iron and producing an acid reaction whereby the organic impurities in suspension are precipitated, while those in solution are oxidised and converted into innocuous compounds. Of course the nascent chlorine will have much greater efficiency than the chlorine present in chloride of lime, and the nascent oxygen will have much more effect on the organic matter in the form of albumenoids than the oxygen of the atmosphere.

The mode in which this process is made to operate will be seen by the accompanying engravings. The ground plan, Fig. 1, representing an area of about 250 ft. by 60 ft., shows the position of the two

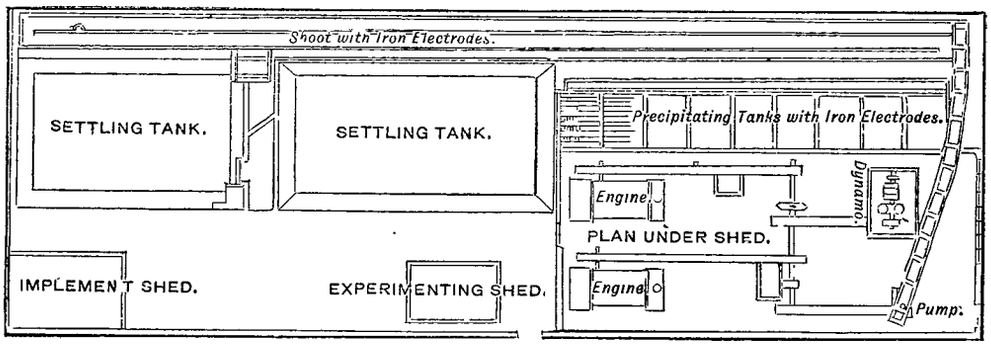


Fig. 1.—Ground Plan of Experimental Tanks.

engines and the dynamo. At a little distance to the rear of the latter is the pump for raising the sewage; the shed containing the engines and dynamo appears on the right in the perspective engraving, Fig. 2.

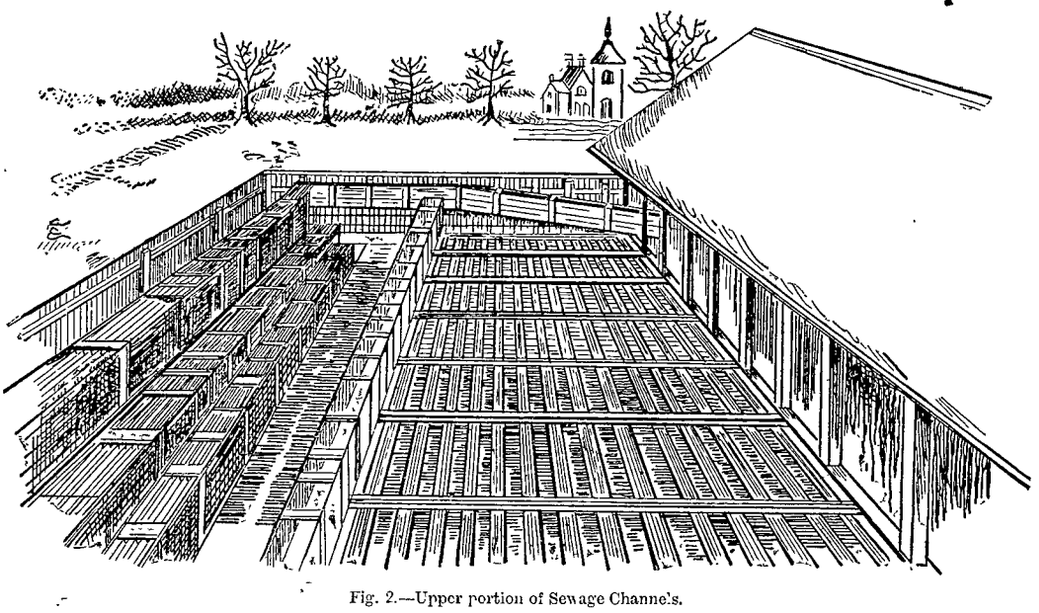


Fig. 2.—Upper portion of Sewage Channels.

Facing the shed in this engraving and in the ground plan are a range of precipitating tanks. These tanks were used for taking experimental measurements, so as to discover the best mode of arranging the electrodes. Practically they form no part of the present working arrangements, and they would not be repeated

repeated in any future works. The sewage raised by the pump passes on through the shoot which runs along one side of the ground plan, and is finally received into one or the other of the settling tanks. A portion of the shoot appears on the right-hand side in Fig. 3, opposite the implement shed. Between the

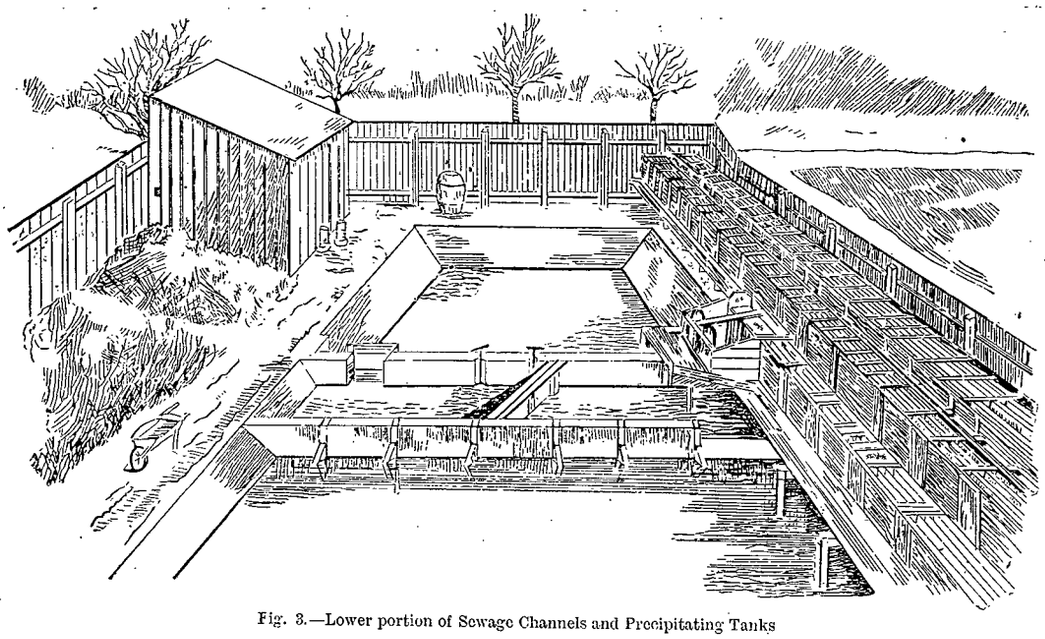


Fig. 3.—Lower portion of Sewage Channels and Precipitating Tanks

shoot and this shed appear the tanks, as on the plan. In Fig. 2 another portion of the shoot is seen opposite the engine-shed, with the precipitating tanks intervening. The shoot is an electrolytic channel in which are the iron electrodes, arranged as shown in the small sectional drawing, Fig. 4. The shoot is made of wood, but in any permanent work would be constructed of some stronger material. Owing to the restricted space, the shoot at Crossness is fitted with wrought-iron plates, but in practice it is intended to make use of cast-iron, run direct from blast furnaces. As the sewage travels along the shoot, every particle of the liquid comes into contact with the plates, and is thereby subjected to the electrolytic action. A separation of the solid particles from the actual liquid speedily shows itself, and increases in its intensity as the sewage approaches the settling tank, into which it ultimately descends, and where the separation reaches its final stage.

Each of the portable engines is of 20-horse power. Only one engine is used at a time, both for pumping the sewage and for driving the dynamo. The dynamo is an Edison-Hopkinson, capable of developing an energy of 43-horse power. From the dynamo the leads run through resistance frames, by means of which the amount of current passing on to the electrodes can be regulated without varying the speed of the engine. From the statements made by Mr. Webster it appears that with 27-horse power it is possible to treat 1,000,000 gallons of sewage in twenty-four hours, presuming the sewage to be of the same strength as average London sewage. In estimating the cost of the engine-power, reference is made to the fact that the newest type of engine for driving dynamos may be taken to consume 2 lb. of coal per horse-power hour. The price of coal regulates the result. As for the iron consumed in the process, the experiments tend to prove that the consumption in continuous working should not exceed 2 grains per gallon of sewage. Plates 1 in. thick, if used in sufficient numbers, would last for many years when once fixed. By way of illustration, it is stated that the consumption of iron in the case of a town with a population of 333,000, having a volume of sewage equal to 10,000,000 gallons per day, or 30 gallons per head, should not exceed 464 tons per annum. The amount of mechanical power required per head of the population is shown to be $\frac{1}{12\frac{1}{2}}$-horse power, or 8-horse power per 10,000 of the population. A very small electro-motive force, only a little over 2 volts, is used and about 11 square feet of iron electrode surface per ampère. There seems to be no polarisation of the electrodes in the channels.

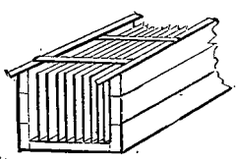


Fig. 4.—Detail of Shoot with Iron Electrodes.

Running from the shoot, and allowing one hour for settlement in the open tanks, the average of twenty analyses shows that under this treatment raw sewage of a very turbid and opalescent character yields a clear and odourless effluent. Estimated in parts per 100,000, the suspended matter is reduced from 33·35 to 1·56. Nitrogen as free ammonia is reduced from 4·34 to 3·32, and albumenoid matter from 0·5 to 0·2. Chlorine as chlorides becomes 18·62 instead of 21·64, and the oxygen required to oxidise the organic matter becomes 0·52 instead of 1·24. A sample of raw sewage, very turbid and opalescent, and with a bad odour, yielded a clear effluent without odour. The sewage contained 14·52 parts of suspended matter, 5·95 being mineral and 8·57 organic. In the effluent these quantities became respectively 1·48, 1·05, and 0·43. The free ammonia declined from 3·57 to 2·9, the albumenoid matter from 0·6 to 0·28, and the chlorine as chlorides from 14·61 to 13·39. The oxygen required to oxidise the organic matter was 4·03 in respect to the sewage, compared with 1·34 for the effluent.

The disposal of the sludge is a final consideration in this as in other processes where precipitation takes place. But the sludge from the electrolytic action is not swollen by the admixture of any foreign ingredients beyond one or two grains of iron per gallon, which as oxide becomes somewhat more.

In the course of the day's proceedings Mr. Webster stated that he estimated the working cost of this process at 13s. per million gallons of sewage treated. This was irrespective of interest on capital, and the allowance to be made for depreciation, except that it included the waste of iron. On 150,000,000 gallons per day, representing the whole of the London sewage, north and south, at the present time, the cost

cost at the rate abovenamed would amount to £36,000 per annum. Mr. Webster, in reply to various questions, said he had not undertaken any calculations as to anything beyond the working cost. He subsequently stated that the charge for interest on capital and depreciation of plant would not be likely to exceed £5,000 per annum.

Dr. Thudicum, who was present, said he was induced, from what he had seen, to look upon the process with the utmost hope. If Mr. Webster succeeded, as he trusted he would, the process would open up a new era in the history of the sewage question.

Sundry experiments followed, showing the action of the electric current on samples of sewage in glass vessels. In another instance the current was made to act on water coloured with an aniline dye, in order to illustrate the effect of organic matter in solution. In each case the solid particles were buoyed up by the liberated hydrogen, and collected on the surface of the liquid. On the escape of the gas the solid particles began to descend so as to form a precipitate.

The parties present were shown over the works by Mr. Webster, accompanied by his electrician, Mr. March. Attention was also given to an automatic weir, invented by Mr. F. Houghton, jun., dealing with eight or nine million gallons of sewage per day. By this apparatus a great saving of labour is effected, it being completely self-acting, while the process of precipitation is materially assisted, water flowing in or out without disturbing the deposit at the bottom of the tank.

[*To Evidence of R. W. Hardie, Esq.*]

I.

CHARGES FOR REMOVAL OF NIGHTSOIL, BOROUGH OF BURWOOD.

Burwood, 29 July, 1889.

Sir,

I have the honour, as directed by yourself, to supplement my evidence respecting the "Western Suburbs Sewerage Scheme" by the following statements as to present charges in the Borough of Burwood, for emptying earth closets:—

(i) The *minimum* charge is 6d. per pan, of which 5d. goes to the contractor, and 1d. to form a sinking fund to cover cost of pans.

(ii) The number of houses within the Municipality is about *one thousand*, and the average rent value may be stated at £100 yearly.

(iii) The following table will show the relative cost under the present imperfect municipal system and under the proposed Government sewerage works, taking the latter rate at 8d. in the £.

Rent value of dwelling.		Annual cost if pans are emptied		Annual cost if under a sewerage rate of 8d. in £.
		Once weekly.	Twice weekly.	
s.	£	£ s. d.	£ s. d.	£ s. d.
10 weekly,	26 yearly	1 6 0	2 12 0	0 17 4
15 „	39 „	1 6 0	2 12 0	1 6 0
20 „	52 „	1 6 0	2 12 0	1 14 8
25 „	65 „	1 6 0	2 12 0	2 3 4
30 „	78 „	1 6 0	2 12 0	2 12 0
35 „	91 „	1 6 0	2 12 0	3 0 8
40 „	104 „	1 6 0	2 12 0	3 9 4

Up to £78 yearly the 8d. rate for a perfect and continuous system is more economical than the present primitive and dangerous system. *i.e.*, taking as a basis that pans are emptied twice weekly. The charge appears heavier up to and beyond £100 yearly, but I feel sure no valid objection could be made to a charge of £3 9s. 4d. on a £100 a-year dwelling.

Many houses have two, three, or four closets, and the owners of these would, I think, prefer the proposed comprehensive system to the present one, which necessitates the visitation of their homes by the nightmen between the hours of 10 p.m. and 5 a.m.

I would emphasise what I stated before the Committee, that I am confident nine-tenths of the residents in the Western Suburbs would welcome the new scheme on the grounds of domestic comfort and as absolutely necessary for health, especially as there never have been any restrictions as to buildings.

I have, &c.,

The President, Public Works Committee, Sydney. ROBERT W. HARDIE.

[*To Evidence of John Trevor Jones, Esq.*]

J.

PROBABLE POPULATION AND CONSUMPTION OF WATER AT THE PERIOD OF COMPLETING THE WESTERN SUBURBS SEWERAGE SCHEME.

Sir, Water Supply and Sewerage Department, Sydney, 27 August, 1889.

I forward herewith, at your Committee's request, an estimate of the increase of population in city and suburbs, based upon the ratio of the increase that took place between 1879 and 1889, which was furnished me by Mr. Coghlan, statistician.

The population in 1879 was 200,009; the population in 1889 is 374,755.

This ratio represents 6½ per cent. nearly per annum. At this rate the population will double its present number in twelve years, and at the end of that time would, under these conditions, amount to 749,510 in city and suburbs.

This

This is my own deduction, based upon the above ratio ; Mr. Coghlan refuses to pledge himself to an estimate, but adopting the above figure of (say) 750,000, and allow a consumption of 40 gallons per diem per individual, the daily consumption of Sydney and suburbs will then demand 30,000,000 gallons daily.

The delivering capacity of the 6-feet pipe at Potts' Hill is 50,000,000 gallons per day. The proposed duplicate along with the present mains thence to the city and suburbs will be capable of delivering together 36,000,000 gallons.

I am inclined to think that the estimated ratio of increase if it err at all is on the side of excess ; nevertheless it is plainly evident that the supply is abundant for at least fifteen years, unless for some abnormal increase of population or other excessive demand for water.

I have, &c.,
J. TREVOR JONES,
Board Engineer.

The Secretary Parliamentary Standing Committee on Public Works.

[*To Evidence of Robert Hickson, Esq.*]

K.

COST OF APPLYING ELECTROLYSIS TO THE WESTERN SUBURBS SEWERAGE SCHEME.

Roads and Bridges Department, Sydney, 7 August, 1889.

Sir,

Since Professor Threlfall's evidence before the Public Works Committee with reference to the purification of sewerage by Webster's process my attention has been directed to ascertain how far this system could be economically used in connection with the Western Suburbs Sewerage Scheme, and I submit herewith a statement made out by Mr. Bagge, which, I suggest, should be sent on to the Committee.

Mr. Bagge has gone as fully as time would permit into the whole matter, and from his figures I think any doubt as to the inapplicability of this process as applied to the Western Suburbs Sewerage Scheme is at once removed. Roughly speaking, he estimates it would cost something like £300,000 extra to adopt this system.

ROBERT HICKSON.

The Under Secretary for Public Works.

Forwarded for the information of the Public Works Committee.—J. Barling, 7/8/89.

Roads, Sewerage Branch, Sydney, 7 August, 1889.

Subject :—Comparative cost of Western Suburbs Sewerage Scheme as proposed by Mr. Stayton and when proposed to be purified by electrolysis.

Northern Division.

1. In order to arrive at a comparison of the relative probable cost of the two different schemes, I had to ascertain first : what areas could be judiciously drained into one outlet on the shores of the harbour ; where the apparatus for purifying the sewage by electrolysis could be conveniently placed and constructed ; and from where the sludge could be easily shipped and deposited in deep sea water.
2. This outlet, I find, may be placed on the northern point of the peninsula between Iron and Long Coves, and the following areas : part of Strathfield, Concord, Burwood, part of Enfield, part of Five Dock, Ashfield, Petersham, Leichhardt, part of Camperdown, and Balmain, comprising a total of about 7,574 acres, can be drained to this point.
3. The Glebe, of about 371 acres, is drained as before into the Bondi sewer.

Southern Division.

4. The now, much curtailed, Southern Division, draining south as before, and proposed to be discharging on to the Sewage Farm, Webb's Grant, comprises the following areas : parts of Strathfield, Enfield, Canterbury, Marrickville, St. Peters, part of Newtown, part of Macdonaldtown, and part of Alexandria, of about 4,328 acres.
5. The revised scheme comprises, therefore, viz. :—

	acres.
Northern Division (paragraph 2)	7,574
The Glebe (paragraph 3)	371
Southern Division (paragraph 4)	4,328
Total	12,273

6. Mr. Stayton's original areas of the same territory are :—

	acres.
Western System (page 30 of his report)	10,632
Northern System (Balmain, Glebe, and Leichhardt)... ...	1,641
Total	12,273

The

The probable estimates of the cost of construction of main and branch sewers (reduced in size where practicable, &c.) for, and of purifying the sewage from the northern 7,574 acres by electrolysis, &c., would be as, viz. :—

	£	£
Cost of main and branch sewers		330,593
Probable cost of plant for electrical treatment :—		
10 100 h.-p. engines	10,000	
20 45 h.-p. boilers, at £450	9,000	
10 dynamos, at £350	3,500	
Copper, lead, fixing plates, machinery, etc....	2,800	
Engine sheds, stores, etc.	3,000	
3 settling tanks	18,000	
Cement troughs	7,300	
Cast iron plates	8,400	
Straining chambers, penstocks, etc.	2,000	
Land resumption at Long Cove	6,000	
Probable total	£70,000	70,000
Probable working expenses of cost—electrical treatment :—		
NOTE.—According to Professor Threlfall's published reports the working expenses would come to £4 19s. per million gallons; according to Mr. Engineer Macdonald's calculations it would be £3 2s. per million gallons; and in this calculation it has been reduced to £2 16s. per million gallons approximately.		
	£	
Coal, 9,400 tons, at 15s. per ton	7,050	
Salaries and wages, per annum	5,000	
Sundries	1,000	
Approximate annual working expenses	£13,050	
Which, capitalised at 4 per cent., gives		326,250
Probable cost of all main and branch sewerage works for the Glebe		32,507
Probable cost of construction of main and branch sewers (reduced in sizes where practicable) to discharge the sewage of the 4,328 acres of the revised Southern Division on to the Sewage Farm at Webb's Grant... ...		294,293
The working expenses of this scheme at £5,200 per annum, capitalised at 4 per cent.		130,000
NOTE.—The cost of removing the sludge from the settling basins to the deep sea is not included in the grand total, but is left to final consideration.		
Approximate total cost of the revised sewerage scheme... ...		£1,183,643

Mr. Stayton's original scheme of Western Suburbs would be :—	£
Original Western system, as per his report (*see* page 25)	602,211
Northern system	145,894
Working expenses at £5,650 per annum, capitalised at 4 per cent. ...	141,250
Total of Mr. Stayton's original estimate	£889,355

From the foregoing it will appear that the revised scheme including the electrical treatment would cost £1,182,393, whereas Mr. Stayton's proposed works for the same areas are set down at a total of £889,355 ; this shows the original scheme to be £293,038 cheaper than the revised electrical scheme.

C. H. OHLFSEN BAGGE, 7/8/89.

The Engineer-in-Chief of Sewerage, &c.

[To

[*To Evidence of Frederick Hammer, Esq.*]

L.

RE WESTERN SUBURBS SEWERAGE SCHEME—CHECK CALCULATIONS.

Roads and Bridges Department, Sewerage Branch,
Lincoln's Inn Chambers, August 19, 1889.

Sir,

In accordance with instructions received last Thursday from you, I forward herewith the result of my calculation of the points in question. My figures agree within a very small fraction with those of Mr. Stayton's. The slight increase of rate from 5·12d. in the £ per annum on £830,304 (cost of main sewers and other works) to 6½d. in the £ per annum on £1,817,896 (cost of final completion of entire scheme) results from Mr. Stayton's estimated ratable value in 1889 of £2,000,000 increasing to £3,300,000 on the final completion of the entire scheme.

The result of my calculation is as follows:—

Interest 4 per cent.

Section 2 of Appendix C1.

Interest and repayment on £830,304 in 28 years.

Interest and repayment	£49,829
Working expenses	5,650
Total	£55,479

Estimated ratable value in 1889, as per Report, £2,000,000.

1d. rate thereon will produce about £8,300 net.

Rate in pence per £: $\frac{55,479}{8,300}$ = 6·68d.

Section 2 of Appendix C1.

Interest and repayment on £830,304 in 60 years.

Interest and repayment	£36,778
Working expenses	5,650
Total	£42,428

Estimated ratable value in 1889, as before.

Rate in pence per £: $\frac{42,428}{8,300}$ = 5·11d. against 5·12d.

REPAYMENT UNDER EXISTING ACT.

Interest 4 per cent.

Sections 1, 2 and 3 of Appendix C1.

Interest and repayment on £1,445,045 in 28 years.

Interest and repayment	£85,532
Working expenses	5,650
Total	£91,182

Estimated ratable value in 1894, as per Report, £2,200,000.

1d. rate thereon will produce about £8,900 net.

Rate in pence per £: $\frac{91,182}{8,900}$ = 10·24d. against 10·25d.

Sections 1, 2, 3 and 4 of Appendix C1.

Interest and repayment on £1,817,896 in 28 years.

Interest and repayment	£109,097
Working expenses	12,296
Total	£121,393

Estimated ratable value on final completion of the entire scheme, £3,300,000.

1d. rate thereon will produce about £13,400 net.

Rate in pence per £: $\frac{121,393}{13,400}$ = 9·06d. against 9·25d.

REPAYMENT UNDER PROPOSED AMENDED ACT.

Interest 4 per cent.

Sections 1, 2 and 3 of Appendix C1.

Interest and repayment on £1,445,045 in 60 years.

Interest and repayment	£63,874
Working expenses	5,650
Total	£69,524

Estimated ratable value in 1894 as above.

Rate in pence per £: $\frac{69,524}{8,900}$ = 7·81d. against 8d.

Sections 1, 2, 3 and 4 of Appendix C1.

Interest and repayment on £1,817,896 in 60 years.

Interest and repayment	£80,355
Working expenses	12,296
Total	£92,651

Estimated ratable value on final completion as above.

Rate in pence per £: $\frac{92,651}{13,400}$ = 6·91d. against 7d.

REPAYMENT UNDER FURTHER AMENDED ACT.

Interest 3½ per cent.

Interest and repayment on £1,445,045 in 60 years.

Sections 1, 2, and 3 of Appendix C1.

Interest and repayment	£57,930
Working expenses	5,650
Total	£63,580

Estimated ratable value in 1894, as above.

Rate in pence per £: $\frac{63,580}{8,900}$ = 7·14d. against 7·25d.

Interest and repayment on £1,817,896 in 60 years.

Sections 1, 2, 3, and 4 of Appendix C1.

Interest and repayment	£72,874
Working expenses	12,296
Total	£85,170

Estimated ratable value on final completion as above.

Rate in pence per £: $\frac{85,170}{13,400}$ = 6·35d. against 6·5d.

The Chairman,
Parliamentary Standing Committee on Public Works.

F. HAMMER.

[5 Plans.]

Sydney: Charles Potter, Government Printer.—1889.

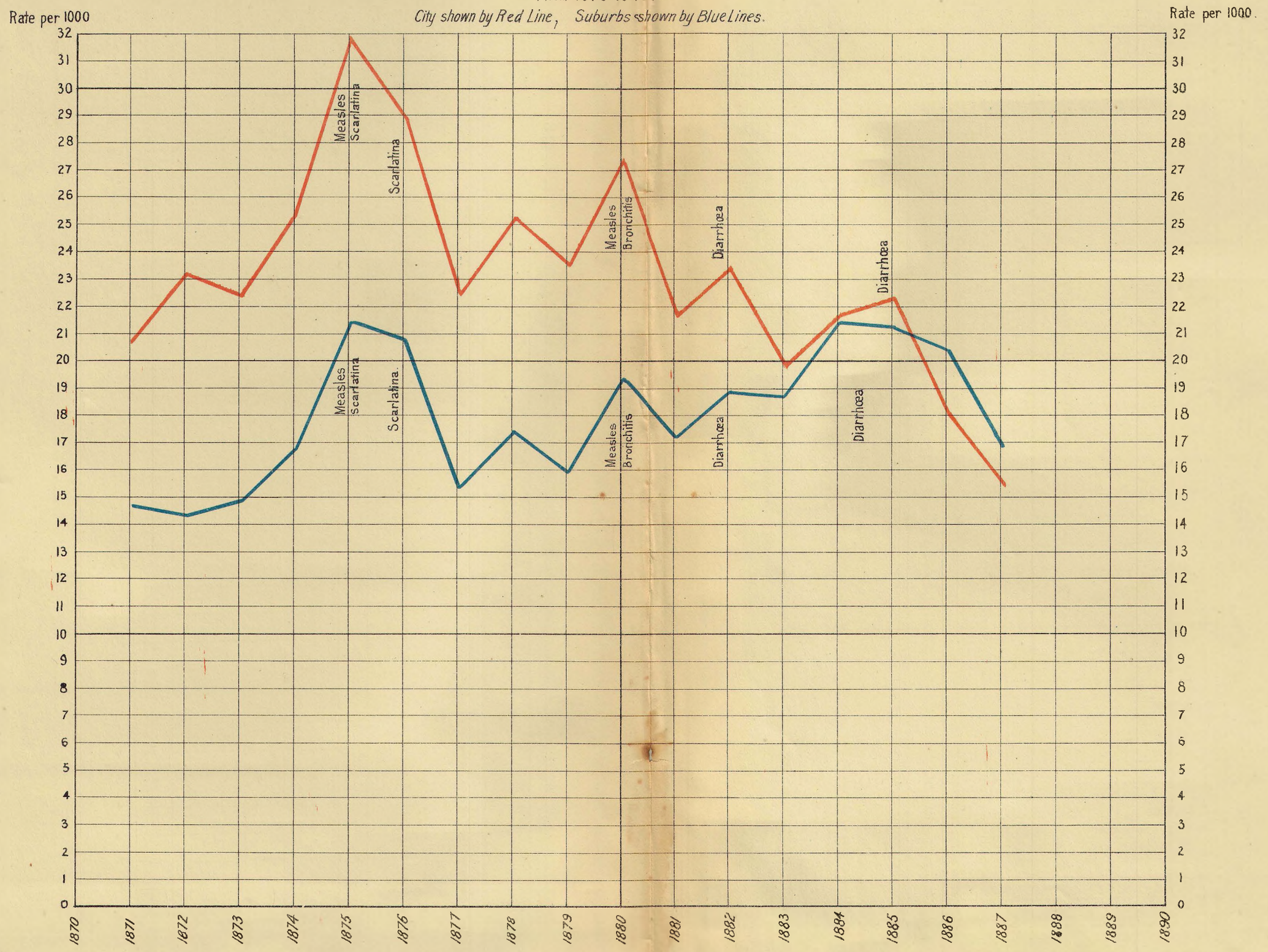
APPENDIX A'
PLAN I
PARRAMATTA RIVER
CONCORD
FIVEDOCK
BALMAIN
CITY OF SYDNEY
OUTFALL SEWER
PADDINGTON
THE GLEBE
NORTHERN
LEICHHARDT
CAMPERDOWN
REDFERN
STRATHFIELD
BURWOOD
ENFIELD
ASHFIELD
PETERSHAM
MARRICKVILLE
ST PETERS
NEWTOWN
MACDONALDTOWN
ALEXANDRIA
WATERLOO
CANTERBURY
SOUTHERN OUTFALL SEWER
SEWAGE FARM
BOTANY BAY
WEST BOTANY
DEPARTMENT OF PUBLIC WORKS,
SEWERAGE BRANCH
PLAN
OF THE
WESTERN SUBURBS OF SYDNEY.
EXISTING OUTFALL SEWERS SHOWN THUS
MUNICIPAL BOUNDARIES
Fatal Cases of (1st January to 30th June 1888)
MEASLES SHOWN THUS
SCARLET FEVER
DIPHTHERIA
TYPHOID FEVER SHOWN THUS
DIARRHOEA
DYSENTERY
CHOLERA SHOWN THUS
SCALE.
PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.
George H Stayton
M. Inst. C.E.
Jan 10th 1888.

DIAGRAM

Showing Death-rate of City and Suburbs of Sydney,

FROM 1870 TO 1888.

City shown by Red Line, Suburbs shown by Blue Lines.



APPENDIX to Mr. Stayton's Report upon a System of Sewerage for the Western Suburbs, presented to Parliament on 10th February last,—a copy of the plan to which reference is made in the Report referred to.

PLAN 3

DEPARTMENT OF PUBLIC WORKS.

SEWERAGE BRANCH

PLAN

OF THE

WESTERN SUBURBS OF SYDNEY.

SHOWING

PROPOSED SYSTEM OF SEWERAGE

SCALE.

CHAINS 10 0 10 20 30 40 50 60 70 80 90 100 110 CHAINS.
FEET 1000 0 1000 2000 3000 4000 5000 6000 FEET.

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

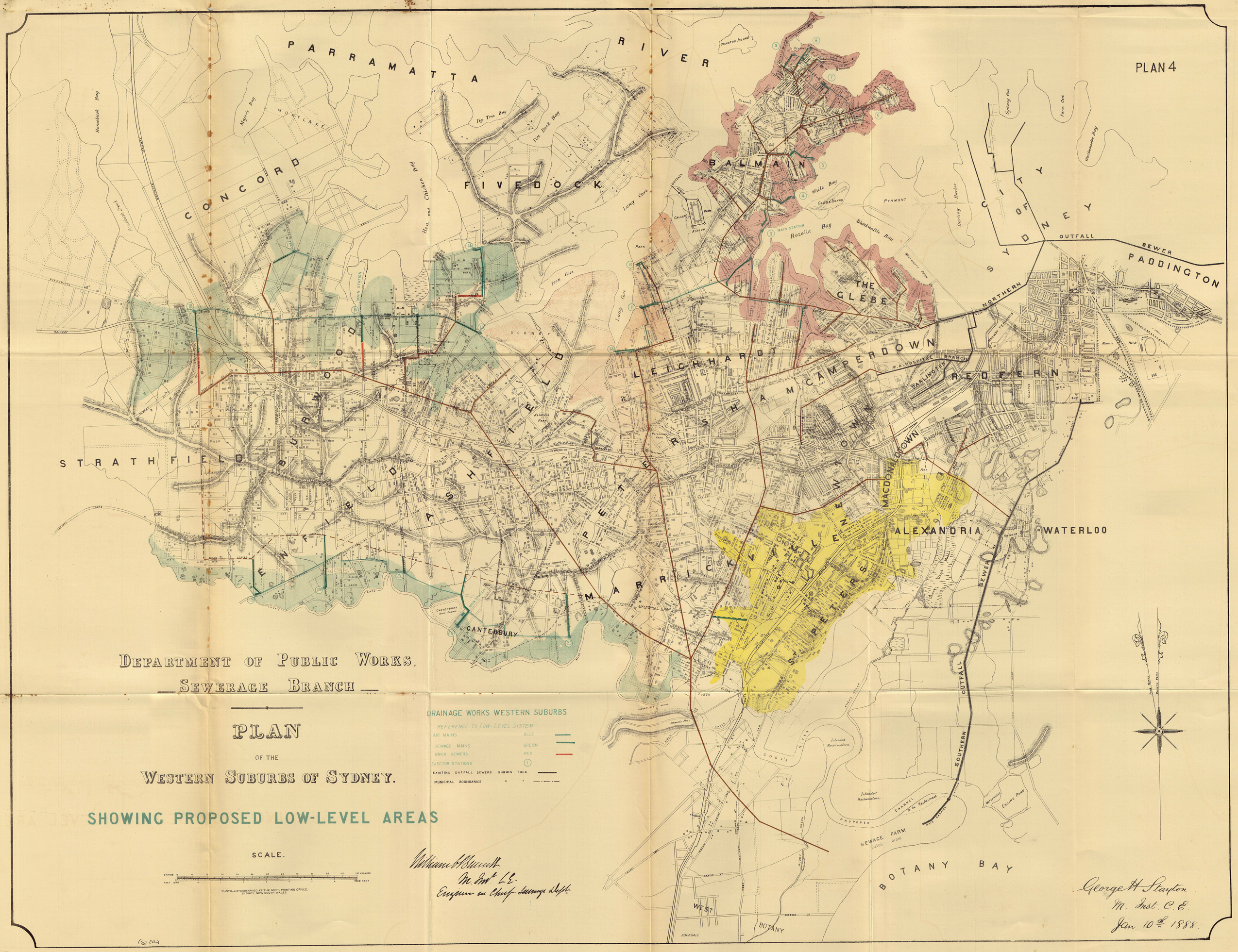
(S.) 20.

REFERENCES.

EXISTING OUTFALL SEWERS SHOWN THUS	———
MUNICIPAL BOUNDARIES " "	—·—·—
LOW LEVEL SEWERS SHOWN THUS	———
PROPOSED " "	———
LIMIT OF GRAVITATING AREA " "	- - -
FUTURE SEWERS " "	- - -

William A. Bennett
M. Inst. C.E.
Engineer-in-Chief Sewerage Dept.

George H. Stayton.
M. Inst. C.E.
Jan 10th 1888.


PLAN 4
PARRAMATTA RIVER
CONCORD
FIVEDOCK
BALMAIN
THE GLEBE
CITY OF SYDNEY
PADDINGTON
OUTFALL SEWER
NORTHERN
LEICHHARDT
CAMPERDOWN
REDFERN
STRATHFIELD
BURWOOD
ENFIELD
ASHFIELD
PETERSHAM
MARRICKVILLE
NEWTOWN
MACDONALDTOWN
ALEXANDRIA
WATERLOO
ST PETERS
CANTERBURY
SOUTHERN OUTFALL SEWER
SEWAGE FARM
BOTANY BAY
WEST BOTANY
DEPARTMENT OF PUBLIC WORKS,
SEWERAGE BRANCH
PLAN
OF THE
WESTERN SUBURBS OF SYDNEY.
SHOWING PROPOSED LOW-LEVEL AREAS
SCALE.
DRAINAGE WORKS WESTERN SUBURBS
REFERENCE TO LOW-LEVEL SYSTEM
AIR MAINS BLUE
SEWAGE MAINS GREEN
BRICK SEWERS RED
EJECTOR STATIONS
EXISTING OUTFALL SEWERS SHOWN THUS
MUNICIPAL BOUNDARIES
PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.
George H. Stayton
M. Inst. C.E.
Jan 10th 1888.

DRAINAGE WESTERN SUBURBS
LOW LEVEL SYSTEM FOR BALMAIN &c.
Alternative Scheme
RIVER
COCKATOO ISLAND
BALMAIN
THE GLEBE
CAMPERDOWN
Long Cove
White Bay
Rozelle Bay
Blackwattle Bay
Darling Harbor
GLEBE ISLAND
PYRMONT
WENTWORTH PARK
PUMPING STATION
OUTFALL
CALLAN PARK
ASTLUM
PARK
BALMAIN CEMETERY
WHITE'S CREEK
ANNANDALE
PROPOSED MAIN SEWER
P.A. HOSPITAL BRANCH
BRANCH
Glo. H. Stayton
Sep. 1888.

1889.

NEW SOUTH WALES.

COUNTRY TOWNS WATER AND SEWERAGE ACT OF 1880.

(BOROUGH OF GOULBURN—AMENDED BY-LAWS.)

Presented to Parliament, pursuant to Act 44 Vic. No. 14, sec. 13.

Colonial Secretary's Office,
Sydney, 25th January, 1889.

GOULBURN MUNICIPALITY--AMENDED BY-LAWS UNDER COUNTRY TOWNS WATER AND SEWERAGE ACT.

THE accompanying Amended By-Laws, made by the Council of the Borough of Goulburn, under the "Country Towns Water and Sewerage Act of 1880," having been confirmed by His Excellency the Governor, with the advice of the Executive Council, are published in accordance with the requirements of the above cited Act.

GEORGE R. DIBBS.

AMENDED BY-LAWS OF THE BOROUGH OF GOULBURN.

THE following rate shall take effect from the first day of January and the first day of July in each year upon all lands and tenements within the area of any water district within which water is authorized to be supplied :—

1. The rates and charges hereinafter specified are those which the owners and occupiers of lands and tenements shall pay in respect of water supplied.

2. On every house, tenement, or plot of unimproved land there shall be paid to the Council for water supplied, otherwise than by meter and for domestic purposes only, the annual minimum sum of ten shillings, and in no case shall water be supplied at less than that sum.

3. On every house or tenement for water supplied otherwise than by meter and for domestic purposes only there shall be paid the rate of five shillings per room for each and every room in such tenement; all out-houses to be included except water-closets; in all stables every two stalls to be rated as one room.

4. The charges for water supplied by meter for steam-boiler purposes shall be at the rate of one shilling per thousand gallons, the minimum quantity to be charged for water supplied to any such boiler shall be five thousand gallons per month.

5. The charge for water supplied by meter for manufacturing and other purposes, unless otherwise specified, shall be at the rate of one shilling per thousand gallons; the minimum quantity to be charged for water supplied shall be three thousand gallons per month.

6. The charge for water supplied by meter to charitable institutions (hospitals excepted) for all domestic purposes shall be at the rate of two shillings per thousand gallons, the minimum quantity to be charged for water supplied shall be five thousand gallons per month.

7. The charge for water supplied by meter to cricket and bowling clubs, and all other pleasure or show grounds whatsoever shall be at the rate of two shillings per thousand gallons; the minimum quantity to be charged for shall be two thousand gallons per month.

8. The charge for water supplied by meter for irrigation, gardens, nurseries, and private fountains shall be at the rate of two shillings per thousand gallons; the minimum quantity to be charged for shall be at the rate of two thousand gallons per month.

9. The charge for a temporary supply of water during the erection of new buildings and required for building purposes shall be at the rate of ten shillings per centum on the amount of contract for stonework, brickwork, and plastering, or the council may require a meter to be fixed and the charge shall be two shillings per thousand gallons.

10. The charge for warehouses and stores not being domiciles, shall be two shillings per thousand gallons; the minimum quantity to be charged for water supplied shall be two thousand gallons per month.

11. The charge for water supplied for motive power, public baths, and troughs in streets, shall be at the rate of two shillings per thousand gallons; the minimum to be charged for shall be two thousand gallons per month.

12. The Council may in any case in which it thinks fit where water is being used by any person for any purpose other than domestic purposes compel such person to use a meter, and such person shall either hire a meter from the Council, or purchase one at his own expense; and any person using water for such purpose as aforesaid, after being cautioned by the Council, or any of its duly authorized officers, not to do so until a meter shall be fixed, shall be liable at the discretion of the Council to have any of the pipes by or through which water is supplied to such person or for his or her own use cut off until a meter shall be provided and fixed for such person.

13. In case of a meter being hired from the Council by any consumer of water, such person shall pay for the hire of same in the following manner, viz. :—For three-quarter inch meter at the rate of five shillings per year, for one inch meter at the rate of seven shillings and six pence per year, and for one and a quarter inch meter at the rate of ten shillings per year.

14. All accounts for water supplied under special agreement or by meter shall be paid monthly.

15. Upon receiving a petition signed by two-thirds of the ratepayers in any public way in the said city or in any part of such way, the Council may cause the same to be watered, or they may in their discretion cause any public way to be watered, and may impose on the tenants or owners of buildings in such public way a uniform rate sufficient to cover the expense, which rate shall be assessed upon, and according to the amount for which such buildings are assessed for the purposes of the city rate, in addition to every other rate hereby authorized and made payable, and every such rate may be made, levied, enforced, and received in like manner as any city rate.

Amended by-law in substitution of existing by-law 143, and sub-sections 1 to 13, adopted by the Municipality of the Borough of Goulburn, this twenty-ninth day of November, 1888.

(L.S.) H. S. GANNON,
Mayor.

J. B. SALMON, Town Clerk.

1889.

NEW SOUTH WALES.

LANDS FOR PUBLIC PURPOSES ACQUISITION ACT.

(RESUMPTION OF LAND UNDER, FOR SEWERAGE PURPOSES, AT PADDINGTON.)

Presented to Parliament, pursuant to Act 44 Vic. No. 16.

NOTIFICATION OF RESUMPTION OF LAND UNDER 44 VICTORIA No. 16.

NEW SOUTH WALES, to wit. } By His Excellency The Right Honourable CHARLES ROBERT, BARON CARRINGTON, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.) CARRINGTON, *Governor.*

WHEREAS I, the Governor aforesaid, with the advice of the Executive Council of the said Colony, have duly sanctioned the carrying out of certain works for and in connection with the sewerage of the City of Sydney and its suburbs, in the said Colony, for and towards the completion of which said works public funds are available under the provisions of the Loans Vote 52 Vic. No. 17: And whereas the lands hereinafter described are required for the construction of the said works: Now I, the Governor of the said Colony, with the advice of the Executive Council of the said Colony, in pursuance of the powers in this behalf given to or vested in me by the "Lands for Public Purposes Acquisition Act," do, by this notification published in the Gazette and in a newspaper, that is to say, in the "Sydney Morning Herald," circulated in the Police District wherein the said lands are situated, declare that the lands hereinafter described have been resumed for the public purposes hereinafter mentioned, that is to say, for and in connection with the sewerage of the said City of Sydney and its suburbs, to the intent that upon the publication of this notification in the Gazette, the legal estate in the said lands shall forthwith be vested in the Minister for Public Works and his successors, on behalf of Her Majesty, for the purpose of the said last-mentioned Act, for an estate of inheritance in fee simple in possession, freed and discharged from all trusts, obligations, estate, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the intent, further, that the legal estate therein, together with all powers incident thereto or conferred by the said Act, shall be vested in the said Minister as a trustee, with the powers stated in the said last-mentioned Act: And I declare that the following is the description of the lands hereinbefore referred to, that is to say:—

All that piece or parcel of land containing by admeasurement 2 roods 27 perches and four-tenths of a perch, situate in the parish of Alexandria, county of Cumberland, and Colony of New South Wales: Commencing at the north-west extremity of Good Hope-street, in the Municipality of Paddington; and bounded thence on the north by a line bearing north-westerly 101 degrees 20 minutes 36 seconds for a distance of 293·5 links; on the west by a line bearing south-westerly 30 degrees 53 minutes 51 seconds for a distance of 466·53 links to the northern boundary of a resumption for sewerage purposes, dated 18th July, 1881, and published in the Government Gazette No. 287 of 22nd July, 1881; thence on the south by a line running along the northern boundary of said resumption bearing south-easterly 296 degrees 24 minutes for a distance of 100·3 links; thence on the east by a line bearing north-easterly 210 degrees 53 minutes 51 seconds for a distance of 388·06 links; thence further on the south by a line bearing south-easterly 101 degrees 20 minutes 36 seconds for a distance of 195·9 links to the western extremity of Good Hope-street; and thence further on the east by Good Hope-street, being a line bearing north-easterly 26 degrees 25 minutes for a distance of 103·56 links, to the point of commencement, and being a strip of land one chain in width, said to be the property of J. R. Street.

Also, all that piece or parcel of land containing by admeasurement 1 rood 27 perches and six-tenths of a perch, situate in the parish of Alexandria, county of Cumberland, and Colony of New South Wales aforesaid: Commencing at a point on the western boundary of Alma-street, being the first angle in that street after it leaves Glenmore Road, and distant from said road about 280 links; and bounded thence on the south by lines bearing north-westerly 302 degrees 34 minutes and 96 degrees 43 minutes 37 seconds for distances of 141·63 links and 241·12 links respectively to Good Hope-street; thence on the west by the eastern boundary of that street, being a line bearing north-easterly 9 degrees 40 minutes 40 seconds for a distance of 47·3 links, and by a line curving westerly, having a radius of 66 feet for a distance of 54·3 links; thence on the north by lines bearing south-easterly 95 degrees 43 minutes and 97 degrees 11 minutes 52 seconds for distances of 116·8 links and 271·66 links respectively to Alma-street; and thence on the east by the western boundary of that street, being a line bearing south-westerly 11 degrees 20 minutes 30 seconds for a distance of 162·25 links, to the point of commencement, and said to be the property of J. H. Cole.

In witness whereof, I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this fifteenth day of March, in the year of our Lord one thousand eight hundred and eighty-nine, and in the fifty-second year of Her Majesty's Reign.

By His Excellency's Command,

BRUCE SMITH.

GOD SAVE THE QUEEN!

1889.

NEW SOUTH WALES.

LANDS FOR PUBLIC PURPOSES ACQUISITION ACT.

(RESUMPTION, FOR EXTENSION OF SHEA'S CREEK CANAL.)

Presented to Parliament, pursuant to Act 44 Vic. No. 16 sec. 6.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable CHARLES ROBERT, BARON CARRINGTON, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.) CARRINGTON, *Governor.*

WHEREAS the Minister for Public Works is desirous of extending the navigable channel of Shea's Creek on the land described in the Schedule at the foot hereof, and for the purpose of confining the waters thereof within defined limits; and it is estimated that the cost of carrying out the said works will not exceed the sum of nineteen thousand nine hundred pounds: And whereas, under the provisions of the Public Works Act of 1888, I, the Governor aforesaid, with the advice of the Executive Council, have in due form directed that the said works shall be carried out under the provisions of the said Act by the Minister for Public Works aforesaid, who, in respect of the said works, I have declared shall be deemed to be the constructing authority; and also, that the land required for carrying out the said works shall be acquired under the provisions of the said Act: And whereas the land described in the Schedule at the foot hereof is the land required for carrying out the said works: Now, therefore, I, CHARLES ROBERT, BARON CARRINGTON, the Governor aforesaid, by this notification, to be published in the Government Gazette, do declare that the said land in the said Schedule described has been and is hereby appropriated for the purpose of making the channel of Shea's Creek navigable and abating the nuisance arising from its present undefined limits. To the intent that upon the publication of this notification in the Gazette, the legal estate in the said land hereafter described shall forthwith be vested in the Minister for Public Works, as the constructing authority on behalf of Her Majesty, under the provision in that behalf in the 21st section of the said Public Works Act of 1888: And I declare the following is the description of the lands hereinbefore referred to, that is to say:—

1st. All that piece or parcel of land situated in the parish of Alexandria, county of Cumberland, and Colony of New South Wales, being part of a grant of 1,400 acres to William Hutchinson, known as part of the Waterloo Estate, and containing 20 acres 2 roods 24 perches or thereabouts: Commencing at a point on the northern boundary of a grant of 12 acres 2 roods to P. and T. M'Guire, distant westerly 760·6 links from the north-eastern corner of the said grant to M'Guire; and bounded thence on the west by other part of the grant to W. Hutchinson, as follows:—By 539·38 links of a concave curve of 2,968·17 links radius, the chord of which bears north 55 degrees 56 minutes east 538·5 links; then north 61 degrees 8 minutes east 1,234·34 links; then by 733·56 links of a convex curve of 2,431·8 links radius, the chord of which bears north 52 degrees 29 minutes east 730·77 links; then south 46 degree 9 minutes east 1,136·3 links; then by 1,037·5 links of a concave curve of 3,568 18 links radius, the chord of which bears south 52 degrees 11 minutes west 1,033·8 links; then by a line bearing south 89 degrees 56 minutes west to the eastern boundary of the aforesaid grant of 12 acres 2 roods to P. and T. M'Guire; thence on the west and south by that grant, to the point of commencement, and said to be in possession of W. Cooper, and in the occupation of Hop Kee and others not yet ascertained.

2nd. Also, all that piece or parcel of land situated in the parish of Botany, county of Cumberland, and Colony of New South Wales, being part of a parcel of land adjoining the Gardener's Road on the northern side, grantee unknown: Commencing on the northern side of Gardener's Road, at a point distant 6,668 links westerly from its intersection with the western side of the Botany Road; and bounded thence on the east by 217 links of a concave curve of 1,831·81 links radius, the chord of which bears north 57 degrees 49 minutes east 213·12 links; then north 61 degrees 8 minutes east 1,234·34 links; then by 39·12 links of a convex curve of 3,568·18 links radius, the chord of which bear north 60 degrees 49 minutes east 39 links; thence on the north by a line bearing south 89 degrees 56 minutes west to the eastern boundary of Collins' 12 acres 2 roods grant; thence on the west by that grant southerly to the northern side of Gardener's Road; thence on the south by that road bearing north 89 degrees 47 minutes east 660·6 links, to the point of commencement,—containing 6 acres 2 roods 21 perches, or thereabouts. Owners and occupiers unknown.

3rd. All that piece or parcel of land situated in the parish of Petersham, county of Cumberland, and Colony of New South Wales, containing 10 acres 0 roods 26¾ perches or thereabouts, being part of portion 11: Commencing on the north-east side of a road 50 links wide from Botany to Newtown, known as Ricketty-street, at a point on the northern side of the said road, distant 269 5 links south-easterly from the southern corner of portion 10 of 4 acres 1 rood; and bounded thence on the west by other part of the said portion 11 as follows:—Bearing north 24 degrees 23 minutes east 98·5 links; then by 1,364 links of a concave curve of 2,968·17 links radius, the chord of which bears north 37 degrees 36 minutes east 1,352·14 links; thence on the north by W. Hutchinson's 1,400 acres bearing easterly 760 6 links to the foot of the embankment; on the south-east by that embankment south-westerly to Shea's

Creek; and by Shea's Creek downwards, dividing it from T. Walker's 11 acres and from part of T. Walker's 12 acres, to its intersection with the aforesaid road known as Ricketty-street; and on the south-west by that road, dividing it from part of portion 8 of 4 acres and 1 rood, bearing north 46 degrees 52 minutes west 601½ links, to the point of commencement,—being part of the land sold in pursuance of the proclamation of the 21st February, 1859, and said to be in the possession and occupation of — Collins.

4th. All that piece or parcel of land situated in the parish of Botany, county of Cumberland, and Colony of New South Wales, containing 3 acres 2 roods and 30 perches or thereabouts, being part of a grant of 11 acres to Thomas Walker: Commencing at a point on the southern side of a road 1 chain wide, known as Gardener's Road, distant westerly 6,781½ links from its intersection with the western side of the Botany Road; and bounded thence on the east by other part of the said grant, being 648·48 links of a convex curve of 1,831·81 links radius, the chord of which bears south 39 degrees 11 minutes west 645·4 links; thence on the south by T. Walker's 12 acres grant bearing north 89 degrees 10 minutes west 585½ links to Shea's Creek; thence on the west by that creek northerly to the southern side of the Gardener's Road aforesaid; thence on the north by that road easterly 931 links, to the point of comment, being part of the land sold as lot No. 80, in pursuance of the advertisement of the 11th May, 1839, and said to be in the possession and occupation of T. Walker.

5th. All that piece or parcel of land situated in the parish of Botany, county of Cumberland, and Colony of New South Wales, containing 1 acre 1 rood and 20 perches or thereabouts, being part of a grant of 12 acres to Thomas Walker: Commencing on the northern side of a road 50 links wide, known as Ricketty-street, at its intersection with Shea's Creek; and bounded on the south by that road bearing easterly 508·32 links; thence on the east by other part of the said grant as follows,—North 24 degrees 27 minutes east 151·76 links, then by 150 links of a convex curve of 1,831·81 links radius, the chord of which bears north 26 degrees 58 minutes east 149·74 links; thence on the north by a grant of 11 acres to T. Walker, bearing westerly 585½ links to Shea's Creek; thence on the west by that creek, to the point of commencement, being part of the land sold as lot 81 in pursuance of the advertisement of the 11th May, 1839, and said to be in the possession and occupation of — Keep.

Given under my Hand and Seal of the said Colony, at Government House, Sydney, this thirteenth day of June, in the year of our Lord one thousand eight hundred and eighty-nine, and in the fifty-second year of Her Majesty's Reign.

By His Excellency's Command,

BRUCE SMITH.

GOD SAVE THE QUEEN!

Sydney: Charles Potter, Government Printer.—1889.

[3d.]

1889.

NEW SOUTH WALES.

LANDS FOR PUBLIC PURPOSES ACQUISITION ACT.

(RESUMPTION OF LAND FOR SEWERAGE, CITY OF SYDNEY AND SUBURBS.)

Presented to Parliament, pursuant to Act 44 Vic. No. 16, sec. 6.

NOTIFICATION OF RESUMPTION OF LAND UNDER 44 VICTORIA No. 16.

NEW SOUTH WALES, to wit. } By His Excellency The Right Honourable CHARLES ROBERT, BARON CARRINGTON, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.) CARRINGTON, *Governor.*

WHEREAS I, the Governor aforesaid, with the advice of the Executive Council of the said Colony, have duly sanctioned the carrying out of certain works for and in connection with the Sewerage of the City of Sydney and its Suburbs, in the said Colony, for and towards the completion of which said works public funds are available under the provisions of the Loans Act 52 Vic. No. 17: And whereas the land hereinafter described is required for the construction of the said works: Now I, the Governor of the said Colony, with the advice of the Executive Council of the said Colony, in pursuance of the powers in this behalf given to or vested in me by the "Lands for Public Purposes Acquisition Act," do, by this notification published in the Gazette and in a newspaper, that is to say, in the "Sydney Morning Herald," circulated in the Police District wherein the said land is situated, declare that the land hereinafter described has been resumed for the public purpose hereinafter mentioned, that is to say, for and in connection with the Sewerage of the said City of Sydney and its Suburbs, to the intent that upon the publication of this notification in the Gazette, the legal estate in the said land shall forthwith be vested in the Minister for Public Works and his successors, on behalf of Her Majesty, for the purpose of the said last-mentioned Act, for an estate of inheritance in fee simple in possession, freed and discharged from all trusts, obligations, estate, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the intent, further, that the legal estate therein, together with all powers incident thereto or conferred by the said Act, shall be vested in the said Minister as a trustee with the powers stated in the said last-mentioned Act: And I declare that the following is the description of the land hereinbefore referred to, that is to say:—

All that piece or parcel of land containing by admeasurement 5 perches and three-fifths of a perch more or less, situated in the parish of Alexandria, county of Cumberland, and Colony of New South Wales, and being part of allotment number eight, section fifteen, on the plan of the subdivision of the Underwood Estate deposited in the Lands Titles Office, Sydney, and numbered 238: Commencing at the south-east corner of allotment 8 on the said plan; thence bounded on the south-west by a line, being the south-west boundary of said allotment 8, bearing north-west 309 degrees 21 minutes for a distance of 154·4 links to Point Piper-lane; thence bounded on the north-west by the south-eastern boundary of that lane, being a line bearing north-east 27 degrees 3 minutes 39 seconds for a distance of 23·26 links; thence bounded on the north-east by a line bearing south-east 129 degrees 21 minutes for a distance of 154·6 links to Point Piper Road; and thence bounded on the south-east by the north-western boundary of that road, being a line bearing south-west 207 degrees 34 minutes 30 seconds for a distance of 23·21 links, to the point of commencement, and said to belong to H. Zions.

In testimony whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this seventeenth day of June, in the year of our Lord one thousand eight hundred and eighty-nine, and in the fifty-second year of Her Majesty's Reign.

By His Excellency's Command,

BRUCE SMITH.

GOD SAVE THE QUEEN!

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

MANLY DRAINAGE WORKS BILL.

(MESSAGE No. 7.)

Ordered by the Legislative Assembly to be printed, 4 April, 1889.

CARRINGTON, *Message No. 7.*

Governor.

In accordance with the provisions contained in the 54th section of the Constitution Act, the Governor recommends, for the consideration of the Legislative Assembly, the expediency of making provision to meet the requisite expenses in connection with a Bill to sanction the carrying out of certain drainage works at Manly, in the county of Cumberland.

Government House,

Sydney, 4th April, 1889.

[3*d.*] 124—

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

NORTH SHORE DRAINAGE WORKS BILL.

(MESSAGE No. 5.)

Ordered by the Legislative Assembly to be printed, 4 April, 1889.

CARRINGTON, *Message No. 5.*

Governor.

In accordance with the provisions contained in the 54th section of the Constitution Act, the Governor recommends, for the consideration of the Legislative Assembly, the expediency of making provision to meet the requisite expenses in connection with a Bill to sanction the carrying out of certain drainage works on the North Shore of Port Jackson, in the county of Cumberland.

Government House,

Sydney, 4th April, 1889.

[3d.] 122—

1889.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

WESTERN SUBURBS OF SYDNEY DRAINAGE BILL.

(MESSAGE No. 59.)

Ordered by the Legislative Assembly to be printed, 26 *September*, 1889.

CARRINGTON, *Message No.* 59.

Governor.

In accordance with the provisions contained in the 54th section of the Constitution Act, the Governor recommends for the consideration of the Legislative Assembly the expediency of making provision to meet the requisite expenses in connection with a Bill to sanction the carrying out of certain drainage works for the Western Suburbs of the City of Sydney.

Government House,

Sydney, 26*th September*, 1889.