AR1940

TASMANIA

REPORT

OF THE

DIRECTOR OF MINES

FOR

YEAR ENDING 31ST DECEMBER

1940

WITH REPORTS OF THE GEOLOGICAL SURVEY, CHIEF CHEMIST AND METALLURGIST, ACTING CHIEF INSPECTOR OF MINES, ACTING CHIEF INSPECTOR OF EXPLOSIVES, DISTRICT INSPECTORS OF MINES, AND THE MOUNT CAMERON WATER-RACE BOARD.

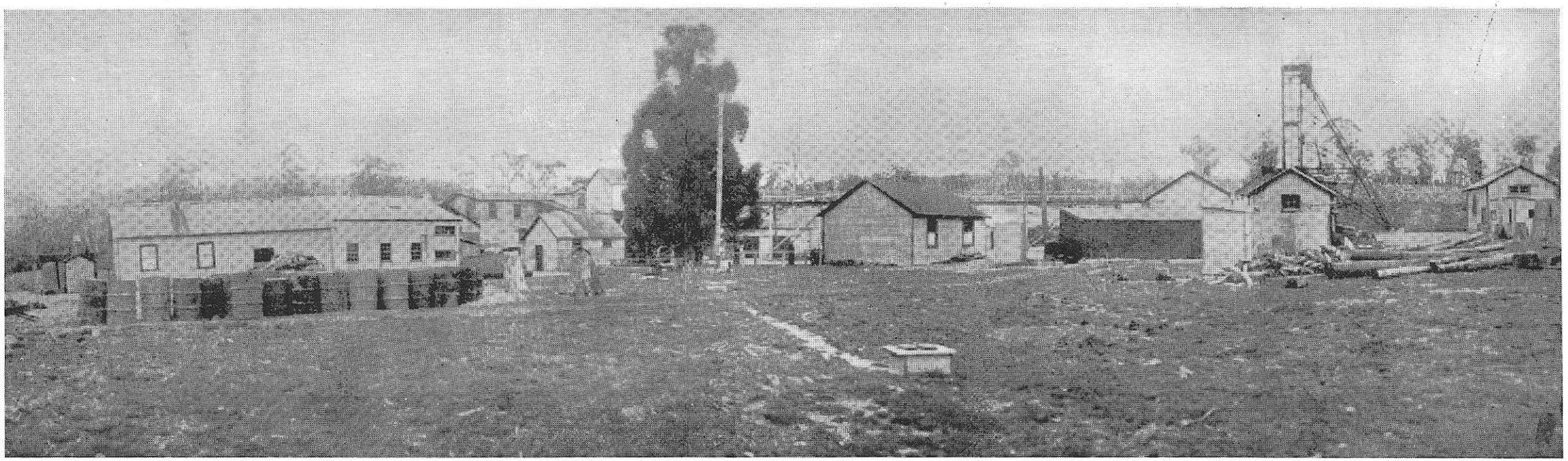
Presented to both Houses of Parliament by His Excellency's Command.

TASMANIA:
H. H. PIMBLETT, GOVERNMENT PRINTER, HOBART

1941

12262

SURFACE EQUIPMENT AT ABERFOYLE TIN NO LIABILITY—ROSSARDEN.



Ore mined and milled, 16,653 tons. Concentrates produced, Tin, 326·2 tons; Wolfram, 23·2 tons. Concentrates sold from stock, Tin, 358·47 tons; Wolfram, 20·18 tons. Gross sale value, £72,101·5. Dividends paid, £12,501. Men employed, 125.

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REPORT OF THE DIRECTOR OF MINES.

Department of Mines,
Hobart.

SIR,

I HAVE the honour to present my report on the Mining Industry of the State for the year ended 31st December, 1940.

MINERAL PRODUCTION.

Progressive activities and inclining metal prices produced a new high-level in the value of mining products, and afforded direct employment to an average of 6000 men.

The value of the output of minerals and mineral products was £3,782,161 in Australian currency, representing an increase of £804,346 in the value of production for 1939. Substantial increases in production and value were recorded in respect of lead, osmiridium, silver, tungsten ores, tin, and zinc. Quantity decreases occurred in the case of coal, copper, gold, silica, pyrites, and grouped carbide, cement, and limestone, but the aggregate value of these products was well sustained.

The Electrolytic Zinc Company of Australasia Limited was in continuous operation at Risdon in the processing of zinciferous calcines imported from other States and from selective treatment of Tasmanian ores. Production from imported calcines was 49,398 tons of slab zinc, valued at £1,031,429; 122·46 tons of cadmium, valued at £41,148; and 17·77 tons of cobalt oxide, valued at £8177. Calcines actually processed from Tasmanian ores returned 26,559 tons of slab zinc, valued at £556,293; 49·39 tons of cadmium, valued at £16,594; 1712 tons of lead, valued at £35,578; 299,837 oz. of silver, valued at £37,605; and 0·55 ton of cobalt oxide, valued at £253. An average number of 1283 men was employed at these works.

The Tasmanian ores resulted from continued exploitation of the extensive occurrences of complex zinc-lead sulphides at the Read-Rosebery mines on the West Coast, where an average number of 481 men was employed in mining and milling practices. The combined quantity of ore mined was 158,562 tons, and selective flotation resulted in the production of 56,257 tons of zinc and 14,353 tons of lead concentrates. The recoverable quantity of metallics was fixed at 9283 tons of lead, 26,126 tons of zinc, 50 tons of cadmium, 1,041,953 oz. of silver, and 11,211 oz. of gold.

The Mount Lyell Mining and Railway Company Limited continued to function as the major producer of copper, and the tonnage of crude ore treated was 1,191,782 tons, as compared with 1,105,749 tons for the previous year. The recorded output of copper was 11,572 tons, and, although this represented a quantity decrease, the actual value of the production of copper was substantially in excess of the output for the previous year, due to inclined copper prices. Activities by the Company were characterised by progressive advances in metallurgical and mining practices commensurate with the handling of a large volume of low grade ore.

Operations by this Company substantially added to the total output of gold and silver, and afforded direct employment to an average of 1084 men.

The strategic importance of copper attracted attention to other cupriferous areas, and trial parcels of ore were produced from north-western and eastern mining fields. Developments did not merge into any major operation, but a policy of structural examinations was designed for the purpose of affording a better conception of the prospective and productive merits of the series.

Lead production inclined to 13,550·85 tons, valued at £338,771 sterling, representing an increase of 2529·85 tons and £165,101 sterling compared with the previous year. This production was a record for any like period in the history of mining in the State.

Operations by the Electrolytic Zinc Company at the Read-Rosebery mines accounted for the greater portion of the recorded production.

The Mount Farrell Mining Company continued as an active producer of silver-lead concentrate, and added materially to the total output of lead. Crude ore amounting to 17,198 tons was mined and milled for a recovery of 4664 tons of concentrate, containing 3499 tons of lead and 404,794 oz. of silver, in addition to which, 846 tons of "firsts" was hand-picked from mined ore, and contained 498 tons of lead and 63,287 oz. of silver. The total output was substantially greater than that for the previous year, and operations afforded employment for 102 men.

Installation of milling units and plant electrification were completed at the Montana Silver Lead Mine at Zeehan, and 123·6 tons of silver-lead concentrates, containing 79·8 tons of lead and 9488 oz. of silver, were recovered from the treatment of 852 tons of mined ore.

At the Magnet Mine, attention was directed to prospecting the economic possibilities of the lode series below the old productive workings. Designed work was completed, but, although several occurrences of ore were located, the developments were not of sufficient economic importance to warrant a resumption of productive mining, and the workings were abandoned.

Conditions of marketing of silver-lead ores did not favour the conditions associated with productive activities at small mines and by small parties, consequently there was less activity in these directions.

Production of tin ores was augmented by improved metal prices and vigorous productive policies of major companies. Metallic tin in the product from lode and alluvial operations was

1430 tons, valued at £367,127 sterling, and constituted a new high-level in output and value for the past 21 years.

The Briseis Consolidated and the Endurance Company, operating on tin alluvials; the Aberfoyle Tin No Liability, operating on a lode series; and the Bischoff Company, mainly as the result of activities by tribute parties, continued as the principal producers. These operations resulted in an output of 1050 tons of metallic tin valued at £269,516 sterling.

Quarrying of tin granites was actively pursued by a tribute party at the old Anchor Mine at Lottah; the Goshen Tin Mining Company continued with sluicing at several faces in the St. Helens district; and quantities of tin oxide resulted from operations on the wolfram-tin lode at the Storey's Creek Mine.

Small mines, miscellaneous parties, and individuals, operating on alluvial, lode, and granitic occurrences throughout the State, were of collective importance in tin mining. These activities afforded employment for 494 men, and accounted for an output of 287 tons of metallic tin, valued at £73,695 sterling.

In quantity and value, silver continued as an important product, the recorded output advancing to 1,608,681 oz., valued at £161,447 sterling, representing an increase of 330,565 oz. and £43,137 sterling compared with the production for the previous year.

Operations by the Electrolytic Zinc Company, at Rosebery, and the Mount Lyell Company, at Queenstown, contributed largely to the total production, but the output was substantially augmented by silver-lead ores from the Farrell Mine, at Tullah, limited operations at the Montana Silver Lead Mine, at Zeehan, and activities by miscellaneous parties.

The average price of tungsten ores declined from £271 to £250, but the aggregate output of scheelite and wolfram increased to 509·78 tons, valued at £91,439 sterling.

Increased productive activity characterised operations at the King Island Scheelite Mine, and resulted in an output of 275·48 tons of scheelite, valued at £49,120 sterling, compared with 171 tons, valued at £33,301, for the previous year.

Operations at the Storey's Creek Mine were mainly directed to the production of wolfram, but, in addition to the recovery of 209·6 tons of high-grade wolfram, tin concentrate recovered from the milling of 12,676 tons of wolfram-tin ores contained 33·5 tons of metallic tin. Sinking was continued to 151 feet below No. 4 level, and lode developments were satisfactorily maintained.

A progressive policy of mine development and milling practices was continued at the Aberfoyle Mine, and these operations, together with activities at small mines, in the north-western portion of the State, contributed to the total output of 234·3 tons of wolfram.

The recorded output of gold was 19,171 oz., valued at £161,035 sterling, representing a slight decline in production but an increase in value as compared with the previous year.

The major portion of the gold was recovered from copper ores mined by the Mount Lyell Company and from zinc-lead ores produced by the Electrolytic Zinc Company from the Read-Rosebery mines, but quantities of moment to the industry accrued from the working of auriferous alluvials, the crushing of lode quartz, the treatment of mine dumps, the cyanidation of tailings, and from the treatment of tin-oxides recovered from the sluicing of gold-bearing stanniferous alluvials.

The quantity of pyrites recovered from the selective flotation of copper ores and exported to the mainland for utilisation in the manufacture of fertilisers declined to 37,819 tons, valued at £47,274.

The market for osmiridium was more buoyant, and the output inclined to 464·74 oz. valued at £11,604 sterling. Adamsfield was the principal area of alluvial activities, but small lots continued to come forward from isolated operations on alluvials in the Savage River areas, and these latter activities contributed 106 oz. to the total output.

There was an increase in the export of silica, but less was used for fluxing and other purposes in connection with metallurgical operations in the State, and the output receded to 4329 tons.

The principal contributors to the production of carbide, cement, and limestone were the Australian Commonwealth Carbide Company at Electrona, the Goliath Portland Cement Company at Railton, and the Broken Hill Proprietary Company Limited at the Melrose limestone quarries. The total output of combined products was 333,182 tons, valued at £440,549.

Appreciation of the red granite at Coles Bay, as an ornamental stone, was expressed in the output which advanced to 330 tons, valued at £2031. Efforts are to be directed to developing trade contacts for an expansion in the use of the natural stones of Tasmania for building, ornamental, and monumental purposes. In addition to red granite, there are sandstones, porphyries, serpentines, and diabases, all of which have distinctive ornamental and structural merits.

Unsettled industrial conditions, in the early part of the year, contributed to the output of coal receding to 83,136 tons, valued at £63,688.

The Cornwall Company continued as the major producer. An output of 47,020 tons resulted from the normal advancement of places and some pillar extraction at the Cornwall Colliery. Mechanisation of coal-winning was completed at the Mount Nicholas Colliery, and a brief period of mechanised activity resulted in an output of 1171 tons of coal.

Main heading development was continued at the Jubilee Colliery, but mining was less active, and the output declined to 14,727 tons, valued at £10,427.

The balance of the production resulted from operations at small collieries in the southern, eastern, and north-western districts.

Developmental and productive activities at the mines and works are reviewed by the district inspectors in the appended reports.

SHALE.

Following the results of experimentation which demonstrated that asphalt can be produced from oil-shales of the Mersey Valley and that the asphalt is admirably suited for road-sealing and other commercial applications, attention was directed to field investigations and the conduct of a drilling campaign to determine a mineable area of shale, for the purpose of an assured production for a reasonable period and for obtaining data to logically control the location of a plant site. This work was proceeding at the close of the year.

QUANTITY AND VALUE OF MINERALS.

STATISTICS RELATING TO THE MINING INDUSTRY FOR THE YEAR ENDING 31ST DECEMBER, 1940.

Mineral.	Mineral Divisions.					Total Quantity.	Value.
	Northern and Southern.	Eastern.	North-Eastern.	North-Western.	Western.		
							£
Barytes .... (tons)	....	....	....	....	36	36	58
Bismuth .... (tons)	....	....	....	·550	·015	·565	270
Coal .... (tons)	3524	74,419	....	5193	....	83,136	63,688
Copper .... (tons)	....	1·2	....	·546	11,570·254	11,572	717,464
Cadmium .... (tons)	....	....	....	....	50	50	18,242
Carbide, Cement, and Limestone .... (tons)	23,941	....	....	303,759	5,482	333,182	440,549
Gold .... (fine oz.)	355·693	65·88	80·612	60·607	18,608·176	19,170·968	161,035
Granite (Red) .... (tons)	....	330	....	....	....	330	2,031
Graphite .... (tons)	....	....	....	5	....	5	8
Iron Ore .... (tons)	....	....	....	1167	....	1167	1,873
Kaolin .... (tons)	22	....	....	813·5	....	835·5	988
Lead .... (tons)	....	....	....	169·65	13,381·2	13,550·85	338,771
Osmiridium .... (oz.)	358·583	....	....	106·157	....	464·740	11,604
Pyrites .... (tons)	....	....	....	....	37,819	37,819	47,274
Red Oxide .... (tons)	....	....	....	3·5	....	3·5	9
Scheelite .... (tons)	....	....	....	275·48	....	275·48	49,120
Silica .... (tons)	354	....	....	186	3789	4329	1,522
Silver .... (fine oz.)	....	111	....	28,658	1,579,912	1,608,681	161,447
Tin .... (tons)	8·760	468·046	742·953	135·579	74·860	1,430·198	367,127
Wolfram .... (tons)	....	229·6	....	4·614	·09	234·304	42,319
Zinc .... (tons)	....	....	....	....	26,126	26,126	711,931
Total Value	....	....	....	....	....	....	£3,137,330
Total Value Australian Currency	....	....	....	....	....	....	£3,782,161
Average Number of Men Employed	1676	656	452	670	2546	6000	....

The Electrolytic Zinc Company of Australasia Limited recovered 49,398 tons of zinc, valued at £1,031,429; 122·4636 tons of cadmium, valued at £41,148; and 17·7767 tons of cobalt oxide, valued at £8177, from other than Tasmanian ores and employed an average of 1,283 men at Risdon.

ASBESTOS.

RETURN showing the Quantity and Value of Asbestos produced from 1899 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1899	200	363
1900	128	113
1901	46·5	45
1902–1915	—	—
1916	15	30
1917	271	271
1918	2854	5008
1919	51	1275
1920–1936	—	—
1937	2	29
1938	4·25	68
1939	—	—
1940	—	—
Total	3571·75	£7202

BARYTES.

RETURN showing the Quantity and Value of Barytes produced during the Years 1916 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1916	83	359
1917	52	234
1918	217	977
1919	399	1160
1920	1048	4163
1921–1924	—	—
1925	3·5	16
1926–1928	—	—
1929	9·5	24
1930–1932	—	—
1933	5	15
1934–1935	—	—
1936	33	66
1937	76	174
1938	—	—
1939	—	—
1940	36	58
Total	1962	£7246

BISMUTH.

RETURN showing the Quantity and Value of Bismuth produced from 1904 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1904	·3	15
1905	3·5	800
1906	·3	24
1907	·175	27
1908	3·75	462
1909	2·9	980
1910	10·70	4249
1911	14·395	5758
1912	7·59	2646
1913	5·08	1627
1914	5·619	1666
1915	5·5	1203
1916	3·51	1059
1917	4·212	895
1918	4·608	1038
1919	1·77	573
1920	·10	9
1921	·05	21
1922	—	—
1923	—	—
1924	—	—
1925	—	—
1926	—	—
1927	—	—
1928	—	—
1929	—	—
1930	·97	475
1931	1·75	1015
1932	1·02	541
1933	1·32	705
1934	—	—
1935	·328	146
1936	—	—
1937	·22	78
1938	·871	396
1939	·623	296
1940	·565	270
Total	81·726	£26,974

COAL.

RETURN showing the Quantity and Value of Coal raised from 1880 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1880 to 1903 inclusive	767,261·5	659,010
1904	61,109	51,942
1905	51,993	44,194
1906	52,895·75	44,962
1907	58,891	50,057
1908	61,067·75	51,907
1909	66,161·75	56,237
1910	82,445	48,609
1911	57,067	26,214
1912	53,560	24,568
1913	55,043	25,367
1914	60,794	27,853
1915	64,536·25	30,418
1916	55,575	27,736
1917	63,412	38,673
1918	60,163	37,676
1919	66,253	47,004
1920	75,429	64,005
1921	66,476	63,446
1922	69,238	61,016
1923	80,718	70,797
1924	75,988	66,555
1925	81,698	70,424
1926	102,358	90,401
1927	112,056	99,802
1928	128,500	106,558
1929	130,291	105,877
1930	138,716	110,253
1931	123,828	98,004
1932	111,853	86,733
1933	116,573	85,848
1934	113,633	81,262
1935	123,714	86,204
1936	132,264	92,269
1937	91,121	66,883
1938	83,753	61,991
1939	99,392	74,460
1940	83,136	63,688
Total	5,878,963	£2,998,903

CADMIUM.

The quantity recovered was 50 tons valued at £18,242, compared with 48 tons valued at £16,249 for 1939.

RETURN showing the Quantity and Value of Cadmium Recovered for the Years 1936 *to* 1940.

Year.	Quantity.	Value.
	Tons.	£
1936	33·64	10,799
1937	45	18,161
1938	49	18,636
1939	48	16,249
1940	50	18,242
Total	225·64	£82,087

COPPER.

The production for the year was 11,572 tons, valued at £717,464.

RETURN showing the Quantity and Value of Copper in Blister Copper and Copper Ore during the Years 1919 *to* 1940 *inclusive.*

Year.	In Blister Copper.		In Copper Ore.		Total	
	Q'ty.	Value.	Q'ty.	Value.	Q'ty.	Value.
	Tons.	£	Tons.	£	Tons.	£
1919...	5014	503,977	13	984	5027	504,961
1920...	4791	528,177	·75	60	4791·75	528,237
1921...	6171	462,876	9·843	287	6180·843	463,163
1922...	5616	391,535	—	—	5616	391,535
1923...	6063	435,282	1·7	131	6064·7	435,413
1924...	6698	457,386	—	—	6698	457,386
1925...	6539	436,661	—	—	6539	436,661
1926...	6915	454,854	—	—	6915	454,854
1927...	5811	362,988	—	—	5811	362,988
1928...	6421	444,802	—	—	6421	444,802
1929...	8689	740,985	—	—	8689	740,985
1930...	9940	620,578	—	—	9940	620,578
1931...	9833·1	416,309	—	—	9833·1	416,309
1932...	10,995	399,646	3·2	116	10,998·2	399,762
1933...	10,734	395,109	5	177	10,739	395,286
1934...	8202	267,126	6·5	216	8208·5	267,342
1935...	13,036	464,007	—	—	13,036	464,007
1936...	13,040	556,734	—	—	13,040	556,734
1937...	12,382	757,311	37·92	2021	12,419·92	759,332
1938...	12,700·6	578,893	28·802	1345	12,729·402	580,238
1939...	13,453	668,561	—	—	13,453	668,561
1940...	11,570·2	717,356	1·746	108	11,572	717,464
Total	194,613·9	11,061,153	108·461	5445	194,722·415	11,066,598

The Mount Lyell Mining and Railway Company Limited Return for the Calendar Year 1940.

Ore and metal-bearing material smelted:— Source of Material.	Tons (Dry).
Ore:—From the Company's North Lyell Mine	9,787
Concentrates:—From the Company's North Lyell Mine, Lyell Comstock Mine, Crown Lyell Mine, and West Lyell Mines ore	50,883
Purchased ore	31
Total	60,701

Source of Material.	Tons (Dry).
Limestone delivered to works (tons)	5,482
Silica delivered at works	3,789
Pyritic concentrate shipped from Regatta Point (tons), approximate value £62,847	37,819

Blister copper produced, 11,652 tons, containing:

Copper (tons)	11,572	Approximate value £A938,043
Silver (oz.)	58,677	
Gold (oz.)	7,260	

Average number of men employed—

Mining Department—At the Company's		
North Lyell Mine	153	
Ditto, Lyell Comstock Mine	151	
Ditto, Crown Lyell Mine	44	
Ditto, Royal Tharsis Mine	28	
Ditto, West Lyell Mines	416	
Miscellaneous	200	
		992
Reduction Works Department (including Lake Margaret)		688
Railway Department—Mount Lyell Railway		124
Total		1,804

Copper produced from the inception of the Company to the 31st December, 1940, 353,205 tons.

Silver produced from the inception of the Company to the 31st December, 1940, 15,204,150 oz. (fine).

Gold produced from the inception of the Company to the 31st December, 1940, 459,553 oz. (fine).

Dividends paid during the year, £155,000 = 2s. per share.

Dividends paid from the inception of the Company to the 31st December, 1940, £6,142,819.

CEMENT, CARBIDE, AND LIMESTONE.

The combined value of output from these three industries amounted to £440,549, as compared with £511,735 for 1939.

GOLD.

The quantity won was 19,170·968 oz., fine, valued at £161,035, as compared with 19,984·066 oz., valued at £154,471 for 1939.

RETURN showing the Quantity and Value of Gold won from 1880 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Oz.	£
1880 to 1903 inclusive	1,265,836·95	4,905,706
1904	65,921	280,015
1905	73,540·5	312,380
1906	60,023·4	254,963
1907	65,354·25	277,607
1908	57,085·1	242,482
1909	44,777·366	190,201
1910	37,048·053	157,370
1911	31,100·873	132,108
1912	37,973·252	161,300
1913	33,400·457	141,876
1914	26,243·453	111,475
1915	18,547·338	78,784
1916	15,790·096	67,072
1917	14,496·464	61,577
1918	10,528·930	44,724
1919	7,686·470	32,650
1920	6,246·192	29,796
1921	5,340·094	28,395
1922	3,431·486	15,998
1923	3,684·124	16,639
1924	4,625·600	21,563
1925	3,523·870	15,041
1926	4,222·748	17,936
1927	4860·7	20,646
1928	3603·43	15,306
1929	5596·88	23,772
1930	4466·61	18,976
1931	4759·59	22,118
1932	5937·17	34,943
1933	6672·74	41,783
1934	5622·26	38,930
1935	8342·68	59,255
1936	17,600·47	123,383
1937	20,276·31	143,138
1938	22,199·961	158,022
1939	19,984·066	154,471
1940	19,170·968	161,035
Total	2,045,521·865	£8,613,436

IRON PYRITES.

RETURN showing the Quantity and Value of Iron Pyrites produced during the Years 1915 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1915	12,835·59	8945
1916	14,005·084	13,597
1917	7,685·549	7137
1918	5,105·600	4667
1919	3,456·95	4288
1920	4,440	7346
1921	606·5	2579
1922	8,276	18,620
1923	11,882	26,737
1924	—	—
1925	—	—
1926	—	—
1927	—	—
1928	—	—
1929	—	—
1930	—	—
1931	506·7	253
1932	274	150
1933	1498	1498
1934	12,030	12,030
1935	25,555	25,555
1936	33,711	33,711
1937	40,630	43,723
1938	50,277	62,845
1939	54,229	67,786
1940	37,819	47,274
Total	324,822·973	£388,741

LEAD.

The output was 13,550·85 tons, valued at £338,771, as compared with 11,020·96 tons, valued at 173,670 for 1939.

RETURN showing the Quantity and Value of Lead included in Silver-Lead during the years 1919 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1919	2357·142	64,403
1920	3855·639	142,268
1921	1434·794	32,241
1922	4925·880	118,257
1923	4784·057	127,542
1924	4559·110	154,881
1925	5525·99	197,452
1926	5892·58	183,167
1927	5583·12	135,403
1928	4786·78	101,616
1929	5983	138,793
1930	4237·84	77,590
1931	2189·47	29,024
1932	2694·06	32,637
1933	2644	30,987
1934	1507	16,723
1935	1488	21,390
1936	7563·04	134,413
1937	9116·62	212,492
1938	10,652·21	163,102
1939	11,020·96	173,670
1940	13,550·85	338,771
Total	116,352·142	£2,626,822

LIMESTONE.

RETURN showing the Quantity and Value of Limestone produced during the Years 1923 *to* 1936 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1923	100,113	122,428
1924	146,140	146,140
1925	124,670	124,670
1926	153,707	153,219
1927	169,522	167,373
1928	98,654	79,050
1929	68,176	66,597
1930	100,251	94,977
1931	55,268	49,490
1932	90,335	18,725
1933	110,347	33,048
1934	174,757	44,877
1935	254,438	68,357
1936	262,301	71,243
Total	1,908,679	£1,240,194

NICKEL.

RETURN showing the Quantity and Value of Nickel produced from 1927 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1927	86·2	14,656
1928	10	1697
1929	85·44	14,765
1930	11·76	1999
1931	0·2	45
1932	0·55	136
1933	8·65	1948
1934	—	—
1935	—	—
1936	—	—
1937	—	—
1938	19·75	3604
1939	—	—
1940	—	—
Total	222·55	£38,850

OCHRE.

RETURN showing the Quantity and Value of Ochre produced during the Years 1918 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1918	100	200
1919	—	—
1920	—	—
1921	14	56
1922	—	—
1923	—	—
1924	20	50
1925	—	—
1926	38	69
1927–1940	—	—
Total	172	£375

OSMIRIDIUM.

The quantity of metal won during the year was 464·740 oz., valued at £11,604, as compared with 283·65 oz., valued at £5015 for 1939.

RETURN showing the Quantity and Value of Osmiridium produced during the Years 1910 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Oz.	£
1910	120	530
1911	271·88	1888
1912	778·77	5742
1913	1261·65	12,016
1914	1018·83	10,076
1915	247·048	1581
1916	222·150	1899
1917	332·079	4898
1918	1606·743	44,833
1919	1669·715	39,614
1920	2009·196	77,114
1921	1750·655	42,935
1922	1173·924	35,512
1923	673·423	19,642
1924	364·805	10,617
1925	3365·543	103,570
1926	3172·5	61,908
1927	632·687	7456
1928	1627·186	42,458
1929	1360	30,624
1930	952·7	16,235
1931	1279·54	18,028
1932	784·95	9075
1933	548	4843
1934	487·7	4622
1935	235	2103
1936	280·6	3862
1937	586·42	9077
1938	190·87	2976
1939	283·065	5015
1940	464·740	11,604
Total	29,752·369	£642,353

The following table gives particulars of osmiridium won from Adamsfield since its discovery up to 31st December, 1940:—

Period.	Quantity.			Value.		
Quarter ending—	Oz.	dwt.	gr.	£	s.	d.
30th June, 1925	9	1	12	281	8	11
30th September, 1925	625	19	9	20,144	10	11
31st December, 1925	2238	5	9	68,757	1	4
31st March, 1926	992	13	7	23,339	0	1
30th June, 1926	633	12	20	12,202	18	4
30th September, 1926	862	18	16	8475	8	11
31st December, 1926	555	6	6	5539	1	3
31st March, 1927	203	9	11½	1909	5	7
30th June, 1927	142	3	9	1706	0	6
30th September, 1927	93	16	6	1132	1	6
31st December, 1927	113	10	8	1362	0	0
31st March, 1928	442	8	9	10,509	18	2
30th June, 1928	261	19	7	6529	9	1
30th September, 1928	551	16	2	15,350	18	0
31st December, 1928	293	5	0	7840	11	4
31st March, 1929	168	9	8	4147	6	4
30th June, 1929	262	7	16	5683	4	7
30th September, 1929	292	2	23	7905	14	9
31st December, 1929	313	2	17	6208	3	0
31st March, 1930	186	9	17	3278	17	0
30th June, 1930	67	6	11	1300	12	1
30th September, 1930	126	16	9½	1898	4	10
31st December, 1930	347	12	17	4302	11	5
31st March, 1931	240	19	14	4008	2	4
30th June, 1931	251	9	6	3104	14	9
30th September, 1931	251	10	15	3428	14	6
31st December, 1931	354	12	3	4741	11	10
31st March, 1932	250	5	21	3372	19	9
30th June, 1932	136	12	19	1504	8	9
30th September, 1932	80	19	3	869	2	8
31st December, 1932	123	7	18	1038	2	1
31st March, 1933	161	0	0	1368	0	0
30th June, 1933	162	0	0	1458	0	0
30th September, 1933	153	0	0	1364	0	0
31st December, 1933	60	0	0	540	0	0
31st March, 1934	148	5	0	1408	0	0
30th June, 1934	107	15	0	969	0	0
30th September, 1934	71	14	0	645	0	0
31st December, 1934	160	0	0	1600	0	0
31st March, 1935	40	0	0	350	0	0
30th June, 1935	12	0	0	108	0	0
30th September, 1935	127	9	10	1147	4	7
31st December, 1935	55	0	0	495	0	0
31st March, 1936	30	0	0	270	0	0
30th June, 1936	30	0	0	285	0	0
30th September, 1936	133	12	0	2004	0	0
31st December, 1936	65	0	0	1105	0	0
31st March, 1937	54	0	0	918	0	0
30th June, 1937	150	10	0	2709	0	0
30th September, 1937	48	10	0	897	0	0
31st December, 1937	76	1	15	723	0	0
31st March, 1938	28	10	0	413	0	0
30th June, 1938	13	0	0	174	0	0
30th September, 1938	33	7	0	540	0	0
31st December, 1938	97	7	0	1558	0	0
31st March, 1939	65	0	0	1105	0	0
30th June, 1939	100	5	0	1704	0	0
30th September 1939	48	0	0	816	0	0
31st December 1939	52	11	11	1051	0	0
31st March, 1940	124	3	0	2793	0	0
30th June, 1940	118	14	0	3412	0	0
30th September, 1940	62	0	0	1550	0	0
31st December, 1940	53	14	14	1075	0	0
Total	14,116	19	15	£278,426	9	2

SHALE.

RETURN showing the Quantity and Value of Shale produced during the Years 1910 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1910	364	214
1911	500	250
1912	—	—
1913	130	130
1914	75	75
1915	—	—
1916	1286	1286
1917	—	—
1918	—	—
1919	600	900
1920	140	172
1921	868	1506
1922	40	100
1923	1101	1094
1924	1576	1526
1925	820	559
1926	2127	1475
1927	3150	2050
1928	2595	1297
1929	4299	2982
1930	5428	3490
1931	1402	600
1932	1097	1074
1933	3401	1483
1934	3276	1630
1935	30	15
1936–1940	—	—
Total	34,305	£23,908

RETURN showing the Quantity of Oil Distilled from Shale.

Year.	Name of Company.	Gallons.
1910	Tasmanian Shale and Oil Company	4800
1915	Railton-Latrobe Shale Oil Co. N.L.	24,000
1927–1928	Australian Shale Oil Corporation	65,000
1929	Goliath Portland Cement Company	2200
1930	Goliath Portland Cement Company	20,101
	Tasmanite Shale Oil Company Ltd.	35,000
1931	Tasmanite Shale Oil Company Ltd.	31,915
1932	Tasmanite Shale Oil Company Ltd.	79,236
1933	Tasmanite Shale Oil Company Ltd.	56,958
1934	Tasmanite Shale Oil Company Ltd.	37,905
1935	Tasmanite Shale Oil Company Ltd.	—
1936–1940	Tasmanite Shale Oil Company Ltd.	—
	Total	357,115

SCHEELITE.

RETURN showing the Quantity and Value of Scheelite produced during the Years 1917 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1917	69	12,130
1918	216	39,252
1919	198·98	43,181
1920	105·09	17,905
1921–1937	—	—
1938	30·53	6193
1939	170·695	33,301
1940	275·48	49,120
Total	1065·775	£201,082

SILVER.

The output was 1,608,681 oz. (fine), valued at £161,477 as compared with 1,278,116 oz., valued at £118,310 for 1939.

RETURN showing the Quantity and Value of Silver contained in Silver-Lead, Blister Copper, Copper Ore, and Gold Ore during the Years 1919 *to* 1940 *inclusive.*

Year.	In Silver-Lead.		In Blister Copper.		In Copper Ore.		In Gold Ore.		Total.	
	Quantity.	Value	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Oz.	£	Oz.	£	Oz.	£	Oz.	£	Oz.	£
1919	296,719·27	71,831	228,624	53,733	...	...	...	...	525,343·27	125,564
1920	453,411	118,898	169,948	47,869	...	...	...	...	623,359	166,767
1921	165,637	27,181	183,021	30,395	...	...	...	...	348,658	57,576
1922	674,886	104,926	119,699	18,511	...	...	...	...	794,585	123,437
1923	516,073·61	73,742	122,528	17,597	...	...	...	...	638,601·61	91,339
1924	494,782	75,398	147,376	22,439	...	...	...	...	642,158	97,837
1925	597,012·67	86,283	133,181	19,226	...	...	...	...	730,193·67	105,509
1926	632,066	80,597	134,587	17,394	...	...	...	...	766,653	97,991
1927	640,575	75,135	101,207	11,889	...	...	...	...	741,782	87,024
1928	564,156	66,386	105,270	12,515	...	...	...	...	669,426	78,901
1929	714,930	78,252	149,424	16,308	...	...	...	...	864,354	94,560
1930	528,641	41,485	182,978	14,583	...	...	...	...	711,619	56,068
1931	242,950	16,104	148,782	9650	...	...	...	...	391,732	25,754
1932	301,854	24,399	161,634	12,905	...	...	...	...	463,488	37,304
1933	361,768	29,394	127,562	10,414	...	...	...	...	489,330	39,808
1934	194,747	18,401	89,940	8726	...	...	...	...	284,687	27,127
1935	191,044	24,780	132,857	17,543	...	...	...	...	323,901	42,323
1936	803,369	71,886	103,189	9150	...	...	...	...	906,458	81,036
1937	977,552	88,252	83,233	7518	...	...	...	...	1,060,785	95,770
1938	1,152,568	91,913	66,982	5758	...	...	...	...	1,219,550	104,671
1939	1,207,604	111,893	70,512	6417	...	...	...	...	1,278,116	118,310
1940	1,549,859	155,576	58,659	5854	119	13	44	4	1,608,681	161,447
Total	13,262,204·5	1,539,712	2,821,193	376,394	119	13	44	4	16,083,560·55	1,916,123

TALC.

RETURN showing Quantity and Value of Talc produced during the Years 1928 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1928	32	96
1929	23	45
1930	13·35	53
1931	15	58
1932	5	17
1933	8·75	22
1934	5·5	16
1935	—	—
1936	3	8
1937-1940	—	—
Total	105·6	315

TIN.

The output was 1430·198 tons, valued at £367,127, as compared with 1249·877 tons, valued at £282,798 for 1939.

RETURN showing the Quantity and Value of Tin exported from Tasmania from 1880 *to* 1904 *(compiled from Customs Returns only), Tin Ore produced during the Years* 1905 *to* 1918 *inclusive, and Metallic Tin produced during the Years* 1919 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1880 to 1904 inclusive	76,708·4	7,167,564
1905	3891·5	362,670
1906	4472·75	557,266
1907	4342·75	501,681
1908	4520·8	421,580
1909	4511·2	418,165
1910	3701·01	399,393
1911	3953·05	513,500
1912	3713·825	543,103
1913	4010·41	531,983
1914	2572·713	259,300
1915	2599·234	292,306
1916	2854·636	350,852
1917	2637·337	427,917
1918	2256·203	488,798
1919	1580·22*	395,794
1920	1310·411*	369,362
1921	790·395*	130,257
1922	679·440*	112,407
1923	1160·390*	236,955
1924	1108·450*	275,014
1925	1129·662*	297,515
1926	1096·16*	322,526
1927	1105·74*	317,593
1928	1140·14*	258,676
1929	640·36*	130,014
1930	511·77*	69,592
1931	588·83*	70,634
1932	793·92*	109,767
1933	957*	190,041
1934	952·49*	219,246
1935	1131*	258,919
1936	1004·06*	206,656
1937	1089·839*	260,673
1938	1278·617*	244,037
1939	1249·877*	282,798
1940	1430·198*	367,127
Total	148,474·847	£18,361,681

* Metallic Tin.

WOLFRAM.

RETURN showing the Quantity and Value of Wolfram produced during the Years 1899 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1899 to 1903 inclusive	57·25	2157
1904	15·5	1147
1905	32·25	2371
1906	19·75	1465
1907	40·75	4411
1908	4·5	338
1909	28·35	2494
1910	67·35	7280
1911	69·96	7769
1912	66·49	6601
1913	68·07	7040
1914	46·873	4327
1915	94·685	11,115
1916	106·265	16,910
1917	172·190	28,714
1918	155·362	27,239
1919	120·907	26,613
1920	70·89	13,626
1921	10·34	676
1922	19·26	1024
1923	96·86	6150
1924	54	2785
1925	174·170	14,658
1926	83·15	5265
1927	148·57	9886
1928	176·15	12,094
1929	151·86	18,358
1930	112·6	12,216
1931	0·29	16
1932	—	—
1933	104	7,301
1934	194·19	27,375
1935	232	29,345
1936	207·13	28,323
1937	291·04	71,643
1938	299·104	63,348
1939	227·604	44,356
1940	234·304	42,319
Total	4053·924	£568,755

ZINC.

RETURN showing the Quantity and Value of Zinc produced during the Years 1919 *to* 1940 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1919	285	13,110
1920	9·3	334
1921–1923	—	—
1924	2748·75	90,485
1925	3112·69	110,691
1926	5377·75	183,362
1927	6326·2	181,242
1928	7112	188,691
1929	6997	185,964
1930	943	19,322
1931–1935	—	—
1936	18,769	283,105
1937	23,481	525,824
1938	25,366	356,452
1939	25,021	366,176
1940	26,126	711,931
Total	151,674·69	£3,216,689

Electrolytic Zinc Company of Australasia Limited—

Return for the calendar year 1940:—

	Tons.
Production of slab zinc	48,858
Production of metallic cadmium	122·4636

The above is from ores other than Tasmanian.

The average number of men employed at Risdon was 1283.

West Coast Division.—The production on the West Coast properties during the year was:—

	Tons.
Slab zinc	26,126
Metallic cadmium	50

The average number of men employed was 494.

VALUE OF METALS AND MINERALS RAISED.

RETURN showing Value of Metals and Minerals Raised in Tasmania from 1880 *to* 1940 *inclusive.*

Mineral or Metal.	Value.
	£
Asbestos	7202
Barytes	7246
Bismuth	26,974
Cadmium	103,001
Carbide, Cement, and Limestone	1,858,413
Carbide to 1936 (now under Carbide, Cement, and Limestone)	1,212,207
Cement to 1936 (now under Carbide, Cement, and Limestone)	2,004,014
Coal	2,998,903
Cobalt	243
Copper (Blister) to 1918 (now shown under Silver and Copper)	13,778,527
Copper Matte	133,736
Copper Ore to 1918 (now under Copper)	577,873
Copper (from 1919)	11,066,598
Gold	8,613,436
Granite (red)	8348
Graphite	8
Ilmenite	1256
Iron Ore	27,610
Iron Pyrites	388,741
Kaolin	988
Lead (from 1919)	2,626,822
Limestone to 1936 (now under Carbide, Cement, and Limestone)	1,240,194
Nickel	38,850
Ochre	375
Osmiridium	642,353
Red Oxide	9
Scheelite	201,082
Silica	13,316
Shale	23,908
Silver-Lead to 1918 (now shown as Silver and Lead)	6,429,291
Silver	1,916,123
Talc	315
Tin	18,361,681
Wolfram	568,755
Zinc	3,216,689
Unenumerated prior to 1894	31,988
Total	£78,127,075

STATISTICS OF PRODUCTION.

RETURN showing the Annual Value of Mineral Products for the State of Tasmania from 1880 *to* 1940 *inclusive.*

Year.	Value.	Year.	Value.
	£		£
1880	554,031	1912	1,493,502
1881	602,723	1913	1,415,700
1882	556,306	1914	1,007,038
1883	560,873	1915	1,225,575
1884	468,302	1916	1,521,050
1885	518,885	1917	1,582,322
1886	489,966	1918	1,597,694
1887	593,256	1919	1,301,090
1888	616,733	1920	1,421,104
1889	504,718	1921	822,851
1890	444,210	1922	1,013,415
1891	528,388	1923	1,219,456
1892	526,909	1924	1,496,804
1893	627,909	1925	1,700,861
1894	732,764	1926	1,808,847
1895	575,692	1927	1,621,027
1896	662,058	1928	1,593,828
1897	1,006,140	1929	1,790,653
1898	1,071,084	1930	1,270,114
1899	1,660,622	1931	894,986
1900	1,888,695	1932	897,168
1901	1,763,896	1933	1,053,373
1902	1,378,406	1934	1,037,351
1903	1,354,044	1935	1,387,511
1904	1,379,204	1936	1,979,637
1905	1,729,129	1937	2,653,822
1906	2,257,147	1938	2,294,735
1907	2,277,159	1939	2,520,282
1908	1,650,027	1940	3,137,330
1909	1,574,995	Unenumerated prior to 1894	31,988
1910	1,432,193		
1911	1,349,497	Total	£78,127,075

STATISTICS OF MINING COMPANIES.

RETURN showing the Amounts Paid in Dividends by Mining Companies during the Year ending 31*st December,* 1940.

Mines.	Dividends.
	£ s. d.
Copper	*76,040 0 0
Gold	...
Tin	76,471 5 0
Silver	...
Coal	...
Scheelite	15,625 0 0
Zinc	*305,800 0 0
Total	£473,936 5 0

* These amounts represent total dividends out of Tasmanian profits, the remainder being paid from profits ex-Tasmanian.

RETURN showing the Mining Companies Registered during the Year ending 31*st December,* 1940.

Number of Companies.	Capital.
4	£11,650

In addition to the above, 2 agents for foreign companies under the Mining Companies (Foreign) Act, 1884, and 2 syndicates under Part V. of the Mining Companies Act, 1884, were registered.

RETURN showing the Total Area of Land and Number of Sluiceheads of Water Applied for during the Year ending December, 1940.

Mineral.	Number.	Sluiceheads.	Area.
			Acres.
Asbestos	...	...	...
Bismuth	...	...	...
Barytes	...	...	...
Clay	3	...	191
Coal	1	...	50
Copper	1	...	80
Gold	26	...	655
Granite	...	...	...
Iron	1	...	50
Lead	...	...	...
Limestone	...	...	...
Manganese	2	...	40
Minerals	5	...	105
Nickel-Silver	...	...	...
Osmiridium	...	...	...
Pyrites	...	...	...
Sand	...	...	...
Silver-Lead	4	...	130
Stone	1	...	10
Tin	36	...	1568
Wolfram	...	...	...
Machinery Sites and Mining Easements	3	...	10
Water-rights and Dam Sites	36	136	4
Licences to search for Coal	1	...	3200
Total	120	136	6093

RETURN showing Total Number and Area of Leases and Licences Issued during the Year ending 31*st December,* 1940.

Mineral.	Leases.	Sluiceheads.	Area.
			Acres.
Asbestos	...	...	...
Barytes	...	...	...
Clay	...	...	...
Copper	...	...	...
Copper-Nickel	...	...	...
Coal	3	...	180
Dolomite	...	...	...
Gold	15	...	472
Iron Ore	1	...	150
Limestone	1	...	194
Minerals	4	...	140
Manganese	...	...	...
Nickel	...	...	...
Osmiridium	1	...	10
Pyrites	...	...	...
Silver	...	...	...
Scheelite	...	...	...
Silver-Lead	3	...	80
Stone	...	...	...
Tin	53	...	824
Wolfram	1	...	80
Water-rights and Dam Sites	54	105	53
Licences to Search for Coal and Oil	...	...	...
Mining Easements and Machinery Sites	4	...	5½
Total	140	105	2088½

RETURN showing the Total Number of Leases and Licences in Force on 31*st December,* 1940.

Mineral.	Number.	Number of Sluiceheads.	Area.
			Acres.
Antimony	...	...	...
Asbestos	1	...	10
Barytes	1	...	10
Bismuth	...	...	...
Coal	31	...	5433
Clay	2	...	4
Copper	7	...	319
Copper-Nickel	...	...	...
Dolomite	3	...	365
Granite	2	...	15
Gold	110	...	1759½
Gravel	...	...	...
Iron	12	...	405
Limestone	5	...	434
Lead-Zinc	1	...	80
Molybdenum	...	...	...
Minerals	46	...	5556
Marble	...	...	...
Manganese	7	...	45
Osmiridium	3	...	90
Pyrites	1	...	80
Scheelite	3	...	281
Shale	3	...	117
Silica (Sand)	2	...	45
Silver-Lead	18	...	682
Stone	5	...	104
Tin	366	...	8986
Wolfram	8	...	294
Mining Easements and Machinery Sites	85	...	616¼
Licences to Search	...	...	...
Water Licences	395	1478	2183
Total	1117	1478	27,913¾

RETURN showing the Total Amount of Rents, Fees, &c., received by the Mines Department during the Year ending 31*st December,* 1940.

Head of Revenue.	Amount.
	£ s. d.
Rent of Auriferous and Mineral Lands	7207 15 5
Fees, Auriferous and Mineral Lands	558 0 7
Survey Fees	458 12 11
Fees under the Explosives and Inflammable Liquids Act	3252 7 9
Total	£11,476 16 8

Comparative Statement of Revenue from Mines, being Rents, Fees, Storage of Explosives, &c., (exclusive of Survey Fees), Paid to the Treasury for the Years ending 30th June, from 1882 to 1903, and for Six Months ending 31st December, 1903, and for the Years ending 31st December, 1904 to 1940 inclusive.

Year.	Amount.	Year.	Amount.
	£ s. d.		£ s. d.
1882	23,077 1 9	1911	20,556 15 10
1883	15,439 14 5	1912	17,639 19 11
1884	6981 11 10	1913	19,410 17 8
1885	11,070 5 7	1914	14,087 0 6
1886	12,523 10 4	1915	17,679 3 6
1887	14,611 11 5	1916	14,678 19 10
1888	23,502 8 4	1917	14,669 7 2
1889	17,254 9 0	1918	17,833 14 9
1890	26,955 4 9	1919	15,388 7 7
1891	37,829 16 5	1920	16,767 11 6
1892	17,568 18 4	1921	11,248 14 11
1893	16,971 9 2	1922	14,184 7 3
1894	16,732 7 7	1923	13,224 11 9
1895	15,323 1 9	1924	14,678 13 11
1896	20,901 13 2	1925	14,229 8 7
1897	25,631 0 3	1926	15,163 15 7
1898	33,661 13 9	1927	16,887 9 9
1899	24,696 10 5	1928	14,313 12 0
1900	28,380 11 10	1929	14,665 10 7
1901	21,569 5 2	1930	11,166 7 2
1902	19,471 0 1	1931	11,520 1 10
1903	17,776 14 3	1932	10,097 18 6
1903, 1 July to 31 Dec.	14,758 17 1	1933	9459 6 9
1904, Jan. to Dec.	16,631 8 2	1934	11,166 2 11
1905	20,208 17 0	1935	10,548 10 0
1906	24,136 12 5	1936	11,023 11 3
1907	24,794 7 7	1937	12,206 10 1
1908	20,311 3 0	1938	11,177 11 5
1909	22,804 1 5	1939	11,556 5 1
1910	22,221 18 0	1940	11,018 3 9

The above Statement does not include Stamp Duties upon Transfer of Leases and Tax payable upon Dividends, from which sources large sums are derived.

RETURN showing the Number and Area of Leases Held under the Mining Act in force on 31st December, 1926 to 1940, inclusive.

Nature of Lease.	In force on 31st Dec., 1926.		In force on 31st Dec., 1927.		In force on 31st Dec., 1928.		In force on 31st Dec., 1929.		In force on 31st Dec., 1930.		In force on 31st Dec., 1931.		In force on 31st Dec., 1932.		In force on 31st Dec., 1933.		In force on 31st Dec., 1934.		In force on 31st Dec., 1935.		In force on 31st Dec., 1936.		In force on 31st Dec., 1937.		In force on 31st Dec., 1938.		In force on 31st Dec., 1939.		In force on 31st Dec., 1940.	
	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area	No.	Area.	No.	Area.	No.	Area.
		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.
For Minerals, Silver, Tin, &c.	541	22,129	642	25,604	728	28,103	652	27,052	418	18,321	379	17,101	284	13,320	326	16,734	444	18,716	500	19,802	585	21,096	603	21,368	595	23,497	463	18,843	474	16,838
For Coal, Slate, Shale, &c.	49	13,136	39	11,077	52	15,407	36	11,022	32	9960	25	7223	32	6104	39	7495	51	8439	47	6635	48	7249	50	6778	43	4904	49	6683	53	6517
For Gold	42	870	38	749	40	830	36	746	40	830	57	999	77	1987	128	3879	167	3987	162	3190	155	3183	22	2619	117	2491	108	1850·5	110	1759·5
Dredging Claims	42	363	41	502	52	626	60	756	30	353	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mining Easements	68	494	77	484	77	475	55	409	73	504	77	434	48	316	79	475	94	578	107	629	112	634	112	663	97	630	86	617·25	85	616·25
Machinery Sites	25	150	21	110	29	169	25	171	18	117	20	209	18	120	17	119														
Licences to search for Coal or Oil	8	10,669	4	5090	7	7200	9	10,844	3	1080	1	800	1	320	2	790	2	3670	2	4200	5	10,900	6	10,600	2	1180	2	1180	—	—
Water-rights, Mineral and Gold	360	2190 & 1591 sluice-heads	394	2246 & 1748 sluice-heads	371	1552 & 1581 sluice-heads	486	2359 & 2053 sluice-heads	364	2095 & 1558 sluice-heads	388	2078 & 1546 sluice-heads	391	2448 & 1473 sluice-heads	400	1905 & 1650 sluice-heads	403	2015 & 1760 sluice-heads	447	2092 & 1835 sluice-heads	466	1963 & 2034 sluice-heads	467	2243 & 2049 sluice-heads	448	1834 & 2191 sluice-heads	388	2172.75 & 1574 sluice-heads	395	2183 & 1478 sluice-heads

TABLE showing the Average Annual Prices for Minerals During Recent Years.

	Average for **1927.**	Average for **1928.**	Average for **1929.**	Average for **1930.**	Average for **1931.**	Average for **1932.**	Average for **1933.**	Average for **1934.**	Average for **1935.**	Average for **1936.**	Average for **1937.**	Average for **1938.**	Average for **1939.**	Average for **1940.**
	£ 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.
Copper—Standard, spot: per ton	59 5 8	72 2 10	75 19 7	54 3 7	38 7 9	31 14 7	32 11 4	30 6 4	31 18 1	36 12 6	60 5 9	45 16 9	49 17 7	62 0 0
Lead—Soft Foreign: per ton	21 9 6	22 13 6	23 4 11	18 3 1	13 0 7	12 0 9	11 16 1	11 1 0	14 5 8	16 7 9	Electrolytic. 23 6 1	Electrolytic. 15 6 5	Electrolytic. 15 13 7	Electrolytic. 25 0 0
Spelter: per ton	26 6 1	25 14 9	24 15 1	16 16 9	12 9 0	13 13 10	15 14 11	13 15 6	14 0 0	14 6 11	22 6 8	14 1 7	14 14 0	25 15 0
Tin—Standard, spot: per ton	254 17 7	216 6 6	263 18 10	141 19 1	118 9 1	135 18 10	194 13 4	230 7 5	225 14 6	208 6 6	242 6 7	189 12 1	226 5 6	256 12 3
Silver—Standard, spot: per oz.	s. d. 2 2·38	s. d. 2 2·15	s. d. 2 0·57	s. d. 1 5·66	s. d. 1 2·593	s. d. 1 5·842	s. d. 1 6·144	s. d. 1 9·208	s. d. 1 9·951	s. d. 1 9·647	s. d. 1 9·65	s. d. 1 9·066	s. d. 1 8·461	s. d. 2 1·048
	£ 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.
Osmiridium: per oz.	21 16 5	25 9 0	22 18 1	17 0 9	14 7 9	11 11 0	8 16 9	9 11 2	9 0 0	12 10 0	15 12 6	15 0 4	17 15 0	24 0 0
Wolfram: per ton	61 10 0	104 5 0	144 5 0	105 0 9	64 0 0	62 16 0	81 2 6	94 0 0	175 0 0	161 5 0	325 19 0 $W.O._2$	289 0 0 $W.O._3$	271 0 0 $W.O._3$	250 0 0 $W.O._2$
Nickel: per ton	...	...	171 0 0	170 0 0	183 15 0	234 7 6	235 0 0	225 0 0	200 0 0	178 4 0	145 0 0	182 10 0	185 0 0	...

AID TO MINING.

The policy of assistance to mining was maintained under the provisions of the Aid to Mining Act. Several grants were made for the development of mines, purchase of plants, provision of supplies of water, and for other purposes allied with mining operations. Sustenance allowance was granted to several organised parties for prospecting in approved localities, but no discoveries of economic moment were reported.

The total amount expended was £5097, affording employment to approximately 85 men. The total value of ore raised by those assisted amounted to £20,580. Repayments made against advances totalled £1543.

Expenditure continued to be incurred in cutting and conditioning tracks to known and potential mineral areas as an item of policy directed to the development of the mineral resources.

THE AID TO MINING ACT, 1927.

STATEMENT OF RECEIPTS AND PAYMENTS OF THE MINING TRUST FUND FOR THE YEAR ENDED 31st DECEMBER, 1940.

RECEIPTS.	£	s.	d.
Balance, 31st December, 1939	345	9	5
Repayment of loans	330	18	7
Refund drilling costs	758	1	5
Miscellaneous	6	8	5
Appropriation Act, 1939-40	3,000	0	0
	£4,440	17	10

PAYMENTS.	£	s.	d.
Sustenance allowance	73	0	0
Assistance	2,101	11	0
Drilling	2,119	6	11
Miscellaneous expenses	39	13	7
Total payments	4,333	11	6
Excess receipts over payments	107	6	4
	£4,440	17	10

THE AID TO MINING (FEDERAL GRANT) TRUST FUND.

(22 Geo. V. No. 92, and 26 Geo. V. No. 8, and 2 Geo. VI. No. 68.)

RECEIPTS AND PAYMENTS STATEMENT.

RECEIPTS.

Item.		March, 1935 (commencement) to 31st Dec., 1940. £	s.	d.	1st Jan., 1940, to 31st Dec., 1940. £	s.	d.
Provided by—							
Commonwealth	£25,750						
State	9,250						
		35,000	0	0	....		
Transfer of balance from—							
The Aid to Mining (Federal Grant) Trust Fund, 1936-37 (1 Edw. VIII. No. 20)		1,883	18	2	....		
The Aid to Mining (Federal Grant) Trust Fund, 1937-38 (1 Geo. VI. No. 32)		798	9	11	....		
Other credits—							
Batteries		95	0	6	13	3	0
Advances		5,231	14	0	599	6	2
Plants and operation thereof		11	18	8	....		
Metallurgical investigations		0	7	11	....		
Staff		0	10	10	....		
Balance brought forward period ended 31st December, 1939		....			2,486	0	7
		£43,022	0	0	£3,098	9	9

PAYMENTS.

Item.	March, 1935 (commencement) to 31st Dec., 1940. £	s.	d.	1st Jan., 1940, to 31st Dec., 1940. £	s.	d.
Prospecting	1,584	6	6	....		
Batteries	1,323	9	0	....		
Advances	22,768	1	3	866	3	5
Plants and operation thereof	6,711	9	11	....		
Metallurgical investigations	1,237	3	4	....		
Roads and tracks	6,385	14	10	320	5	1
Transport	817	19	10	189	14	0
Staff	574	11	1	103	3	0
Total payments	41,402	15	9	1,479	5	6
Excess receipts over payments	1,619	4	3	1,619	4	3
	£43,022	0	0	£3,098	9	9

STATEMENT OF LOANS UNDER THE AID TO M INING ACT, 1927.

EXPENDITURE.

Year.	Federal Funds. £	s.	d.	The Mining Trust Fund and Other Funds. £	s.	d.	Total. £	s.	d.
1935	8,398	11	4	2,298	14	8	10,697	6	0
1936	10,462	3	7	2,807	12	10	13,269	16	5
1937	3,902	17	7	1,983	9	6	5,886	7	1
1938	3,337	2	7	1,937	1	0	5,274	3	7
1939	658	13	10	2,721	11	1	3,380	4	11
1940	866	3	5	4,188	5	4	4,984	8	9
Total	£27,625	12	4	£15,866	14	5	£43,492	6	9

RE PAYMENTS.

Year.	Federal Funds. £	s.	d.	The Mining Trust Fund and Other Funds. £	s.	d.	Total. £	s.	d.
1935	300	4	9	87	10	0	387	14	9
1936	1,286	12	5	1,078	5	11	2,364	18	4
1937	1,244	15	5	2,246	13	9	3,491	9	2
1938	3,796	4	7	422	15	3	4,218	19	10
1939	716	19	2	390	4	0	1,107	3	2
1940	599	6	2	944	3	9	1,543	9	11
Total	£7,944	2	6	£5,169	12	8	£13,113	15	2

DRILLING.

Departmental drilling plants were in constant operation, partly on hire to holders of mineral leases and others and partly in drilling areas reserved against occupation under the provisions of the Mining Act. The total expenditure on all fields was £5720, and £758 was repaid under drilling agreements.

Drilling continued to be directed to prospecting the extent and value of the deep tin-bearing lead on the Scotia area at Gladstone. Results have been variable, but of such a nature that further drilling is warranted to demonstrate if there is a sufficient yardage of average low-grade drifts to merit large-scale working.

No disclosures of prospective merit were revealed by drilling along the copper-nickel series at North Dundas, and the campaign was discontinued.

Boring was continued at Beaconsfield, and the second hole was deepened to 2125 feet, when difficulties developed and compelled an abandonment of the hole.

DETAILS OF EXPENDITURE ON DRILLING DURING THE YEAR ENDED 31ST DECEMBER, 1940.

Plant.	Location.	Amount. £	s.	d.
Diamond Drill	Beaconsfield	2,334	11	5
Diamond Drill, No. 2	Tarraleah (agreement)	647	3	6
Diamond Drill, No. 3	North Dundas (agreement)	965	16	9
Diamond Drill, No. 3	Latrobe	188	0	10
Calyx and Surge Drill	Gladstone	1,584	18	4
	Total	£5,720	10	10

(During the year a refund of £758 1s. 5d. was obtained from drilling carried out by agreement.)

DRILLING RESULTS.

No. 1 Diamond Drill.

This plant was employed at the Tasmanian Gold Mine, Beaconsfield. No. 2 bore was deepened to 2125 feet without penetrating the objective lode.

No. 2 Diamond Drill.

This plant completed operations at Tarraleah, where it had been engaged under the direction of the Hydro-Electric Commission in connection with the proposed construction of the Butler's Gorge Dam.

No. 3 Diamond Drill.

This plant completed the initial programme of prospect drilling the copper-nickel series at Zeehan, and 2047 feet of drilling was done without disclosing mineralisation of prospective merit.

The plant was then transferred to Latrobe, and was engaged in a drilling campaign directed to locating a mineable area of oil-shale, 613 feet of drilling having been completed at the close of the year.

Calyx and Surge Drills.

These plants were engaged in testing the extent and value of the deep tin-bearing lead on the Scotia area at Gladstone. The number of holes drilled was 114, and the aggregate depth of the bores was 11,847 feet.

The following tabulation relates to holes in which more than a trace of tin was encountered:—

No. of Bore.	Depth to Bedrock.		Average Values. Oz. per c. yd. of 70% Conc.	Best Values. Depth.				Best Values. Oz. per c. yd. of 70% Conc.
	ft.	in.		ft.	in.	ft.	in.	
230B	120	0	1·9	117	4	118	6	78·2
232B	124	0	9·1	117	4	122	9	192·2
234B	124	0	6·9	117	4	122	0	159·0
235B	123	0	0·5	117	4	121	0	4·4
237B	120	0	10·7	117	4	118	8	552·8
242B	108	0	2·2	102	8	105	0	33·6
243B	95	0	0·3	90	8	92	0	10·5
245B	120	0	4·0	88	0	95	4	20·1
247B	122	0	4·0	113	4	120	0	33·5
248B	119	0	1·0	95	4	102	8	2·88
249B	123	0	7·5	113	4	121	6	57·4
250B	128	0	6·0	124	8	126	1	75·8
251B	126	0	16·8	113	4	124	4	142·0
252B	128	0	1·5	117	4	124	8	8·37
253B	101	0	1·1	90	8	99	0	12·3
254B	107	0	0·3	88	0	95	3	1·76
255B	126	0	5·0	113	4	124	3	36·5

Calyx and Surge Drills—*continued.*

No. of Bore.	Depth to Bedrock.		Average Values. Oz. per c. yd. of 70% Conc.	Best Values. Depth.				Best Values. Oz. per c. yd. of 70% Conc.
	ft.	in.		ft.	in.	ft.	in.	
256B	120	0	1·2	110	0	117	1	9·9
257B	104	0	0·3	90	8	102	0	2·93
258B	117	0	1·4	95	4	102	8	11·84
259B	97	0	0·8	79	4	90	8	4·72
260B	123	0	3·2	117	4	120	1	45·3
261B	104	0	1·2	90	8	97	9	7·65
262B	127	0	5·7	117	4	124	8	42·5
263B	121	0	4·6	117	4	119	7	64·2
264B	129	0	13·1	124	8	127	10	114·0
265B	128	0	11·9	102	8	110	0	75·9
266B	120	0	2·4	113	4	117	0	17·62
268B	107	0	0·56	102	8	105	0	16·1
270B	70	0	0·59	36	8	44	0	2·1
271B	110	0	1·93	102	0	108	8	20·7
272B	48	0	0·7	29	4	36	5	3·62
273B	123	0	4·22	110	0	111	4	16·5
275B	105	0	0·28	95	4	102	5	6·2
276B	109	0	4·77	102	0	107	0	78·5
277B	115	0	3·0	90	8	102	0	13·2
278B	101	0	0·76	90	8	99	0	9·15
279B	120	0	19·15	113	4	116	0	163·0
280B	110	0	5·68	90	8	101	9	48·4
4D	136	0	0·72	124	8	130	0	5·7
5D	150	0	0·7	124	8	136	0	3·72
6D	158	0	0·66	117	4	124	8	4·52
7D	160	0	5·78	146	8	154	0	48·9
8D	152	0	4·63	147	8	150	0	105·0
9D	147	0	1·2	136	0	141	6	38·0
10D	150	0	3·0	146	8	152	0	47·3
2E	100	0	1·5	95	4	97	6	16·7
3E	100	0	2·6	95	4	98	0	57·0
4E	91	0	2·4	90	8	92	6	125·0
5E	105	0	0·5	95	4	98	9	3·85
6E	102	0	1·6	95	4	97	0	78·6
7E	95	0	0·89	79	4	90	8	3·69
8E	106	0	1·9	88	0	92	2	33·3
9E	96	0	2·2	88	0	93	7	28·5
10E	92	0	3·26	79	4	89	0	26·8
11E	95	0	2·4	88	0	89	10	88·0
12E	100	0	1·4	90	8	95	4	10·5
13E	94	0	1·43	88	0	89	5	36·5
15E	95	0	1·56	80	8	87	3	10·39
1F	154	0	3·7	139	4	146	8	25·8
2F	152	0	4·9	147	4	149	0	185·0
3F	111	0	2·9	95	4	100	3	56·9

DEPARTMENTAL ACTIVITIES.

Initial consideration was directed to reconstruction of services, to produce a more conscious regard for the development of the mineral resources and to ultimately create an important addition to technical functions in mineral research and beneficiation of ores and materials, bearing upon the commercial exploitation of both metallics and non-metallics.

Establishment of these services has been retarded by release of officers for war services and added difficulty of obtaining equipment under war-time conditions. The working capacity of the Geological Survey was reduced from four officers to one officer. An additional inspector of mines was appointed, and inspectorates were altered to enable officers to give added attention to the development of the mineral resources without detracting from duties directed to the surveillance of conditions affecting the health and safety of those employed in the mines, quarries, and works.

MINES DRAFTING BRANCH.

The number of working plans in use and which are kept up to date is 223 as compared with 221 in 1939.

Instructions issued to surveyors	64
Diagrams received from surveyors	80
Diagrams drawn on leases	282
Consolidated and other diagrams drawn	25
Lithographs entered to date	198
Various tracings prepared	13
Tracings for Launceston	114
Manuscripts entered to date	11
New manuscript plans drawn	1
Meteorological colour work	35
Underground surveys examined	29

STAFF.

Several alterations in staffing and duties were made to meet the requirements of reconstructional services, an early inception of which has been retarded by the release of officers for war services.

Mr. W. H. Williams, Acting Secretary for Mines, was appointed Secretary for Mines and was then made Director of Mines, with a retention of offices of Secretary for Mines, State Mining Engineer, Chief Inspector of Mines, and Chief Inspector of Explosives.

Mr. W. H. Williams, Director of Mines, was appointed Chairman of the Mount Cameron Water Race Board as from the 4th December, 1939.

Mr. P. B. Nye, Government Geologist, was granted a further extension of special leave from the 30th June to 31st December, 1940, to enable him to continue the duties of Chief Executive Officer on an aerial survey, under Commonwealth direction, in Northern Australia.

Mr. T. Platt was appointed an inspector of mines as from the 28th August, 1940.

The title of Chief Chemist and Assayer, held by Mr. W. St. C. Manson, was altered to Chief Chemist and Metallurgist. The title of chemist, pertaining to two officers in the Laboratories, was altered to chemist and assayer.

Mr. E. C. Briggs, Chief Clerk and Accountant, was granted long service furlough, for six months, as from the 31st May, 1940, and then leave, for military services, for the duration of the war.

Mr. F. Blake, Field Geologist, was granted long service furlough, for six months, as from the 9th August, 1940, and then leave, for military services, for the duration of the war.

Mr. T. D. Hughes, Geological Draftsman, was granted leave for military services, for the duration of the war.

Miss B. A. Muir was appointed typist, on probation, from the 13th June, 1940.

Miss E. M. Griffiths was appointed typist, on probation, in the office of the Chief Inspector of Mines and Explosives, Launceston, from the 13th June, 1940.

Mr. R. T. Bell, clerk in the office of Chief Inspector of Mines and Explosives, Launceston, was transferred to the Treasury Department on the 10th December, 1940.

APPRECIATION OF SERVICES.

Appreciation is recorded of the loyal and efficient services rendered by officers of the Department, including officers of the Mining Drafting Branch, Wardens of Mines, and registrars of the several mining districts.

APPENDICES.

The following reports are appended:—

Geological Survey.
Chief Chemist and Metallurgist.
Acting Chief Inspector of Mines.
Acting Chief Inspector of Explosives.
Inspectors of Mines and Explosives.
Mount Cameron Water-race Board.

I have the honour to be Sir,

Your obedient servant,

W. H. WILLIAMS, Director of Mines.

The Honourable the Minister for Mines.

APPENDIX I.

REPORT OF THE GEOLOGICAL SURVEY FOR 1940.

The Field Geologist (Mr. Q. J. Henderson) reports:—

Field Work.

The field work of the Geological Survey was seriously affected by the release of officers for war services. With one exception, the staff was completely depleted.

The following items relate to the field visits, surveys, and examinations made in connection with mineral deposits, mines, and other matters during the year:—

(1) Examination of Gold Mines in the vicinity of Fingal, by F. Blake.

(2) Examination of Pyrite Deposits in the vicinity of Penguin, by F. Blake.

(3) Examination of Manganese Deposits in the Dial Range, by F. Blake.

(4) Survey and Correlation of Diamond Drilling at Beaconsfield, by F. Blake.

(5) Completion of Iron Ore Survey, by F. Blake and T. D. Hughes.

(6) Examination of a Structural Survey of the Read-Rosebery Lode Series, by Q. J. Henderson.

(7) Examination of the Merits of providing Head-water Races at the Jane River Goldfield, by Q. J. Henderson.

(8) Investigation of Cinnabar at Jane River, by Q. J. Henderson.

(9) Investigation of Proposals to Cut a Prospecting Track Southerly from the Jane River Goldfield, by Q. J. Henderson.

(10) Collaboration upon a Geological Survey of the Jukes-Darwin Copper Series, by Q. J. Henderson.

(11) Geological Survey of Copper Deposits at Dove River, by Q. J. Henderson.

(12) Detailed Definition Survey of the Oil-shales between Latrobe and Railton.

Reports.

In connection with the above and other matters, the following reports were prepared:—

(1) Prospective and Developmental Merits of the Fingal Reefs and Miami Group of Gold Mines, by F. Blake.

(2) Possibilities of Developing a Pyrite Deposit, in the vicinity of Penguin, for Sulphide Ore suitable for the Production of Elemental Sulphur, by F. Blake.

(3) Prospective Merits of an Occurrence of Manganese Ore in the Dial Range, by F. Blake.

(4) Iron Ore Resources of Tasmania, by F. Blake, in collaboration with the Commonwealth Geological Adviser (Dr. Woolnough).

(5) Brown Coal and Lignite in Tasmania, by F. Blake.

(6) Mineral Resources of Tasmania, by F. Blake.

(7) Survey of Water Facilities for Hydraulic Mining at the Jane River Goldfield, by Q. J. Henderson.

(8) Extension of Tracks from the Jane River Goldfield to Southern Areas of Prospective Merit, by Q. J. Henderson.

(9) Deposits of Copper Ore at Dove River, by Q. J. Henderson.

Staff.

Mr. P. B. Nye, Government Geologist, continued to carry out the duties of executive officer to the Geological, Geophysical, and Aerial Survey of Northern Australia, in which position he has acted since 1934. Leave of absence was extended to the 31st December, 1940.

Mr. F. Blake, Field Geologist, who functioned as Acting Government Geologist during the absence of Mr. P. B. Nye, was granted leave of absence for war services.

Mr. T. D. Hughes, Draftsman in the Geological Survey, enlisted for active service overseas, and was granted leave of absence for the duration of the war.

Routine and Other Duties.

The usual duties of interviewing visitors and answering technical correspondence were undertaken. These were chiefly concerned with the identification of mineral and rock specimens and furnishing intelligence with reference to mineral deposits, mines, and reports in connection with the mining industry.

Other duties of the Geological Survey included:—

(1) Attendance at meetings of the Mining Manager's Board.

(2) Preparation of rock and mineral sections.

(3) Weighing and certifying to parcels of Osmiridium being shipped overseas.

(4) Compilation of boring records.

(5) Attention and additions to departmental library.

(6) Preparation of plans, sections, and maps to accompany reports.

(7) Preparation of mineral specimens.

(8) Attention to departmental rock and mineral-collections.

APPENDIX II.

REPORT OF THE CHIEF CHEMIST AND METALLURGIST.

The Chief Chemist and Metallurgist (Mr. W. St. C. Manson) reports:—

During the year the following determinations were made:—Gold, silver, tin, lead, aluminium, arsenic, antimony, beryllium, barium, bismuth, boron, calcium, chlorine, chromium, copper, iron, magnesium, manganese, mercury, molybdenum, nickel, osmiridium, phosphorus, tungsten, titanium, zinc, and zirconium. Analyses were made of ores, minerals, clays, rocks, coal, shale, water, &c. The number of determinations approximated 4000.

Metallurgical Investigations.

Cyanide extraction tests, under conditions of agitation, were made of samples of gold-bearing sands and slimes from Lefroy and Beaconsfield.

Samples of gold-bearing sands from the Golden Gate Mine were submitted to screen analysis, grinding tests, and cyanide extraction tests under conditions of agitation.

A sample of silver-lead-gold ore from the Dove Silver Mine was examined, and investigations were made into possible methods of concentration. The ore showed that a fair proportion of the galena was massive, the remainder being finely disseminated in the gangue minerals. Minor amounts of sphalerite, chalcopyrite, and pyrite were present, together with secondary lead and copper minerals. Major gangue minerals were quartz and siderite. The examination indicated that a maximum galena recovery could not be obtained without fine grinding. Bulk flotation recovered 90·7 per cent of the lead, 89·1 of the silver, and 85·9 of the gold as a marketable product. Selective flotation was unnecessary to obtain a marketable product, but should ore developments reveal an increase in associated minerals, such as pyrite and sphalerite, selective flotation would become necessary. The tailings from bulk flotation contained 5·5 per cent to 6·7 per cent of lead and secondary minerals would be partially responsible for the loss. Combined treatment by jigging and flotation of the jig tailings inclined the recoveries to 98·6 per cent of the lead, 98·3 per cent of the silver, and 86·5 per cent of the gold.

Exhaustive grindability, classification, and flotation tests were made of tin concentrates with the object of producing a formula for the extraction of impurities and improving the marketable tenor of the finished product.

Gravity concentration investigations were made of battery sands to reveal the practicabilities of substantially increasing the total recovery of the contained gold.

Tests were made of a gold ore to determine possible maximum recoveries by amalgamation.

Fine cassiterite concentrate was examined for the identification of a brown tin-bearing material of such a low specific gravity as to be practically non-recoverable by gravity concentration. The particle size of the material was larger than the cassiterite and microscopical examination showed the material to be agglomerated particles of cassiterite thinly cemented together with iron oxide. The agglomerates were extremely fragile and agglomeration was considered to be of likely formation after concentration by oxidation of associated metallic iron or iron minerals.

Metallurgical investigations are directed to the solution of simple and complex problems affecting the benefication of ores, the fixation of processes for recovering maximum percentages of marketable minerals and metals, and the possible conversion of apparently unmarketable metallic and non-metallic substances into commercial products. The laboratory is affording material service in those and other directions as affecting the development of the mineral resources Consideration directed to Tasmanite Asphalt comprised:—

I. Reports upon the progress of research into the manufacture of asphalt, including alterations, mechanical improvements, and control of the experimental digester at Latrobe, together with details of operations, products, and matters requiring further investigation:

II. Reports upon stages of commercial production of asphalt, estimated costs, and capital and operating expenditures: and

III. Consultations with engineers and metallurgists on the Mainland relative to equipment and plant details for reduction, classification, and flotation practices.

An inspection was made of the milling plant at the Montana Silver Lead Mine, and a report was compiled upon operating disabilities, including practices as adopted for dry crushing and later altered to wet crushing, together with the details of lay-out, plant units, and flow sheet.

In conclusion, I wish to place on record my appreciation of the services rendered by the staff.

APPENDIX III.

REPORT OF THE ACTING CHIEF INSPECTOR OF MINES.

The Acting Chief Inspector (MR. J. O. HUDSON) reports:—

Mines and Works Regulation Act, 1915.

The average number of persons employed in mining, metallurgical, and quarrying operations was 6000 compared with 5928 for the previous year.

The appended table relates to—

(1) Fatalities and non-fatal casualties at mines, works, and quarries which involved absence from work for more than 14 days.

(2) The average number of persons employed and the rate per 1000 persons employed of fatal and non-fatal injuries in the State and in each mineral division.

Accidents.

The total number of accidents registered under the provisions of Section 23 of the Act was 103, as against 87 for the previous year. The 103 accidents resulted in injury to 104 persons.

There were 5 additional accidents in the Northern and Southern Divisions, a reduction of 7 accidents in the North-Western Division, and in the Eastern Division a reduction of 5 accidents, and in the Western Division there was an increase of 24 accidents.

Two accidents were attended with fatal injuries to two persons, being the same number as registered during the previous year. Both fatalities occurred in the Western Division.

One fatality was due to the collapse of a bridge crossing over a railway line.

The second fatality occurred underground in a mine. A round of 14 charged holes was being fired, when too much time was occupied in lighting the fuses, some of which had become wet, and the charge of explosives, of the first lighted fuse, exploded before the miner left the face of the drive.

The non-fatal accidents totalled 101, causing injury to 102 persons, compared with 85 accidents, involving injury to 87 persons, for the previous year. The rate per 1000 persons employed fatally injured was 0·333 compared with 0·337 for the year 1939. The rate per 1000 persons employed killed and injured was 17·333, compared with 15·013 for the previous year.

The rate per 1000 incapacitated for more than 14 days was 17·000, compared with 14·676 for the previous year.

Of the non-fatal accidents, totalling 101, 49 occurred underground, and 39 were associated with surface operations at mines, and 13 happened at metallurgical and other works. Two of the accidents occurred at collieries, one happening on the surface and one being due to a fall of coal in underground workings.

Twenty-six accidents resulted in oscia fractures or permanent injury.

Prosecutions.

It was found necessary to take legal action against 5 persons for failing to comply with the requirements of the Act. Convictions were obtained in four cases, and one case was dismissed. Two cases were for failure to use appliances for the prevention of dust, and three cases for unseemly and riotous conduct.

Staff.

The appointment of one additional inspector with coal mining qualifications and the alteration of districts should have a very beneficial effect, as officers will be in a position to devote more time to problems which arise in their districts and give added attention to the development of the mineral resources.

APPENDIX IV.

REPORT OF THE ACTING CHIEF INSPECTOR OF EXPLOSIVES.

The Acting Chief Inspector of Explosives (Mr. J. O. HUDSON) reports:—

The Explosives Act, 1916.

The imports of explosives were as follows:—

	Lbs.
Monobel	33,250
Gelignite	1,091,550
Ligdyn	106,250
Gelatine dynamite	14,975
Blasting powder	7,450
Sporting powder	3,510
	Number.
Detonators	868,649

Considerable attention was directed to ensuring that the compounds were in good chemical and physical condition. Recorded instances of deterioration, I regret to report, were considerable. In all cases the defect was due to the absorption of moisture, and it was clearly demonstrated that the effect was due to careless wrapping of the plugs and cartons.

Two accidents were due to explosion:—

(1) A man was cleaning sawdust out of a detonator when the latter exploded, causing serious injury to both hands.

(2) A miner, igniting a number of fuses in a drive with a fuse lighter, delayed too long. The first fuse ignited, exploded the charge, causing fatal injury.

The Inflammable Liquids Act, 1929.

The absence of untoward incidents in connection with the handling and storage of inflammable liquids reflected creditably upon the care exercised in the control of safety and fire hazards.

A bulk installation at Devonport and subsidiary depots at Launceston and Hobart were completed, and the first overseas tanker discharged bulk cargo at the port of Devonport.

The rationing of petrol caused a very large increase in orders for petrol in drums, and it was difficult to handle the inquiries and to regulate the storage in accordance with the requirements of the Act.

There were 14 prosecutions for breaches of the Act and Regulations, largely in connection with the storage of petrol in drums. Convictions were obtained in all cases.

COMPARATIVE Table of Statistics of Accidents in and about the Mines of Tasmania from 1st July, 1892, to 31st December, 1940.

Period.	Number of Miners Employed.	Number of Accidents.	Number of Persons		Total Killed and Injured.	Average per 1000 Killed and Injured.	Average per 1000.	
			Killed.	Injured.			Killed.	Injured.
1 July, 1892, to 30 June 1893	3295	28	4	25	29	8·8001	1·214	7·586
„ 1893 „ 1894	3403	25	7	20	27	7·934	2·057	5·877
„ 1894 „ 1895	3789	26	4	24	28	7·390	1·058	6·332
„ 1895 „ 1896	4160	22	7	16	23	5·529	1·682	3·847
„ 1896 „ 1897	4303	36	7	31	38	8·831	1·627	7·204
„ 1897 „ 1898	5530	36	13	33	46	8·318	2·351	5·967
„ 1898 „ 1899	6180	35	9	34	43	6·957	1·456	5·501
„ 1899 „ 1900	6834	19	7	16	23	3·365	1·024	2·341
„ 1900 „ 1901	7017	29	8	23	31	4·417	1·140	3·278
„ 1901 „ 1902	6438	38	7	35	42	6·524	1·088	5·437
„ 1902 „ 1903	6484	44	6	43	49	7·557	0·925	6·632
„ 1903, to 31 Dec., 1903	5604	27	8	20	28	4·977	1·428	3·569
1 Jan., 1904 „ 1904	6192	73	9	65	74	11·951	1·454	10·497
„ 1905 „ 1905	6586	34	7	30	37	5·618	1·063	4·555
„ 1906 „ 1906	7004	65	4	61	65	9·280	0·571	8·709
„ 1907 „ 1907	7516	68	6	64	70	9·314	0·798	8·515
„ 1908 „ 1908	6464	60	6	58	64	9·900	0·928	8·972
„ 1909 „ 1909	6054	54	6	49	55	9·085	0·991	8·093
„ 1910 „ 1910	5770	63	8	57	65	11·265	1·386	9·878
„ 1911 „ 1911	5247	80	4	77	81	15·437	0·762	14·675
„ 1912 „ 1912	5566	60	53*	53	106	19·044	9·522	9·522
„ 1913 „ 1913	6106	64	6	60	66	10·809	0·982	9·826
„ 1914 „ 1914	4741	69	9	62	71	14·977	1·896	13·081
„ 1915 „ 1915	3908	71	6	67	73	18·679	1·535	17·144
„ 1916 „ 1916	3864	53	2	51	53	13·716	0·517	13·198
„ 1917 „ 1917	4050	50	2	48	50	12·345	0·493	11·852
„ 1918 „ 1918	4279	50	5	45	50	11·684	1·168	10·516
„ 1919 „ 1919	4413	58	1	57	58	13·143	0·226	12·917
„ 1920 „ 1920	5364	52	2	50	52	9·694	0·372	9·322
„ 1921 „ 1921	4011	40	3	37	40	9·972	0·748	9·224
„ 1922 „ 1922	3835	31	4	27	31	8·083	1·043	7·040
„ 1923 „ 1923	4785	64	2	63	65	13·584	0·417	13·166
„ 1924 „ 1924	5264	72	1	73	74	14·057	0·189	13·867
„ 1925 „ 1925	5110	62	2	61	63	12·328	0·391	11·937
„ 1926 „ 1926	5309	54	5	52	57	10·736	0·941	9·794
„ 1927 „ 1927	5044	70	5	65	70	13·877	0·991	12·886
„ 1928 „ 1928	5170	47	1	46	47	9·090	0·193	8·897
„ 1929 „ 1929	4986	59	17	55	72	14·440	3·409	11·031
„ 1930 „ 1930	4606	55	4	52	56	12·158	0·868	11·289
„ 1931 „ 1931	4391	38	8	35	43	9·792	1·821	7·970
„ 1932 „ 1932	4605	71	4	67	71	15·418	0·868	14·549
„ 1933 „ 1933	4510	77	7	71	78	17·295	1·552	15·742
„ 1934 „ 1934	4843	108	4	105	109	22·506	0·826	21·680
„ 1935 „ 1935	5409	142	1	141	142	26·252	0·184	26·067
„ 1936 „ 1936	5432	97	4	96	100	18·409	0·736	17·673
„ 1937 „ 1937	5876	107	5	103	108	18·379	0·850	17·529
„ 1938 „ 1938	5891	103	2	102	104	17·654	0·339	17·315
„ 1939 „ 1939	5928	87	2	87	89	15·013	0·337	14·676
„ 1940 „ 1940	6000	103	2	102	104	17·333	0·333	17·000

* Mount Lyell disaster.

TABLE showing Rate per Thousand Killed and Injured in different Divisions for the Year 1940.

Division.	Average Number of Men Employed.	Number of Accidents.	Number of Persons		Total Number Killed & Injured.	Average per 1000 Killed and Injured.	Average per 1000.	
			Killed.	Injured.			Killed.	Injured.
Northern and Southern	1676	10	...	10	10	5·966	...	5·966
North-Eastern	452	3	...	3	3	6·637	...	6·637
Eastern	656	5	...	5	5	7·621	...	7·621
North-Western	670	12	...	12	12	17·910	...	17·910
Western	2546	73	2	72	74	29·065	0·785	28·279
Total	6000	103	2	102	104	17·333	0·333	17·000

ANALYSIS of Statistics of Accidents for Western Division.

Division.	Number of Miners Employed.	Number of Accidents.	Number of Persons		Total Number Killed & Injured.	Average per 1000 Killed and Injured.	Average per 1000.	
			Killed.	Injured.			Killed.	Injured.
Mount Lyell	1809	41	...	42	42	23·217	...	23·217
Zeehan, &c.	737	32	2	30	32	43·419	2·713	40·705
Total	2546	73	2	72	74	29·065	0·785	28·279

APPENDIX V.

REPORTS OF INSPECTORS OF MINES.

Inspector H. A. Vaudeau, Upper Burnie, reports:—

Employment.—The average number of men employed in mining, quarrying, and metallurgical activities was 977. Operations afforded employment to 281 men in portion of the north-western mineral district and 696 in the western district exclusive of Mount Lyell.

Accidents.—Forty accidents were registered under the provisions of the Mines and Works Regulation Act. Twenty-nine of the accidents occurred underground, and 11 were associated with surface operations. There were two fatalities. An exercise of merited care would have averted several accidents, but in the majority of the mishaps the injuries were due to misadventure. The largest proportion of the non-fatal accidents was associated with operations by one mining company, and although lack of observation may have contributed to two of the accidents, the general conduct of operations would not incite the conclusion that lack of supervision contributed to the cause of the mishaps. The two accidents were concerned with falls of ground, and, as a result of investigations, an improvement ensued in the care directed to the detection of ground weaknesses.

One of the fatal accidents was connected with the collapse of an ore-tramming bridge over a main railway track. The tramming bridge had been designed and approved for a fixed capacity, but transport difficulties resulted in the introduction of heavier trucks and, although it was asserted that the structure had been adequately tested with the increased tramming load, the structure collapsed when three trucks of ore were in process of being drawn across the bridge. The brakesman, who was riding between the first and second trucks, was unable to jump clear and sustained fatal injuries.

In the case of the second fatality, two miners had loaded a round of holes with explosives in the face of a drive, and were engaged lighting the fuses with a "fuse lighter" when one of the holes exploded and inflicted fatal injuries to one of the miners. The other miner was able to make clear from the place before further charges exploded and was not seriously injured. It was revealed that some of the fuses had become wet, and this rendered it difficult to enable regularly rapid lighting to be carried out, consequently the miners delayed in the place for a period not allowed for by the length and burning rate of the fuses. Considerable discussion ensued in regard to the number of fuses, controlling individual charges, that should be lit in the one round of firing, and the evidence was inclined to the fact that the underground employees always had ample time to light the required number of fuses and more, if necessary, and make clear to the surface before any explosions occurred. Inexperience may often have an immediate bearing upon the issue. It would not be difficult to legally prescribe the number of charges to be fired, but it may be difficult to make a logical margin of demarcation, and the effort to control the matter might be regarded as farcical.

Four accidents were due to falls of ground. In one case a quantity of ore had "set off" on square set timbering, and a party was detailed to remove the ore before interfering with the timber, but one member of the party proceeded to cut away portion of a wooden chute, and while thus engaged, the timbering spread and allowed some of the ore and timber to fall on him. He sustained injuries which caused incapacity for several weeks. Failure to observe instructions in regard to the method of procedure was of moment in this case, and the result was a general example in this connection.

In a second case two miners were barring down ground that had been loosened by blasting operations on the preceding shift when a quantity fell from the roof of the working face and struck one of the miners. Apparently the ground had been affected over a larger area than was anticipated, and no allowance was made for the possibility of a result of the nature recorded.

A third mishap occurred when an underground employee was carrying a water jet up the rill of a stope; due to a small quantity of ground falling from the roof at the edge of a bulk and striking him on the left hand. An investigation suggested that the condition of the roof at the bulk was not satisfactory prior to the accident.

The fourth accident, due to falling ground, happened when miners were engaged timbering. Reports indicated that the ground had fallen away without warning and had severely injured one person, while a second person sustained only minor injuries. Investigations suggested that the miners had been instructed to erect the timber without delay after an examination had been made of the roof of the underground place. One set of timber had been erected, and the instruction was then passed to employees and an official of the succeeding shift, but the instruction was not given immediate effect to. Ore removal was proceeded with, and the ground fell away before there was time to erect the timber. A degree of carelessness was attachable to both the official and the men concerned.

Four persons received eye injuries during spalling operations. Every endeavour is made to persuade men to use commonsense when engaged in spalling, as carelessness in this regard may result in injury to a neighbouring employee.

A fifth person sustained an injury to his right eye as the result of the corner of a shovel, being used by his mate to free a loose board in an ore chute, slipping and striking him therein. Investigations were made concerning a fatal accident at a gravel pit not under the provisions of the Mines and Works Regulation Act. In this case the bank was being undercut in a dangerous manner, and resulted in a fall of earth which smothered the deceased.

Safety.—At two mines objection was taken to the steepness of stoping rills owing to the danger of ore striking employees ascending to their working places, due to the ground being broken on the rise instead of on the decline as is customary. Several rills have been flattened, and a scraper system has been adopted to rake the ore to passes and the mullock to the filling section. An extension of this system would be beneficial in the interests of safety, where breaking of ore is carried on upwards, otherwise there is always a danger of men being injured.

At an open-cut workings rigid measures were necessary to secure the safe battering of the hanging-wall country. Every encouragement has been extended to officials and employees to keep all affected ground barred down, but cases continue to arise where it is found necessary to have such a condition rectified during the course of extensions to divert against the possibility of a serious accident. Matters of extending baulking and timbering systems, of improving ladder-ways, of providing life-lines at open-cut workings, of maintaining reasonable batters on broken ground and surface workings, and of controlling details of a miscellaneous nature have figured prominently in measures taken to ensure the greater safety of working conditions.

Ventilation.—The question of adequate ventilation has received constant attention. At one mine auxiliary fans were installed to propagate the circulation developed by the main ventilating fan, but the location and operation of the fan was not conducive to permanently satisfactory results. Efforts to obtain an alteration of the system were responded to with beneficial results, but a general alteration of the policy of ore-breaking was made and produced a commendable condition of control in mine ventilation. At a second mine a request for level connections was given effect to, and resulted in improved ventilating conditions.

Counts of atmospheric dust were required and, where taken, were deemed satisfactory.

Health and Sanitation.—Much attention was directed to matters affecting health and sanitation. At two mines material alteration was made to the drainage and formation of roadways, and resulted in more congenial trucking and travelling conditions. A better type of crib-house was adopted and courted expressions of satisfaction. At one mine there was considerable dissatisfaction in regard to the existing accommodation, and, as a result of general representations, new crib-house facilities are being provided. Generally, the provisions of the Act in regard to sanitation, crib-houses, change-houses, and roadways have been complied with in a reasonable manner. Water reticulation services exist for allaying dust during rock-drilling operations and for the wetting of broken ore and material during shovelling and other operations. Cautionary action was taken in isolated instances where insufficient use had been made of the means provided for the prevention of dust dispersion.

In one case legal action was taken against a person for neglecting to take necessary measures to prevent dust. The defendant was fined £1 and ordered to pay costs amounting to 12s. 6d.

Explosives.—Due regard was given to an observance of the requirements of the Explosives Act and that portion of the Mines and Works Regulation Act relating to explosives. No instance of defective explosives was encountered and no complaint was received regarding the quality of the nitro-compounds, detonators, and fuse in use.

Three shipments of explosives, comprising 2005 cases of nitro-compounds and 75,000 detonators were received at Burnie. Unloading and despatching were supervised.

A ship's winchman was prosecuted for smoking at the time of unloading and was fined £2, with costs amounting to 8s.

Inflammable Liquids.—Many irregularities were encountered in the storage of inflammable liquids, due largely to the creation of stocks to cover periods of wartime conditions. Every endeavour was made to correct irregular practices without recourse to law but deliberate neglect to comply with requests compelled the institution of legal proceedings in six instances.

Occupational Diseases.—A considerable amount of work was involved in attending to matters for the purpose of the Workers' (Occupational Diseases) Relief Fund Act.

Two persons were certified as suffering from partial affection. Four persons applied for examination. One was initially certified as free from disease. Three were certified as partially affected by the district medical officer, but as unaffected on examination by the medical referee.

Differences of opinion in regard to degrees of affection give rise to the question of the extent to which experienced miners might be excluded from underground employment and the effect that such exclusion has on safety owing to the necessary employment of less experienced men. Many good miners, apparently in good health, have been denied underground occupation following medical examination, and, although no opinion is being recorded upon the medical merits of these cases, the exclusion of these miners and the inclusion of inexperienced persons in occupation involving mining hazards tend to increase the accident list.

General.—Appreciation is expressed of the assistance rendered me by managers, foremen, and employees at the mines, works, and quarries in the execution of duties directed to obtaining the best possible conditions in occupations which are allied with many risks.

Reports and Prospects.—Twenty reports were furnished on mineral prospects and application for assistance under the provisions of the Aid to Mining Act. Several reports were submitted upon the cutting and conditioning of tracks to mineral areas, upon the consolidation of leases, and upon matters of a miscellaneous nature for the purpose of the Mining Act.

One area in the region of Mount Brown and Dove River presents mineral prospects of an interesting nature and, in consideration of seams and blebs of copper ore in favourable rock types, is worthy of a geophysical examination to determine the merits of a drilling campaign.

Exposures of tin ore along the old Dundas-Williamsford tramway are sufficiently attractive to merit prospecting.

There is an exposure of manganese ore on this tramway, approximately 1¼ miles from Williamsford, that may lead to a development of importance. At a comparatively small expenditure a massive body of commercial ore might be exposed. Selected ore has assayed 53 per cent manganese.

There are also good possibilities of locating payable deposits of manganese in the Dial Range. An examination was made of outcrops of chrome and nickel ores in the Heazlewood district. Comparatively small expenditure might reveal deposits of economic importance.

Operations and Production.

Asbestos.

An occurrence of asbestos of the chrysotile variety was revealed during the construction of the road between Zeehan and Renison Bell, but insufficient work has been done to determine the commercial merits of the occurrence.

Bismuth.

An exposure of bismuth ore was made at the old Federation Tine Mine, and from the exposure there was produced a quantity of concentrate containing ·016 ton of bismuth, valued at £7·5. A small crushing plant is being installed, and the occurrence is to be further tested.

Cadmium.

The recoverable quantity of cadmium in ores produced by the Electrolytic Zinc Company from the Read-Rosebery mines was 50 tons, valued at £18,242.

Clay.

In addition to clays normally required for the manufacture of bricks, 800 tons of white clay, valued at £926, were produced from deposits at Hellyer for use at the Associated Pulp and Paper Mills at Burnie. A small parcel of 14 tons, valued at £17·5, was despatched from Preston to Launceston for testing purposes.

Gold.

The recorded output of fine gold was 11,262 oz., valued at £944,602·6. Of this quantity, 11,211 oz. was recovered from zinc-lead ores mined by the Electrolytic Zinc Company at the Read-Rosebery mines.

West Coast Gold Mines.—After a protracted period of unsuccessful efforts to sluice the auriferous alluvials at Middleton Creek with the natural supply of water, two portable steam plants were installed, and some 4750 cubic yards of ground were sluiced for a return of 44·89 oz. gold, valued at £371·4, equal to 18·766 pence per cubic yard. The management is now sanguine regarding the future.

J. Spencer recovered 0·448 oz. gold, valued at £3·764, by dishing at Middleton Creek.

A. S. Betts pursued ground sluicing at Mount Ramsey and, from the treatment of 240 cubic yards of ground, recovered 1·28 oz. gold, valued at £10·762, together with a small quantity of tin oxide and osmiridium.

Doctor's Rocks.—During periods of low tides, parties were occasionally engaged in specking and pot-holing along the sea coast from Somerset to Seabrook. Gold sold to a local buyer amounted to 1·098 oz., valued at £9·224. It is difficult to ascertain the exact quantity recovered. Slugs up to 19 dwt. have been won, and it is considered that there are possibilities of gold values being obtained by sea dredging. Such a project is worthy of investigation.

Geale and Party.—Consequent upon a favourable report by a mining engineer on the alluvials west of the Lyons River, it was decided to undertake a drilling campaign, but delays and difficulties were experienced, and it was not possible to reach bottom. Results, however, influenced the party to investigate a proposal to bring in a supply of head-water to test the ground under sluicing conditions.

Wynyard Gold Syndicate.—At Calder an adit was driven into the side of a steep hill. Quartz was struck and sunk on, but only traces of gold were obtained.

Prospecting.—Miscellaneous prospecting was pursued in the vicinity of Rocky River, Whyte River, and Donaldson Ranges, but no discovery of moment was reported.

Graphite.

One parcel of 5 tons of graphite, valued at £8, was produced from a deposit at East Ulverstone and despatched to the Mainland.

Iron.

From iron ore deposits, on the property of M. L. Sushames, at Cuprona, 412 tons of ore, valued at £741, were despatched to the Australian Commonwealth Carbide Works, at Electrona, for the manufacture of ferro-silicon.

The area, at Natone, held by J. Linell-Cook (Holdings) Pty. Ltd. embraces outcrops and detritals of haematite of excellent quality. Samples have been despatched for examination and testing, and early operations, directed to stripping the ore deposits, are anticipated.

Iron Pyrites.

The manager of Pacific Phosphate Company, which Company is interested in occurrences of iron pyrites at Chester, has reported that accommodation has been provided for employees, tracks have been cleared, and the bottom tunnel of the old workings has been cleaned, drained, and repaired. This tunnel had been driven 330 feet, and had penetrated low grade ore. Opencut benches and old workings have been sampled to evaluate the ore body. Copper, silver, and gold are absent, and there appears to be no other than sulphur values. The mine was previously worked for the sulphur content of the pyritic ore.

Limestone.

A parcel of 70 tons of limestone, valued at £50, was produced from a deposit at Pulbeena and used for agricultural purposes.

Manganese.

Only a limited amount of work was pursued by A. G. Black on the manganese prospect in the Dial Range. It is regrettable that this prospect is so devoid of activity when manganese is urgently required for strategic purposes.

Osmiridium.

An improved market resulted in the disposal of quantities of osmiridium that had been held for several years and induced a greater number of miners to search for this natural alloy of osmium and iridium which is now hard to locate on the old fields. It is difficult to obtain an accurate statement of all production, but the recorded quantity produced and sold was 106 oz., valued at £2775·6.

Ochre.

From an occurrence of red ochre, at Spadford, a parcel of 3·5 tons was despatched to the Mainland and realised £9.

Scheelite.

Opencutting and milling has been actively pursued by the King Island Scheelite N.L. on King Island. 35,000 tons of ore was treated for a recovery of 275·5 tons of concentrate, valued at £49,120. A lower level adit was driven and, at the close of the year, penetrated ore of an encouraging nature. Installation of milling units was completed and commissioned for the treatment of tailings and coastal sands with favourable results. Operations afforded employment for an average of 77 men, 3 of whom were employed underground.

Prospecting was pursued by Burgess and party north of the King Island Tin Mine. Prospects are ascribed to be encouraging.

Silver-Lead Ores.

Farrell Mining Company Limited.—Ore mined and milled was 17,198 tons. Finished lead concentrate was 4664 tons, containing 3499 tons of lead and 404,794 oz. of silver. In addition, 846 tons of "firsts" were hand-picked at the underground faces and contained 498 tons of lead and 63,287 oz. of silver. The total marketable product was 5510 tons, containing 3997 tons of lead and 468,081 oz. of silver, valued at £146,972. The output of silver and lead represents a substantial increase as compared with that for the previous year when the finished product was 3282 tons, containing 2365 tons of lead and 249,721 oz. of silver, valued at £61,567.

The main shaft was deepened 100 feet and No. 7 level was opened up. The main crosscut was driven 140 feet westerly. A quartz lode was intersected at 104 feet and driven on southerly for a distance of 105 feet. The lode carried splashes of "metal," but nothing of a payable nature. A rise was commenced for a connection with No. 6 level.

At No. 6 level the drive on the quartz lode was advanced 200 feet southerly and 40 feet northerly from the main crosscut. Although values were patchy, there was an average of 18 inches of payable "seconds" in the overhead stope. The drive on the main lode was extended 230 feet without penetrating payable values. Crosscuts were driven into the walls without intersecting ore.

Stoping was continued on Nos. 3, 4, and 5 levels, and occasional crosscuts were driven into the footwall country for mullocking and prospecting purposes, but no ore was encountered in the crosscuts.

At No. 2 level the northern drive was continued on the main lode for a distance of 360 feet. The lode development for 190 feet was highly payable. At 220 feet from the main crosscut the lode widened to 20 feet of high-grade milling ore with occasional bunches of galena. The enlargement was at the junction of the main and branch lodes. This development enabled the output of ore to be materially increased.

No. 1 level was driven northerly, and intersected the vertical projection of the ore opened up on No. 2 level. Payable ore, averaging 5 feet in width, persisted for a distance of 260 feet, and a rise was lifted to 25 feet from the level on payable ore.

Impoverishment of the lode below No. 5 level is of concern, and, to assist in the development of the series, a contract for 2000 feet of drilling was arranged. The first hole was drilled in a westerly direction from the main drive at No. 6 level, and passed through 5 inches of clean galena. An extension of the main crosscut was commenced with the object of intersecting this occurrence of ore.

Surface prospecting is to be undertaken, in addition to the drilling campaign, in an endeavour to determine a northern extension of the main lode channel.

Montana Silver-Lead Mine.—Plant electrification was completed, and a concentrating mill was installed, but electrical and mechanical difficulties developed and caused a protracted delay in production. 852 tons of ore was treated for a recovery of 123·6 tons of concentrate, containing 79·868 tons of lead and 9488 oz. of silver, valued at £2986·6. Limited underground developmental work was undertaken, and although results were rather disappointing it is considered, under skilled management, there is a good future for the mine.

Swansea Mine.—31·35 tons of prill ore was sold, and contained 21·3 tons of lead and 1731·84 oz. silver, valued at £714·3.

Old Montana Mine.—Preparations were made for unwatering the mine, but no work was in progress at the close of the year.

Government Comstock Mine.—Operations were suspended as the ore body was too zinciferous and prospects did not warrant the installation of a plant for selective treatment.

Spray Mine.—One person continued underground exploratory work, but the objective "G" lode was not struck owing to a displacement fault at the calculated point of intersection. Driving was then commenced in an endeavour to locate the lode at the northern end.

Silica.

The Leven Silica Quarry was worked according to the demand for silica. The quantity of silica exported to the mainland was 186·5 tons, valued at £186·5.

Tin.

Metallic tin in the recorded output of tin products was 209 tons, valued at £53,836. 74·867 tons of metallic tin accrued from operations in the Western Division and 134·24 tons from portion of the North-Western Division.

Mount Bischoff Tin Mining Company.—A quantity of 29,759 tons of crude ore was crushed and 7020 tons of slimes and tailings were re-treated for a total recovery of 173 tons of tin concentrates. 8490 cubic yards of alluvial ground was sluiced for an output of 19·3 tons of tin oxide. The total production was 192·3 tons of concentrate, containing 130·27 tons of metallic tin valued at £33,506.

Operations afforded employment for an average of 115 men. A small 4-head battery was removed from the Happy Valley location to a new position below the White Face to reduce costs of handling.

Underground Workings, North Valley Lode.—Developmental work carried out on this lode has been attended with satisfactory results, having proved the existence of a large block of payable ore between the Nos. 2 and 5 levels. No. 4 level was advanced 232 feet south-easterly, the total length of the level being 715 feet. The lode has averaged 54 inches in width for the last 232 feet, but, at the close of the year, the face of the level was showing 10 feet of fair grade ore, while in the stopes above the level the lode was 12 feet in width carrying payable values. No. 5 level is 57 feet below No. 4 level, and extends 1700 feet south-easterly from the portal of the adit. Good ore has been won from the northern end, but the southern end, which has been closed for some time, is now being cleaned out and is revealing a good make of ore along the back of the level as work proceeds. The vertical height between Nos. 5 and 2 levels is 132 feet, and as the lode shows strongly in the latter level a good tonnage of ore is assured between the levels. The manager has reported that the bulk of the ore opened up above No. 2 level has been worked out, but there is still some 2000 tons of good ore to be stoped and there are possibilities of opening up further blocks of ore as the level is extended southerly. The ore in this lode channelling is pyritic and was not mined in earlier years owing to treatment difficulties.

North-East Lode.—Operations were continued on this lode, but results were disappointing. A short crosscut at No. 4 level disclosed a small seam of high grade ore in the hangingwall, but when driven on for a distance of 30 feet dense pyritisation occurred and values declined.

Slaughter Face Lode.—A small tonnage of good grade ore has been won from the stopes above No. 1 level, and a winze has been sunk to test the lode below that level. The lode in the winze is small but carries good values.

Gossan Face Lode.—The shallow level below the Gossan Face was extended 58 feet north-easterly, and fair grade ore was won in the early part of the year, but winter working was difficult owing to the soft nature of the ore and the seepage of a large volume of water into the stopes. Operations were resumed during the latter part of the year, and a prospecting level was driven in the western side of the face in anticipation of penetrating good values.

Surface Faces, White Face.—Operations were temporarily suspended to enable the stamper battery to be moved from the Happy Valley workings to a site below this face. Crushing was then resumed, and, although the ore is to be regarded as low grade, it is mined and milled at a low cost and an increased output is expected during the coming year.

Gossan Face.—A lesser tonnage of ore was won from this face, and the value has impoverished. Careful classification is necessary to maintain a payable grade under present working conditions.

Brown Face.—This face was again brought into production, but results have been disappointing due mainly to transportation difficulties during wet weather.

Slaughter Face.—A comparatively large tonnage of the lower grade ore has been won from this face and crushed at No. 1 battery.

North Valley Alluvial Workings.—Restricted sluicing was resumed at the beginning of the year, but frequent wash-outs occurred along the race. Latterly, more progress was made, and it is expected that production will be increased during the coming year.

G.P.S. Syndicate.—Two to three men were occasionally occupied in cleaning up around the old mill, in re-treating old tailings, and in ground sluicing in Tinstone Creek. These operations resulted in an output of ·7 ton of tin oxide, containing 0·488 ton of metallic tin, valued at £126·46.

Leases of H. Stanley and C. Dunstan.—Two to three men were engaged picking over old dumps and breaking up old pillars below No. 3 level in the underground workings. Production amounted to 1·53 ton of tin oxide, containing 1·03 ton of metallic tin, valued at £264·93.

Leach and Payne, Waratah.—Intermittent ground sluicing was pursued on a miner's right claim at Tinstone Creek and resulted in an output of ·55 ton of tin oxide, containing ·35 ton of metallic tin, valued at £90.

Big Dipper Syndicate, Wombat Flat, Waratah.—Hydraulic mining resulted in the treatment of 2390 cubic yards of alluvial ground for a recovery of 1·75 ton of tin oxide, containing ·91 ton of metallic tin, valued at £235·92.

R. W. Pryde was intermittently engaged in working alluvial ground on a miner's right claim at Campbell Creek, and recovered ·55 ton of tin oxide, containing ·36 ton of metallic tin, valued at £94.

Betts and Son continued with prospecting and ground sluicing operations for tin, gold, and osmiridium at Mount Ramsey. Two hundred and forty cubic yards of ground were treated for a recovery of ·31 ton of tin oxide, containing ·16 ton of metallic tin, 2·625 oz. of osmiridium, and 1·28 oz. of gold. Additional attention is to be directed to prospecting the area during the new year.

Balfour.—There are no records of operations of moment in the Balfour area. One lot of tin oxide, weighing ·145 ton and containing ·1 ton of metallic tin, resulted from ground worked by D. Cruickshank.

Housetop.—An area of alluvial ground at Trial Creek was tested by V. Aitken without any material development. Tin-dressing difficulties hampered operations and impoverished the available grade of the product, one parcel of ·03 ton of concentrate containing not more than ·012 ton of metallic tin.

Renison Associated Tin Mine, Renison Bell.—Productive activities were seriously interrupted by a collapse of the ore-tramming bridge over the Emu Bay Railway. During the construction of a new bridge several alterations were made to the milling plant. 12,694 tons of ore was milled for a recovery of 86·27 tons of concentrates, containing 57·8 tons of metallic tin, valued at £14,921. Operations gave employment to 42 men. Pending the restoration of the tramming bridge an appreciable amount of mining work was undertaken, new faces being opened and connected to provide an ample output of ore for resumed milling. An encouraging ore development ensued at the Cable Workings. An application of flotation practices to the separation of cassiterite from gangue mineral is reported to have been successful.

Tasmanian Amalgamated Tin Mines, Renison Bell.—Formerly the Federal Lode was quarried to the 57-ft. level, but hand methods on the southern extension became uneconomical owing to a flattening of the dip of the lode and an increase in the amount of overburden to be removed. During the year under review compressor and rock-drilling equipment were installed, and an incline adit was driven to cut the lode 80 feet below the 57-ft. working level. The incline was driven 195 feet, and a rise was then lifted from the end to the objective level. A crusher was installed at the end of the adit, and a belt conveyor was provided for the conveyance of ore along the adit to surface bins. Ore breaking and milling were resumed, and 2885 tons were treated for a recovery of 19·12 tons of tin concentrates, containing 11·8 tons of metallic tin, valued at £3043·9. The number of men was increased to 26.

Miscellaneous, Renison Bell.—Sluicing was pursued by G. Cox and resulted in an output of 1·6 ton of tin oxide, containing 1·1 ton of metallic tin, valued at £274·6. J. Pepper was occasionally engaged in ground sluicing and accounted for ·2 ton of tin-oxide, containing ·11 ton of metallic tin, valued at £29. A. Abel was mainly engaged in prospecting activities at Pine Hill and located two large lodes, but the exposures were low in tin values. From productive work ·123 ton of tin oxide was recovered and contained ·07 ton of metallic tin, valued at £18·8.

X-River and Gorge.—A. J. Salmon recovered ·69 ton of tin oxide, containing ·43 ton of metallic tin, valued at £111, from hand-crushing and boxing a picked quantity of ore from a lode occurrence.

J. Copping won ·27 ton of concentrate containing ·16 ton of metallic tin, valued at £41·5, from the treatment of a small quantity of selected lode material.

Ground sluicing was pursued by J. S. Fenton and Son and resulted in an output of ·43 ton of tin oxide, containing ·24 ton of metallic tin, valued at £63·6.

Mount Lindsay.—A picked quantity of ore from a lode occurrence was treated by R. M. Clarke for a recovery of ·46 ton of concentrate, containing ·25 ton of metallic tin, valued at £64.

Heemskirk.—Miscellaneous parties continued with productive and other operations in the southern and northern areas of the Heemskirk district, and contributed to the total output of tin.

At South Heemskirk A. Whyman recovered ·337 ton of tin oxide, containing ·16 ton of metallic tin, valued at £41·4, from ground sluicing.

W. G. Jones ground sluiced for an output of ·369 ton of concentrate, containing ·17 ton of metallic tin, valued at £42·9, and E. Cornish was engaged for a short period in the production of ·04 ton of alluvial tin, containing ·022 ton of metallic tin, valued at £5·8.

On a portion of the old Federation leases J. Geason erected a 2-head stamper battery, small concentrating table, and pelton-wheel drive. A picked quantity of ore from a lode occurrence was crushed for a recovery of ·4 ton of concentrate, containing ·18 ton of metallic tin, valued at £46·7. Small lots of bismuth and wolfram concentrates were also recovered.

Costain and party continued with the driving of an adit and penetrated a flat make of ore, but values were irregular and operations were temporarily suspended. It is considered that there are possibilities of a large low-grade ore zone.

Mel. Humphries was engaged in ground sluicing at South Heemskirk, and produced ·33 ton of tin oxide, containing ·193 ton of metallic tin, valued at £49·8. A small lot of wolfram was also produced, and this development is worthy of added attention.

G. Maskell produced one small lot of tin oxide.

At North Heemskirk the North Heemskirk Tin Syndicate was not engaged in active sluicing, but an early resumption of operations is anticipated. Samples taken from a lode formation are reported to have returned satisfactory results, but there has been no development.

Ground sluicing was pursued by R. Smith and resulted in an output of ·79 ton of tin oxide, containing ·53 ton of metallic tin, valued at £137.

H. G. Watson recovered ·317 ton of alluvial tin, containing ·217 ton of metallic tin, valued at £56·3.

Dundas.—A small party was engaged at the Razor Back Tin Mine, and a selected quantity of ore from the lodes was hand crushed and boxed for an output of 2·2 tons of concentrate, containing 1·38 ton of metallic tin, valued at £349·6.

J. Hodge produced one small lot of tin ore from the Dundas series, but there was no further development.

Five-Mile.—H. E. Brock employed several men in connection with exploratory operations at the old Grand Prize Mine. At No. 2 adit a crosscut was driven 20 feet to the eastern lode, which was driven on for 60 feet. No. 3 adit was extended and penetrated the eastern lode, which was driven on for 18 feet. A low-level adit was then commenced and driven 175 feet to further prove the lode series. Values were encountered, but the prospects were not considered sufficient by the owner to warrant further work.

Messrs. Wallace and Laffer were engaged in general prospecting, but no development of moment was reported.

Wolfram.

There were two new discoveries of wolfram lodes at South Heemskirk, and although only a small lot of concentrate has been won from them the developments are

worthy of further attention. One exposure was on the side of the road to the Federation Tin Mine. Samples of the concentrate assayed as high as 72·3 per cent tungstic acid. One bag of concentrate weighing ·047 ton was washed from the lode material, and contained ·033 ton of tungstic acid, valued at £8·3. The second lode exposure was at the old Federation Tin Mine and consisted of a formation 18 to 24 inches in good ground. By boxing material from the formation ·087 ton of concentrate was recovered, and contained ·041 ton of tungstic acid, valued at £10·25.

Zinc-Lead Ores.

Magnet Silver-Lead Mines.—In the early part of the year, productive mining was continued at Nos. 16 and 17 levels, and 1862 tons of ore was milled for a recovery of 261 tons of lead concentrate and 283 tons of zinc concentrate. The concentrates were estimated to contain 169·65 tons of lead, valued at £4241; 135·84 tons of zinc, valued at £3701; and 28,606 oz. of silver, valued at £2726. Financial difficulties developed and the company went into liquidation. The Spartan Silver-Lead Mining Company was formed and took over the mine and assets to test the prospective and economic importance of the Magnet series at No. 17 level. A set of crosscuts was completed, and two small formations carrying up to 12 inches of galena were passed through, but the developments, together with makes of ore revealed by earlier operations, were not considered to comprise a payable proposition, especially in view of excessive handling, additional mining equipment required, and re-construction of the main shaft necessary to place the mine on a commercial basis. It was decided to abandon operations in the old workings, and this appeared to be the only logical conclusion. As a matter for future consideration it is considered that there are excellent prospects of locating the faulted portion of the main lode westerly from the old workings. Geological structures on the surface and underground support this opinion, and it is believed that if the south adit was deflected about 20 degrees and driven a further 300 feet the "Back Lode" and the "Main Lode" of the Magnet series would be penetrated.

Electrolytic Zinc Company of Australasia Limited, Rosebery, Williamsford, and Zeehan.

Hercules Mine.—At No. 6 level the main crosscut was extended 234 feet and then deflected to intersect an occurrence of ore penetrated by a drill hole. Driving passed through several bunches of ore and appeared to be at the bases of a lens. Ore assaying up to 8·8 per cent lead, 11·7 per cent zinc, 20·8 oz. silver, and 2 dwt. gold per ton was revealed over a width of 8 feet. A south drive was commenced from the main crosscut and was advanced to 100 feet with the object of ultimately penetrating the "J and K" lode channellings.

Developmental work comprised 430 feet of driving, 270 feet of crosscutting, and an appreciable amount of rising, in addition to 8033 feet of exploratory drilling. A geological survey of the ore bodies of the Hercules and Mount Read group was completed, and a drilling campaign was undertaken to locate other than the known ore bodies and their lateral extensions, but no major ore body was located. A 3-ft. seam of payable ore was cut, but is presumed to be "G" lode channelling.

A high-level dam, with a capacity of 16,000 gallons, was built, and a larger capacity pump was installed to afford a better supply of water for operations.

A material tonnage of ore was recovered from "L" lode as the opencut was extended for mullocking purposes. Operations at this mine gave employment to an average of 91 men and 50,754 tons of ore was mined.

Rosebery Mine.—Developmental work was continued on northern and southern extensions of the lode system at No. 9 level with satisfactory results. A rise was lifted to No. 8 level. Developmental work was continued on lode extensions at Nos. 8, 6, 4, and 2 levels. Necessary rise connections were made between levels. An innovation has been made in connection with rising by the drilling of a pilot hole for simplifying the course of rising and improving the ventilation. A mechanical loader has been installed at No. 9 level and is giving efficient results. Main trucking roads have received considerable attention. Light rails have been replaced with heavier ones and the drainage system has been considerably improved. Endeavours have been made to improve mullocking practices by using modified scrapers. Improvements have resulted, and consideration is being directed to the introduction of other mechanical appliances for filling purposes.

The geological survey was continued, and preliminary work was carried out on the Mount Black, Dalmeny, and Rosebery lode sections. Operations gave employment to 366 men and 107,910 tons of ore was mined and milled. 2470 feet of prospect drilling was carried out.

The milling plant was in continuous operation, and 158,562 tons of combined ores were milled for a recovery of 56,257 tons of zinc concentrates and 14,353 tons of lead concentrates, collectively containing 26,126 tons of zinc valued at £711,933·5, 9283 tons of lead valued at £232,075, 50 tons of cadmium valued at £18,242, 1,041,953 oz. of silver valued at £104,631, and 11,211 oz. of gold valued at £94,172·4.

Calcining Works, Zeehan.—Twenty-four men were employed at these works in connection with the calcining of zinc concentrates from Rosebery prior to despatch to Risdon for final treatment.

Inspector J. F. Shaw, Launceston, reports:—

Mines and Works Regulation Act.

Employment.—Owing to re-arrangement of inspection districts, the statistics relative to employment and accidents include district coal mines for the first half of the year and mines in portion of the North-Western District for the latter half of the year.

The average number of men employed was 1321, and, for the reason mentioned, no comparison is made with the previous year. In the alluvial tin mining districts work was, to some extent, intermittent owing to variations in water supplies.

Accidents.—The number of accidents registered was 11, involving injury to 11 men. Two of the accidents occurred underground and 9 on the surface.

An explosive accident was caused by a man grinding caked sawdust from inside an old copper detonator with a short piece of fuse. The detonator exploded and caused lacerations of face, hands, and legs, resulting in amputation of parts of thumb and two fingers of right hand and two fingers of left hand.

Another man was in a kneeling position while undercutting a coal face, when a piece of top coal fell from the face and struck him a glancing blow on the back causing abrasions and other injury. Another man, while tipping a truck of coal from a ramp, stooped beyond the end of a railing to open the truck door, unbalanced, and either fell or jumped about 25 feet to the ground, sustaining a fracture of lumbar vertibrae, a fractured rib, a sprained wrist, and systemic shock.

The other accidents, though causing periods of incapacity in excess of 14 days, were not of a serious nature. In no case was an accident deemed to be due to laxity on the part of an employer.

Safety.—Continued inspection of workings was made and advice given to employers and employees with a view of ensuring conditions of work which would minimise the risk of accidents, and it is pleasing to record that a good response was met.

Ventilation.—The ventilation of underground workings was satisfactory. Some fogging from the exhaust of rock drills was noticed and efforts were made to check it.

Health and Sanitation.—The provision of facilities for rendering first aid was generally satisfactory on the larger mines. In some cases latrine accommodation was improved after inspection had shown it to be faulty. In a magnetic separator plant dust conditions were not satisfactory, and the installation of a comprehensive dust collecting unit was undertaken. Although not quite completed at the end of the year, an improvement was immediately apparent, and indications were that, with the full scheme in operation, conditions would be satisfactory. At a large alluvial mine a well-equipped change house, fitted with drying arrangement, hot and cold water showers, and basins was erected. Only a small percentage of employees have so far made use of the accommodation, but it is hoped that the employees generally will show their appreciation of the benefits provided by making full use of the facilities.

Explosives.—Periodic examinations and enquiries from users of explosives have been made, and the quality has been satisfactory. A few old copper detonators, which had at some period become damp, and one of which was concerned in an accident, were destroyed.

Machinery.—The provisions of the Act regarding winding ropes and protection of machinery, belts, and general equipment have received attention.

General.—Appreciation is recorded of the assistance afforded by officials and employees generally at the various mines and works.

Explosives Act.

At one mine, where the magazine is too close to plant and buildings, a new magazine is to be erected on a selected site. At the end of the year the site had been cleared and the erection of magazine buildings is to be proceeded with when material and labour are available. Further attention was given to the transport of explosives by motor lorry.

Inflammable Liquids Act.

The installation of storages for petrol was less active than for several years, but attention was given thereto as required. No serious breaches of the provisions of the Act were observed.

Workers' (Occupational Diseases) Relief Fund Act.

Several applications for examination of new employees were received, and arrangements were made for medical examinations. Certificates were forwarded to the Board. Applications for examination were received from three employees claiming incapacity. One of these, certified as 60 per cent affected, had an industrial history of underground mining in Tasmania extending over a period of 41 years. A second case, certified as suffering no incapacity, had been working underground in Tasmania and Western Australia for 12·5 years. The third person, certified as 25 per cent affected, had been working at underground mining in Tasmania and Victoria between 1914 and 1940.

Aid to Mining.

Considerable time was occupied in making examinations of properties and furnishing reports in connection with applications for assistance under the provisions of the Aid to Mining Act. Reports were also furnished on the location and condition of mining plant and on mining prospects of a general nature.

Extension of mining activities by the possible development of metallic or non-metallic formations has been kept in mind, and enquiries and some examinations were made.

Mining Operations and Production.

Gold.

The recorded output of gold was 612·6 oz., valued at £5146 sterling, representing an increase of 126·7 oz. compared with the production for the previous year.

In the Beaconsfield district there was practically no mining, the only production being 20·36 oz. from small lots of alluvial. No productive work was done at the Golden Horseshoe Mine.

Lefroy.—Crushing of selected material from old dumps was pursued by H. A. Tripptree, but the grade of available material impoverished and operations were suspended. Retort gold recovered contained 11·08 fine oz.

F. Randell crushed 950 tons of selected stone from the Pinafore dumps for 38·46 oz. gold. Dry weather and consequent shortage of water caused a temporary suspension of crushing.

The Lefroy Dump Syndicate treated, by cyanidation, 3300 tons of old battery sand for bullion containing 186·35 oz. gold. The sand was obtained from Sludge Creek.

A cyanide plant was also installed at New Chum Creek for treatment of old battery sand from the creek, but productive work had not started at the end of the year.

Miscellaneous fossickers in the Lefroy district sold 28·85 oz. gold.

Lisle-Nabowla.—A tribute party continued with sluicing operations at the Cradle Creek Mine and accounted for 10·37 oz. gold. After following the lead until it became narrow and poor in the upper part of the creek operations were suspended.

Miscellaneous fossickers, from operations on the alluvials in the Lisle basin, sold 57·71 oz. gold.

Mathinna.—Activities at the Enterprise Mine revealed nothing of an encouraging nature, and operations were suspended early in the year. Some stone won from the work was crushed for 7·06 oz. gold. Attention was then directed to the Jubilee Gold Mine, where the main shaft, the upper part of which had collapsed owing to damage from bush fires, was reconstructed through the collapsed section to 50 feet. Repairs and unwatering were continued to 150 feet, and the shaft was restored to a good condition.

At the *Old Boys Gold Mine* some prospecting work was done on behalf of Brock Bros. A short, low-grade formation was followed in disturbed country by sinking to 80 feet below the surface. The chute of stone was little more than the length of the winze. Ore won from this work, odd lots from about the Jubilee Mine and battery debris, returned 17·6 oz. gold. Unfortunately, on the death of Mr. C. Brock late in the year all work being done on behalf of Brock Bros. was suspended. A few ounces were sold by fossickers.

The installation of a cyanide plant, inclusive of filter press, to treat the sand and slime dumps at the Golden Gate Mine, by agitation, was well advanced at the end of the year.

Mangana.—A parcel of 10 tons of surface stone from Yates' Prospect was crushed at the State Battery for a return of 3·6 oz. fine gold.

Tower Hill.—A battery was installed by Gold Quarries Limited with a view to testing the large quartzite formation. Shortage of water hampered work. From 80 tons of picked surface stone bullion containing 7·42 oz. fine gold was recovered.

Fingal.—Some work was done on the Miami and West Miami Gold Mines by the Iris Gold Mining Company and H. Jenner. The work done was mainly breaking ore for crushing from selected parts of the old workings. One crushing of 50 tons at the State battery returned 9·2 oz. fine. A later crushing returned 6·39 oz. fine gold. The values were low and the outlook gave no cause for optimism.

The Endeavour Prospecting Syndicate tested some ground at Fingal. A vertical shaft was sunk 90 feet in slate country. From the 90-ft. level a crosscut was driven 30 feet westerly, and from the end of the crosscut a drive was extended south along a slate wall. Some small leaders were met crossing the trend of the country but they were not gold bearing.

South Mount Cameron.—Alluvial gold extracted by the Endurance Tin Mining Company from tin concentrate recovered from the sluicing of tin-alluvials returned 27·46 oz. fine.

Alberton.—There was little mining activity at Alberton. McCann's Associated Gold Mines reopened the Ringarooma United Mine and stoped 40 tons from below the adit level. This was crushed for a return of bullion containing 9 oz. fine gold. Work was later suspended.

At the Mount Victoria Mine J. C. Matthews and Son worked intermittently. From the mechanical treatment of old battery sand 5·62 oz. fine gold was recovered.

The balance of the recorded output of gold resulted from operations on auriferous alluvials by miscellaneous parties, and from the treatment of tin oxides recovered from tin alluvials carrying alluvial gold.

Copper.

A parcel of 13 tons of ore was picked from various parts of the workings of the Scamander Copper Mine and forwarded to the Mount Lyell Company for a return of 1·2 ton copper, 110·7 oz. silver, and 0·06 oz. gold.

G. L. Richmond forwarded to the Mount Lyell Company a lot of 4 tons of ore from the Welcome Home Mine, Middlesex, and this contained ·184 ton copper, 6·8 oz. silver, and 0·087 oz. gold.

Tin.

Recorded output of concentrates from lode and alluvial operations contained 1214·3 tons of metallic tin as against 1041·8 tons for the previous year. The improved return was largely due to an increase of 118 tons by the Briseis Company. As the rainfall in the sluicing districts was much below average the output was satisfactory.

Piper's Beach.—V. J. Miller carried on tabling of beach sand for part of the year for a production of concentrates containing 1 ton of metallic tin and 4·25 oz. of fine gold.

Storey's Creek Tin Mine, Storey's Creek.—Sinking of the pump shaft on the lode underlay was continued to 151 feet below No. 4 level. During sinking a well defined parallel fault was met, but the lode and values persist normally below the fault. At 80 feet below No. 4 level (below the fault) the lode has been driven on northerly and a rise connection made with No. 4 level. The sinking and driving have proved the lode to average between 7 and 8 feet wide and to contain normal values. Extension of upper levels by driving has been continued, the lode maintaining satisfactory widths and values. A total of 12,676 tons of ore from stoping and development was milled for a production of 209·6 tons of high-grade wolfram, and concentrates containing 33·5 tons of metallic tin. The average number of men employed was 100.

Aberfoyle Tin, N.L., Rossarden.—The main operations underground were development of the vein series on No. 4 level from No. 2 shaft by drives and crosscuts. Driving has been mostly in a northerly direction to attain a position under the main workings on Nos. 1 and 2 levels. At the co-ordinate of No. 1 shaft a crosscut has been driven to a position vertically under No. 1 shaft and sinking to connect this from No. 2 to No. 4 levels is in progress, the vertical distance to connect being 170 feet. The driving on No. 4 level, as far as it has gone, has proved the vein system to maintain normal widths and values. Some further driving has been done on No. 2 level. In stoping a better selection of vein ore and rejection of slate is being attempted so as to reduce dilution of mill ore and thereby increase the grade.

On the surface the main addition to the plant has been the erection at No. 1 shaft of an electric hoist to replace the steam hoist, new housing for same, and new steel head frame to replace the old timber frame. At the mill a flotation unit for retreatment of tin concentrates has been installed, the object being to eliminate pyritic impurities and increase the percentage of tin.

During the year 16,653 tons of ore were milled, and sales were completed of tin concentrates containing 318 tons of tin and 20 tons of wolfram. Average number of men employed was 116.

A. McDonald, Rossarden.—This person worked out a rich patch of lode tin, and from prospecting the extension of the lode won concentrates containing ·77 ton tin.

Lahoe Syndicate, Rossarden.—The syndicate did some prospecting of 4 parallel zones of enrichment. These occur over a width of 60 feet of slate and quartzite, though the tin-bearing formation is narrow in each case. The work done consisted of crosscutting for 75 feet from a shaft at 53 feet deep on No. 4 lode and surface trenching and stoping on all the lodes. A test parcel of 29·5 tons of ore won from this work was crushed at a Mathinna battery for a return of ·187 ton concentrates, estimated to contain ·116 ton metallic tin.

Miscellaneous fossickers about Rossarden, Storey's Creek, and Gipp's Creek returned concentrates containing 1·14 tons of tin.

Goshen Tin Syndicate, St. Helens.—From areas formerly held by Siamese Tin Syndicate a total of 157,000 cubic yards of ground was sluiced for a return of 35·6 tons of concentrates, estimated to contain 25·6 tons of tin. An average of 28 men was employed. From the section on Groom River 75,000 cubic yards were sluiced for a production of 13·8 tons of concentrates which contained 9·86 tons of tin. An average of 10 men was employed. Work was held up in the early part of the year through shortage of water.

Georges Bay Tin Mine, St. Helens.—Productive sluicing was in operation during the first half of the year, when 38,500 cubic yards of ground were treated for a recovery of 3·06 tons of oxide containing 2·2 tons of metallic tin. Work was then confined to race cutting. There were 9 men employed throughout the year.

Hunt Tin Mine, St. Helens.—Work was completely held up during the first half of the year on account of water shortage, and, later, small scale operations by two men returned concentrates containing ·46 ton of tin.

Miscellaneous mining by small parties about St. Helens, Gould's Country, and Pyengana districts returned concentrates containing 10·4 tons of tin, in the production of which 32 men were concerned.

Tasman Tin N.L., Lottah (Anchor Tin Mine).—Dry weather caused a stoppage of work on several occasions. The tribute party of 27 men, by quarrying and milling 20,652 tons of ore, recovered concentrate from which 33·9 tons, containing 24·23 tons of metallic tin, were sold.

Bryce and party were engaged sluicing alluvial ground on the recreation reserve at Weldborough and obtained 3·24 tons of concentrates, containing 2·23 tons of tin.

The Weld Tin Syndicate pursued sluicing on the flats of the Weld River, Weldborough, and produced 4·65 tons of concentrates containing 2·72 tons of metallic tin.

The Niagara Syndicate was occupied in sluicing shallow alluvial ground near Knight's Creek and produced 1·8 tons of concentrates, containing 1·22 tons of tin.

V. A. Walker and Son sluiced 14,100 cubic yards of alluvial and leader formations about the Laffer Mine for an output of 2·35 tons of concentrate, containing 1·65 tons metallic tin.

A. W. Bird and partners, Moorina, carried on continuous sluicing of alluvial deposits on and adjacent to the Weld River from which was recovered 22·06 tons of concentrates, estimated to contain 14·34 tons of metallic tin.

H. Harridge, Moorina, though occasionally short of water for sluicing, produced 3·27 tons of tin oxide, containing 2·37 tons of tin, from his section on the Frome River.

Miscellaneous parties and individuals continued with the sluicing of alluvials and granitic formations in the Lottah, Weldborough, and Moorina districts, and accounted for an output of 23·67 tons of concentrate containing 16·58 tons of tin. These operations afforded employment for 45 men.

Eastern Leads, Pioneer.—From the sluicing of 9500 cubic yards of alluvial ground, Ponting and party recovered 4·21 tons of concentrates containing 3·1 tons of metallic tin. Alluvial gold, containing 5·15 oz. fine gold, was recovered from the concentrates.

Shean Bros., Pioneer.—After completing an arrangement with the owners of a water right to use 12 sluice heads of water on a royalty basis, the party completed a big programme of race cutting and installing new pipes to enable them to sluice ground on leases embracing 36 acres adjacent to the Wyniford River. The amount of work involved in establishing the plant and the shortage of water through the very dry season have delayed full scale production. From the sluicing of 5000 cubic yards of shallow ground 2·66 tons of tin oxide was recovered and contained 2 tons of metallic tin.

Miscellaneous parties around Herrick, Pioneer, and South Mount Cameron produced 32·4 tons of concentrates containing 22·67 tons of tin. In this production 50 men took part, some of them using the Waugh Company's water on royalty to work their own ground as well as working the company's ground on tribute.

Endurance Tin Mining Company, South Mount Cameron.—The deep ground was worked when enough water was available for using the electric pump. When the water supply was short operations were confined to sluicing shallow ground. A total of 356,700 cubic yards was treated, and sales of concentrates were 150·89 tons containing 111·91 tons of tin. As referred to under "Gold," 27·46 oz. of fine gold resulted from alluvial gold recovered from the tin concentrates. A party treating the old Pioneer dumps under a tribute agreement with the company recovered 12·36 tons of oxide containing 8·68 tons of tin. Employment was given to an average of 44 men.

Star Hill Syndicate, Gladstone.—Using a steam driven pump to supply nozzle pressure, a total of 45,000 cubic yards of alluvial and leader formation was sluiced for a production of 17·19 tons of concentrates containing 12·17 tons of tin. An average of 9 men was employed.

Lanka Tin Mine.—Using Mount Cameron Race water and from sluicing, mainly about Amber Creek, concentrates were produced containing 2·98 tons of metallic tin.

Black Duck Tin Mine.—With a steam driven gravel pump and nozzle 2300 cubic yards of ground were treated for 1·51 tons of concentrates containing 1·05 ton of tin. The plant was then transferred across the Ringarooma River and installed on Section 291/P-M at Boobyalla. The first clean-up, after sluicing 1000 cubic yards, returned only 20 lb. of tin oxide. The plant was then moved to another part of the lease, and 12,000 cubic yards of alluvial ground were treated for a recovery of 3·15 tons of concentrates containing 2·3 tons of tin.

Miscellaneous parties, using Mount Cameron Race water, and representing the employment of 22 men, returned 34·12 tons of concentrates containing 23·49 tons of tin. Miscellaneous production by parties not using Mount Cameron Race water was 7·73 tons of concentrates containing 5·5 tons of tin.

Briseis Consolidated N.L., Derby.—Cleaning up of overburden, which had run into working paddock, was completed early in the year, and the rest of the period was marked by steady production from the drift face. Removal of overburden was interrupted more than usually by the abnormally dry season. Production figures for the year were:—Overburden removed by sluicing, 202,000 cubic yards; tin-bearing drift sluiced, 752,000 cubic yards; concentrates produced, 669·4 tons, estimated to contain 481·89 tons of metallic tin. Average number of men employed, 163.

The sale value of the concentrates delivered in Launceston was £134,190 in Australian currency. During the year the driving of two low-level tunnels was commenced. These are in series, and are to be used for conveying overburden. They are at lower level than the existing tunnel so as to provide the necessary fall to carry overburden by water when the face has advanced beyond the limits of the existing tunnel. The drift tunnel has been driven to 1470 feet. This tunnel will deliver overburden to a grizzly, where the oversize will be conveyed by belt to a dump in the worked-out paddock. The undersize from the grizzly is to pass through the rock section

tunnel to the river. The rock tunnel has been driven to 625 feet. A motor-driven air compressor was installed for use in supplying compressed air to the rock drills employed in the rock section of tunnel. The overburden conveyor belt was extended 45 feet during the year. New intake tanks of improved pattern, with extensions to syphon pipes and 20 chains of stone and concrete, have replaced the timber fluming on the Ringarooma water supply. A well-equipped change house was erected. Two power boring plants have been employed for the greater part of the year prospecting at Derby, the total footage drilled being 2645.

Lone Brother Mine, Derby.—Owing to low values operations were abandoned. The sluicing plant was dismantled and partly sold.

Miscellaneous producers in the Derby-Winnaleah district sold 13·63 tons of concentrates, containing 9·53 tons metallic tin. Up to 30 men took part in the production.

Arba Tin Mine, Branxholm.—Tributers, with an employment of 9 men, sluiced 100,000 cubic yards for a return of 36·95 tons of oxide containing 25·87 tons of tin.

Ormuz Tin Mine, Branxholm.—From sluicing the high face of drift near the Arba mine, 1·58 ton of oxide was produced and contained 1·09 ton of metallic tin.

Ruby Flat Tin Mine.—From sluicing of detritals and decomposed granite, 14·75 tons of concentrates, containing 10·56 tons, were returned.

W. A. Walsh and Company operating an area near Muddy Creek at Branxholm sluiced 8000 cubic yards of ground for 3·9 tons of oxide containing 2·82 tons of tin.

Baker's Discovery, Branxholm.—Shortage of water hindered work. The output from sluicing decomposed granite and detritus was 1·59 ton of concentrate containing 1·04 ton of tin.

Mount Paris Tin Mine.—The plant and buildings were removed from the mine. Tributers produced ·7 ton of concentrate containing ·52 ton of tin.

Miscellaneous producers about Branxholm sold 8·65 tons of concentrates containing 6·08 tons of tin.

Miscellaneous producers in the Ringarooma-New River district sold 5·59 tons of concentrates containing 3·93 tons of tin. From North Scottsdale 2·93 tons of concentrates, containing 2·02 tons of tin, were returned.

Strait Islands.—The recorded production from Flinders Island was 1·28 ton of concentrates containing ·91 ton of tin, and from Cape Barren Island 2·29 tons of concentrates containing 1·59 ton of tin.

Wolfram.

The principal producer of wolfram was the Storey's Creek Mine which returned 209·6 tons of high-grade wolfram.

The Aberfoyle Mine sold 20 tons. Work at both of these mines has been reviewed under the heading "Tin."

Small quantities of wolfram resulted from treatment of dumps at the All Nations Mine and from open-cutting and milling by the Wolber Valley Company at Moina. A small quantity of mixed concentrates containing tin, bismuth, and wolfram, resulted from operations on alluvial and lode occurrences at the Shepherd and Murphy Mine.

Cement and Limestone.

The Goliath Portland Cement Company was continuously engaged in the production of cement at Railton.

Quarrying operations were continued by the Broken Hill Proprietary Company Limited at Melrose, and quarried limestone was exported for fluxing purposes at the iron and steel works at Newcastle.

Fines from the conveyor system at the Melrose quarries were taken by the Melrose Lime Company and ground to limestone dust for use as agricultural lime.

Small-scale operations were continued at Blenkhorn's quarries, where the quarried limestone was converted into lime.

I take this opportunity of expressing my appreciation of help received from bosses and men on the various mines and works visited during the year.

Inspector K. A. Rae, Queenstown, reports:—

Employment.—The average number of persons employed in the mining industry was 1840, representing a decrease of 31 in the number employed last year. Of the total number 1809 were employed in connection with operations by the Mount Lyell Mining and Railway Company Limited. Two drilling companies, operating four diamond drilling plants, employed 20 men. The remainder was intermittently employed in prospecting operations and in producing small quantities of alluvial gold.

Accidents.—Forty-one accidents, causing non-fatal injuries to forty-two persons, were registered under the provisions of the Mines and Works Regulation Act compared with 30 accidents, involving a like number of persons in non-fatal injuries, registered during the previous year.

Twenty-two accidents, causing injury to 23 persons, occurred underground, and 19 accidents, involving injuries to a like number of persons, occurred in connection with surface operations.

Of the underground accidents, two persons were severely injured when a cage in which four persons were travelling struck a set of protruding chairs. The platman in charge of the cage received an injury that subsequently necessitated the amputation of the lower portion of one leg, and the other injured person lost 98 working days through sustaining a twisted knee joint, while the other two passengers of the cage did not receive serious hurt.

A man engaged in repairing an ore pass used a rope that was not classed as a life-line, and, when he was being raised through the pass, the rope broke and he fell 30 feet injuring his ankles. Without having received instructions to do so a miner attempted to clean out an ore pass and was struck by falling rocks. He sustained a broken arm. As the result of two separate accidents during the year, one person received injuries to his foot. Another person, with only three days' underground experience, in attempting to replace a loaded derailed truck, caused it to fall and injure his ankles. The remainder of the underground accidents were of a minor nature and were due mainly to inexperience and carelessness of the persons concerned. These mishaps caused nine finger injuries, five foot and leg injuries, and one head injury.

In the accidents allied with surface operations one person was involved in two separate mishaps. In both instances he received head injury causing concussion. Slipping on an iron flat-sheet a person fell and broke a small bone in his wrist. He did not apply for medical attention until some days later. Complications developed, and the period of incapacity amounted to 220 working days. Through failure of brakes a sixteen-ton capacity motor vehicle got out of control and the driver had to jump from the moving vehicle. He sustained an injured ankle. When engaged in using the power-tipping gear of a large motor truck the gear failed and the telescopic lifting rods fell, crushed the cabin of the truck, and inflicted chest injuries to the operator.

At a smelter a man received burns through some hot matte splashing and falling inside the top of his boot. Whilst using a "jack hammer" in an open cut a machine-man sustained an injured hand as the result of being struck by a small piece of stone. Another person attempted to run down a rill of ore but slipped and injured his knee. The remaining surface accidents were of a minor nature. Finger injuries resulted in seven instances, hand injuries were sustained in three cases, and one accident resulted in foot injuries.

It is of interest to note that of the recorded accidents arising from underground operations, ten of the 22 persons injured had had less than three months' experience of such work, while four persons with less than five months' experience were injured during surface operations. It is gratifying to record that no fatal accidents occurred.

Safety.—Maintenance of safe working conditions has been closely observed, and inspection work has materially assisted towards this by advice and by the correction of irregular practices. The attention of persons concerned in operations has been regularly directed towards the prevention of accidents. Many young and inexperienced persons commenced mining operations and increased vigilance has been necessary in guiding these new employees in the exercise of safety precautions.

Improvement in design of a signalling device, used to indicate to the winding enginedriver whether the shaft chairs are in a safe or dangerous position, was suggested and has been found beneficial.

Ventilation.—Generally, the ventilation of underground workings has been satisfactory, and no unduly high temperatures have been noted. Additional ventilation was requested at several developmental points and in one working stope, and prompt attention was directed to correction of the conditions by the installation of mechanical ventilating devices.

Health and Sanitation.—Regular attention was given to matters affecting the health of employees. Improved conditions of crib-places, latrines, change-houses, and drinking water have been maintained and added to as occasion

demanded. Conditions of atmospheric dust have been examined by use of a Konimeter sampler, and many tests have been conducted in underground and surface working places. In some cases improved conditions were deemed necessary, and upon the attention of the management being directed to the necessity for improvements some success was obtained. The use of water for allaying dust nuisances arising from various underground and surface operations was enforced, and several persons were reprimanded when found to be inefficiently using this preventative.

The removal of dust arising from conveying, crushing, and treatment of ore has been improved by the installation of powerful suction fan units both at surface and underground portions of the system.

No complaint or dissatisfaction was registered in the operation of the changing and bathing facilities.

A well equipped first-aid room was installed in a machine shop, and is supplying a necessary service to a number of employees. Inspections were made of all the established first-aid depots. Various improvements have been suggested, and it is hoped that better facilities will result.

Explosives.—Supervision, as required under the Mines and Works Regulation Act, has been maintained of the handling and general use of explosives. A ganger was reprimanded for allowing work to proceed in a drive after having allowed a top set of holes to be charged for firing. The only recorded accident was occasioned when a person found a fuse and detonator on a mullock tip, lit the fuse, and threw it over the side of the tip. Another person noticed the burning fuse, climbed over the side of the tip, and picked it up as the detonator exploded. Fortunately, only a slight injury resulted.

Machinery.—Several mishaps occurred in connection with machinery at the mines and works, four of which are of moment. Two accidents caused injury to the drivers of motor trucks of the 16-ton semi-trailer type. One truck got out of control through failure of the brakes, and the driver was forced to steer the vehicle into a bank. When attempting to jump clear he sustained an injured foot. The second accident occurred when the driver of a stationary truck was using the power tipping gear. The gear failed, and the cylinder of the lifting ram collapsed onto the cabin of the truck pinning the driver. At an underground winding station a driver, through inattention, caused an overwind during ore hoisting operations. The safety hook was pulled into the thimble, shearing the copper pin, and releasing the rope. No other damage occurred. The driver was medically examined the following day, and found to be unfit to hold a winding driver's certificate. His certificate was cancelled. The rope of a small electrically operated winch, used in shunting operations at an ore bin, became entangled with a plank used as a footway over the bin. Two men were standing on the plank, which was displaced, but neither was injured. Alteration to the location of this winch was enforced. Minor protective adjustments were recommended in instances as required, and prompt attention was given thereto. Records of regular inspection and tests kept by the registered managers were checked and conditions found satisfactory, with the exception of a haulage rope which had been damaged and was deemed to be unsafe. A new rope was installed immediately. Occasional joint inspections were made with the Inspector of Machinery.

Through making a request that additional protection be provided against danger of leakage from electric power cables attached to power shovels, a comprehensive scheme has been evolved that should ensure the prevention of accidents from electrical leakages. Cables are examined daily and tested, and any detected leakage of current must be reported immediately. Cables are to be tested in a soda bath. Records are being kept of leakages and repairs.

Prosecutions.—On two occasions employees were prosecuted under Section 74 of the Mines and Works Regulation Act for unseemly behaviour. Two men were convicted and fined.

Explosives Act.

Supervision has been maintained in respect of the importation, landing, transport, storage, and general use of explosives. Explosives landed at Regatta Point for Queenstown were:—

	Lbs.
Polar A.N. gelignite "50"	682,750
Polar A.N. gelatine dynamite "75"	19,050
Polar A.N. gelignite "60"	10,000
A.N. gelatine dynamite "75"	2,700
A.N. gelignite "60"	5,000
Total	719,500

	Number.
Detonators, delay action, electric	1,550
Detonators, No. 6 L/A	340,000
Fuse igniters	20,000
	Cases.
Safety fuse, in reels	300

In the first half of the year all explosives were noted to be in good condition during storage, but subsequent shipments manufactured in June and landed in July were found to deteriorate after a period of three or four months' storage in the main magazines.

Investigation of the cause again disclosed that ineffective waxing of the end wrapping of the cartridges, and also the carton wrapping paper, allowed moisture to penetrate to the explosive and cause deterioration through the deliquescence of the ammonium salts.

Frequent examinations have been made of the main and subsidiary magazines, and attention has been given to the testing of the burning rate of safety fuse. The burning rate has always been satisfactory.

It is of interest to note that during the latter part of the year lead azide detonators made in Australia have been used for the first time, and have given satisfaction.

Inflammable Liquids Act.—Regular inspections were made of storage outfits and depots. There was an increase in storage facilities, and accommodation of an additional 1200 gallons of mineral spirit was approved.

Workers' (Occupational Diseases) Relief Fund Act.—Clean certificates were issued in respect of 420 new employees. Application was made by 64 persons for examination for the effects of industrial disease. In five instances applicants were found to be incapacitated, while nine others were classed as partially incapacitated. The remaining 50 cases were pronounced free of disease. The following is a comparative analysis of the afflicted cases:—

	1939.	1940.
Incapacitated (affected by silicosis 100 per cent)	Nil	5
Partially incapacitated (over 50 per cent affection)	Nil	2
Partially incapacitated (50 per cent affection)	1	1
Partially incapacitated (under 50 per cent affection)	9	6
Totals	10	14

The following tabulation illustrates the ages and length of service in mining occupations of 14 persons certified as suffering from silicosis:—

Certified Incapacity due to Silicosis. Per cent.	Age of Person Affected. Years.	Length of Service in Mining Occupations. Years.
100	62	14
100	61	18
100	58	30
100	54	20
100	37	13
75	50	19
75	50	18
50	41	25
40	41	17
40	41	17
20	48	18
20	46	7
20	43	13
20	41	10

General.—Owing to many enlistments in the fighting forces and general war conditions, a shortage of skilled labour has been experienced. The change due to these factors is reflected in the registration of new employees. The number registered during the year was 420 as against 173 registered during 1939, representing an increase of 247.

A new industrial agreement became operative, and satisfactory industrial conditions have been maintained.

Aid to Mining.—Sustenance allowance was granted to a party of prospectors to enable them to cut a foot track from the Zeehan-Queenstown road to Hall Rivulet in the Mount Dundas area in order to locate a supposed lead-zinc lode. Bad weather conditions and rough country

disheartened the prospectors, and so far no useful results have been obtained. An examination has been made of portion of this area. Two men working a small sluicing claim have obtained small quantities of gold near Newell Creek. I have examined this area and assisted this party by advice. Several examinations have been made of areas near Lynchford, where mining operations have been conducted to determine mineral possibilities. This work will be continued in the interests of the development of the mineral resources.

Mining Operations and Production.

The Mount Lyell Mining and Railway Company Limited.—The output of ore from all mines was 1,191,782 tons, representing an increase of 86,033 tons compared with that for the previous year. The additional tonnage resulted from increased opencutting and the reopening of an underground mine.

988,743 tons of ore resulted from surface mining, being an increase of 78,540 tons, made possible by the extension of the opencuts and additional handling facilities. Production of ore from the underground workings increased by 7493 tons owing to the resuming of operations at the Royal Tharsis mine.

Opencuts methods of mining at the West Lyell and Prince Lyell mines have continued to expand, road systems have been extended, and the carrying capacity of mechanical transport has been enlarged. Nine units of the transport section were converted into semi-trailer truck type, making 11 units of 16 tons capacity in commission. The transfer pass commenced during last year has been completed and is operating. An additional pass has been commenced. To avoid removing a large quantity of non-payable rock, and to allow access to a new bench of ore, a motor transport tunnel 300 feet in length and of 24 feet x 24 feet cross section is being constructed. A small electric shovel, ¾-yd. in capacity, has been installed to aid in the removal of the spoil from this excavation.

Construction of an additional shed for shovel repairs and the erection of crib-houses and other necessary buildings have been carried out.

At the Lyell Comstock mine production has been maintained about equal to that of last year, the ore being won by underground and surface mining. Rising, driving, and crosscutting have been continued as required in the development of the lower levels. The proved value of the lode is slightly better at No. 11 level than at No. 10 level, due to an increase in the size of the subsidiary ore body which was located at No. 9 level. A diesel-engined mechanical shovel and a haulage tractor have been installed at the mullock quarry. Some additions and improvements have been made to crib-houses and other buildings.

At the North Lyell mine a northern development drive of over 500 feet in length has been driven at No. 6 level from the Crown shaft to test the value of the stopes being worked at No. 7 level. Production was 8666 tons less than for the previous year.

Production from the Crown Lyell mine declined by 11,017 tons due to a necessary alteration of changing to square-set timbered stoping as a result of several stopes having reached the upward limit of safety in using the former method of open stope mining. One section of the mine has been idle for the greater portion of the year.

The Royal Tharsis mine has been again brought into production, and the ore gained has been responsible for the increased quantity of ore recorded from underground mining.

Pumped mill tailings have been regularly used as filling at all underground workings, excepting the Lyell Comstock mine, and continue to contribute to the safe working of these mines. A mullock quarry supplies filling for the workings at the Lyell Comstock mine.

The following tabulation represents the disposition of ore production:—

	Tons.
North Lyell mine	53,970
Crown Lyell mine	35,756
Royal Tharsis mine	27,290
Lyell Comstock mine	86,023
West Lyell opencuts	988,743
Total	1,191,782

The concentration plant was in operation for 362 days and processed 1,165,347 tons of ore for a recovery of 50,883 tons of copper-pyrite concentrates and 54,669 tons iron-pyrite concentrate, portion of the latter being exported for use in the manufacture of fertilisers.

The reduction works treated copper bearing concentrates from the concentration plant, and, in addition, 9787 tons of high grade ore and 31 tons of purchased ore was treated by smelting or conversion for an output of 11,652 tons of blister copper.

Under normal running conditions the refinery produced 11,572 tons of cathode copper, and also recovered a concentrate containing 58,677 oz. of silver and 7,260 oz. of gold.

Additional plant is being installed at the concentrating section with the object of treating an increased tonnage. An intermediate grinding plant is being placed in the circuit between the crushing rolls and the ball mill grinding section, and consists of a short head cone grinder, double set of tandem vibrator screens, cyclone dust collecting unit, a wood collecting screen, and conveyor belts. This section of the plant was nearing completion at the end of the year. The fine grinding section of the mill is also being enlarged, and foundations and buildings are being prepared to instal additional grinding flotation and classifying machinery.

Improved working conditions have been achieved at the smelting section of the reduction works by the provision of fresh air to the enclosed cabin of the overhead travelling crane and by a general control of the fume-dust nuisance in the buildings. Results are appreciated by all concerned. The installation of a mechanical-grab Telford type conveyor is being proceeded with, and, when completed, will obviate the use of hand carts for transporting concentrates from bins to the blast furnace.

The limestone quarry at Hall Creek and silica quarry at Queenstown were worked as required, 5482 tons of limestone and 3789 tons of silica being used for fluxing and other purposes.

A motor transport road, affording direct connection between the main portion of the reduction works and Queenstown has been completed, and is of interest in that it is now possible to convey injured persons directly to hospital and will save valuable time.

The following is a comparative table of the productive activities by the company:—

	1939.		1940.	
		£		£
Copper (Electrolytic)	13,453 tons	668,562 S	11,572 tons	717,464 S
Silver	70,412 oz. f.	6427 S	58,678 oz. f.	5867 S
Gold	7507 „	57,888 S	7260 „	60,977 S
Pyritic concentrates	55,229 tons	67,786 A	37,819 tons	47,274 A
Limestone	6739 „	2358 A	5482 „	1919 A
Silica	6969 „	1692 A	3789 „	947 A

S = Sterling value. A = Value in Australian currency

Miscellaneous.

Eleven men were intermittently engaged in prospecting and working auriferous ground. These operations accounted for 50 oz. of fine gold valued at £423 sterling. No discovery of importance has resulted.

A parcel of 36 tons of Barytes, valued at £A72, was collected from the old Howard Plain mine. No other work was done on this claim.

Inspector T. Platt, Hobart, reports:—

In addition to embracing mines, works, and quarries in southern areas, inspectorial duties allotted me extend to all coal and shale mines throughout the State.

Employment.—The average number of men employed in all operations was 1856.

Accidents.—Twelve accidents, involving injury to a like number of persons, were registered under the provisions of the Mines and Works Regulation Act. There were no fatalities. One accident occurred underground, and eleven were associated with surface operations.

Health and Safety.—Reasonable care is generally exercised to avoid accident and safeguard the health of employees, but improvement in existing practices could be effected in some undertakings. Measures were taken to remedy an objectionable practice of extracting pillars on the advance instead of on the retreat at one colliery.

Objectives deemed necessary for safer working in coal mines are summarised as follows:—

(i) Inspection of underground workings with oil-buring safety lamps and observance of a station, preferably at the surface and beyond which men must not pass until the pre-shift inspection is completed:
(ii) Continuous running of ventilating fans where such are installed:
(iii) Regular examination of old workings for spontaneous heating and other hazards:
(iv) Exclusive use of permitted explosives to minimise flame and noxious gases resulting from explosives:
(v) Periodical analyses of mine air and surveys of dust for inflammability:
(vi) Adoption of rules governing the installation and use of electricity and electrical machinery:
(vii) Introduction of Special Rules for the guidance of all persons employed in coal mines.

Ventilation.—Too much reliance is placed on natural ventilation. More extended use of power-driven ventilating fans is advocated to give an assured supply of fresh air. Stoppings between main and return airways should be substantial and not of loose debris. Improvements in the matter of stoppings were effected at one colliery.

First Aid.—There is need for better facilities for rendering first-aid at some mines, particularly in regard to the provision of hygienic dressing rooms.

Explosives.—In several instances it was necessary to correct lapses in the proper storage of explosives. Small quantities of ammonium nitrate compound were destroyed owing to deterioration due to advanced deliquescence.

Machinery.—Generally, the machinery in use is suitably accommodated for safe operation.

Operations and Production.

Coal.

Fingal-Mount Nicholas-Dalmayne Coalfields.—These fields continued as the major coal-producing centre of the State. The production was 66,688 tons, valued at £50,178, and operations afforded employment for an average of 198 men.

The Cornwall Colliery gave employment to 129 men, and the output was 47,020 tons, valued at £37,050. Towards the end of the year extraction of pillars of coal was commenced in one section of the mine. Such a practice could well have been established earlier, as it is generally more economical and advantageous to closely follow the solid mining with the extraction of pillars.

The Mount Nicholas Colliery resumed coal-winning in the latter part of the year. 1171 tons, valued at £702, was mined, and 25 men were employed. A complete electrically-driven unit has been installed embracing coal-cutting by a chain-type machine, boring of shot-holes by a hand-held rotary drill, loading by a Jeffrey-type loader, and transport by a storage battery locomotive. The whole unit is in keeping with modern practice as adopted by the Broken Hill Proprietary Company Limited in mines such as Burwood, Lambton "B", and John Darling in New South Wales. Current is obtained from the Hydro-Electric Commission. The presence of "greasy heads" in the mudstone roof makes close attention to timbering imperative. The output of the mechanised unit is expected to reach 250 tons per day of one shift.

The Jubilee Colliery produced 14,727 tons, valued at £10,427, and employed an average of 39 men. The development of the main-heading section continued along sound lines. The recently adopted practice of building solid concrete stoppings between the main intake and return airways should make for permanently good ventilation.

The Dalmayne Colliery produced 1005 tons of coal, valued at £627, and employed three men.

The output from the Fingal Colliery was 2765 tons, valued at £1382. Three men were employed.

Avoca Coalfield.—The average thickness of the seam worked by the two mines on this field is approximately 5 feet.

The Stanhope Colliery produced 7967 tons, valued at £5749, and employed 20 men. Development of the new tunnel area has been carried out, and the old tunnel area is almost fully exploited.

The Mount Christie Colliery was again opened in the third quarter of the year. The output was 764 tons, valued at £560, and four men were employed.

Sandfly-Cygnet Coalfield.—The Sandfly mine is the only one operating. There are two tunnels to two separate seams averaging about 3 feet 6 inches. The mine produced 2114 tons, valued at £1636, and employed 6 men.

Upper Derwent Coalfield.—The Langloh Colliery provided an output of 742 tons, valued at £541, and employed 4 men intermittently. The average thickness of the producing seam approximated 4 feet.

York Plains Coalfield.—The York Plains Colliery produced 642 tons, valued at £835, and employed 2 men. The seam is approximately 3 feet thick.

The Mersey Coalfield.—Five mines operated in this area. The average thickness of the producing seams was about 20 inches.

The Illamatha Colliery produced 1276 tons, valued at £1339, and 5 men were employed.

The Tarleton Colliery produced 1207 tons, valued at £899, and employed 4 men.

The Black Beauty Colliery produced 479 tons, valued at £386, and employed 2 men.

The Aberdeen Colliery produced 1949 tons, valued at £1364, and employed 6 men.

Bott's No. 2 Colliery produced 382 tons, valued at £267, and employed 2 men.

Carbide.

The Australian Commonwealth Carbide Company carried on operations continuously and produced 5732 tons of calcium carbide valued at £114,640. Supplies of limestone were obtained from the Ida Bay quarries, and 7284 tons of limestone was sold at a valuation of £3064. An average of 151 men was engaged. Additions have been made to operating plant. Storage capacity has been increased and an extension of the products of the company is anticipated.

Granite.

Coles Bay produced 330 tons, valued at £2031. Five men were employed. The lease of Coles Bay (Tas.) Red Granite Company was transferred to Balmoral Red (Aus.) Proprietary Limited.

Ore-Treatment.

The Electrolytic Zinc Company, at Risdon, has remained in continuous operation on ores, concentrates, &c., from the West Coast and the mainland. Additions to plant have been made. Total production was:—Slab zinc, 75,957 tons, valued at £1,587,722; cadmium, 171·85 tons, valued at £57,742; cobalt oxide, 18·32 tons, valued at £8430; silver, 299,837 oz., valued at £37,605; and lead 1712 tons, valued at £35,578.

Production from Tasmanian ores was:—Slab zinc, 26,559 tons, valued at £556,293; cadmium, 49·39 tons, valued at £16,594; cobalt oxide, 0·55 ton, valued at £253; silver, 299,837 oz., valued at £37,605; and lead, 1712 tons, valued at £35,578.

The average number of men employed at Risdon was 1283.

Osmiridium.

At Adamsfield osmiridium mining was fairly active, although depletion of the known alluvial deposits is apparent. Existing sluicing plants worked intermittently due to insufficiency of water. Operations afforded employment for 44 men.

Attention is being given to development of lode formations carrying payable quantities of "metal" on the eastern side of the field. There was an increase in production, and the value of the "metal" was higher than for the previous year. Production was 359 oz., valued at £8830.

Quarries.

The quarries operating under the provisions of the Mines and Works Regulation Act employed 115 men. Work was continuous in the production of "bluestone" for road-making, &c., and shale and clays for brick-making.

Tin.

At Cox Bight an average number of four men operating on alluvial deposits produced tin-oxide containing 4·15 tons of metallic tin, valued at £1055.

APPENDIX VI.

REPORT OF THE MOUNT CAMERON WATER-RACE BOARD FOR THE YEAR ENDING 31st DECEMBER, 1940.

SIR,

We have the honour to submit our report for the year ended 31st December, 1940.

Main Race.

Sections of the race from the intake of the Great Mussel Roe River to the Little Mussel Roe River, and from No. 6 syphon to the No. 1 dam, were scrubbed and cleaned out during the year. The main race is now in good order, except for the usual growth of weed, which is cut out during the summer months.

Branch Races.

The branch from the main race to the machinery site of H. C. Lawry was cleaned out and the old branch race from the main race to the dam built by G. Mallinson and J. Watt was widened.

Syphons.

A section of metal syphon over the Ringarooma River, which had deteriorated beyond repair, was replaced with a concrete syphon consisting of 1280 feet of 15-in. diameter re-inforced concrete pipes. Other portions of this syphon were repaired, and the whole length is now in reasonable condition providing a satisfactory service to the miners and domestic consumers in the vicinity. No. 6 syphon was tarred and the surrounding scrub removed.

Flumings.

All flumings are in good order.

Dams.

These are all in good order, with the exception of the dam across the Great Mussel Roe River at the intake of the main race, which requires the wall to be renewed. Consideration will be given to this matter during the next year.

We have the honour to be,

Sir,

Your obedient servants,

W. H. WILLIAMS,
Chairman of the Board,

C. G. RYAN, } Members.
GEO. MALLINSON, }

The Hon. the Minister for Mines.

STATEMENT FOR THE YEAR ENDED 31ST DECEMBER, 1940.

Rainfall.

The registered rainfall for the year was as follows:—

Great Mussel Roe	20 inches 96 points
Little Mussel Roe	21 inches 1 point

Revenue.

The revenue for the year amounted to £1464 12s. 6d., being a decrease of £70 on that for the previous year.

Disbursements.

The expenditure for the year amounted to £1166 5s. 3d., being a decrease of £42 8s. 1d. against that for the previous year.

Statistics.

The statistics for the year are as follows:—

Average number of claims supplied per week	9
Greatest number supplied in any one week	12
Total number of heads supplied under:—	
Fixed or cash scale	537
Royalty or credit scale	2992

Tin ore raised—

	tons.	cwt.	qr.	lb.
Under royalty scale	36	2	1	21
Under fixed scale	17	3	3	27
	53	6	1	20

Average number of men employed per week—25

Receipts.	£	s.	d.
Water sold under fixed scale	233	16	0
Water sold under royalty scale	1,225	16	6
Sale old pipes	5	0	0
	£1,464	12	6

Payments.	£	s.	d.
Salaries and wages	779	2	8
Travelling expenses	3	2	6
Stationery and printing	11	9	5
Insurance	12	8	5
Stores	41	10	6
Repairs to race, syphon, dam, culverts	120	4	5
Repairs to channel keepers' cottages and manager's residence	7	17	6
Cleaning and scrubbing main race	136	0	8
Cartage and freight	30	1	6
Claim for workers' compensation	24	7	8
Total payments	£1,166	5	3
Excess receipts over payments	298	7	3
	£1,464	12	6

H. H. Pimblett, Government Printer, Tasmania.