

AR1948

1949.

(No. 49.)

TASMANIA

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REPORT

OF THE

DIRECTOR OF MINES

FOR

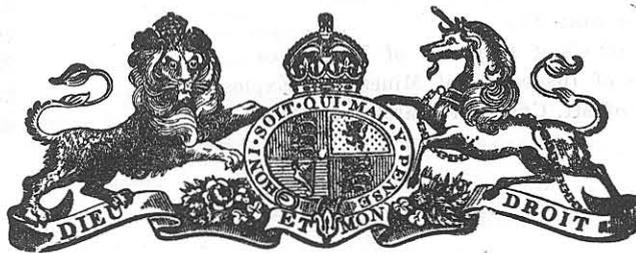
YEAR ENDED 31ST DECEMBER

1948

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

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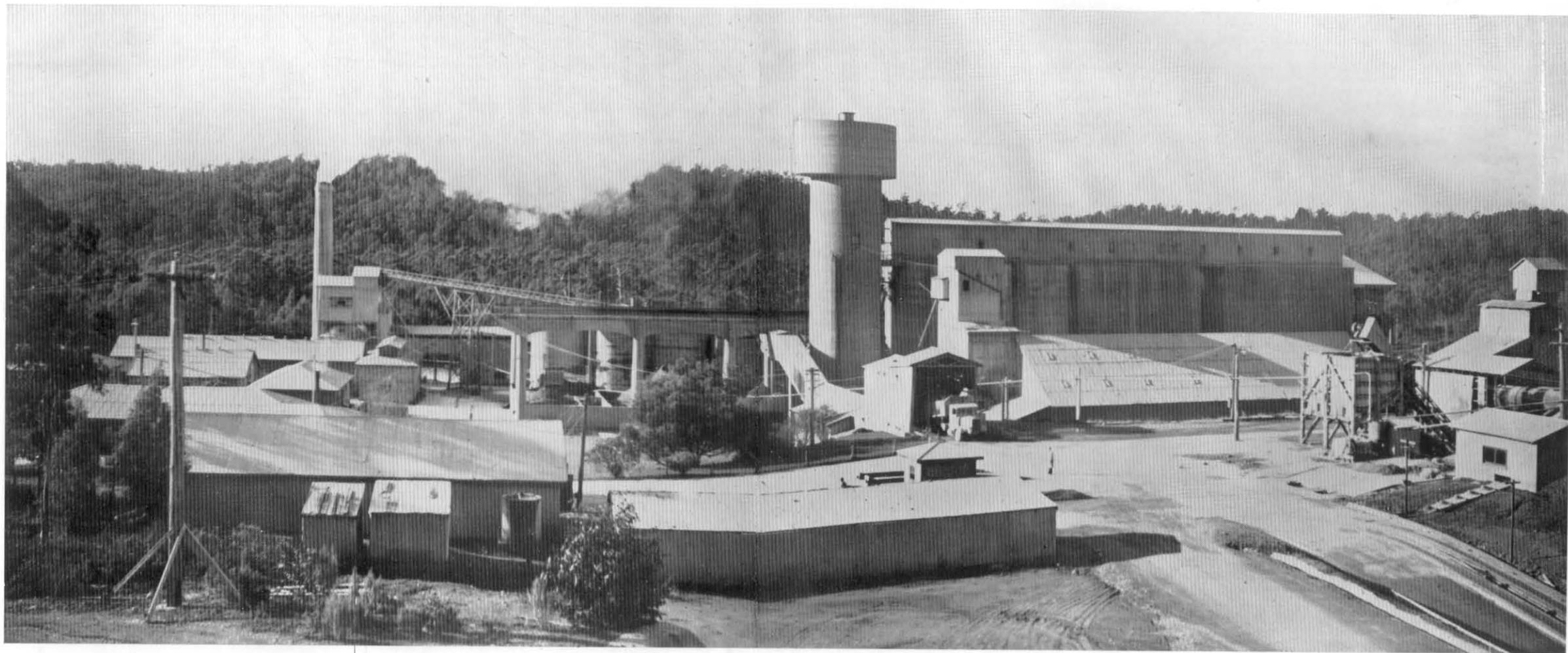


TASMANIA.

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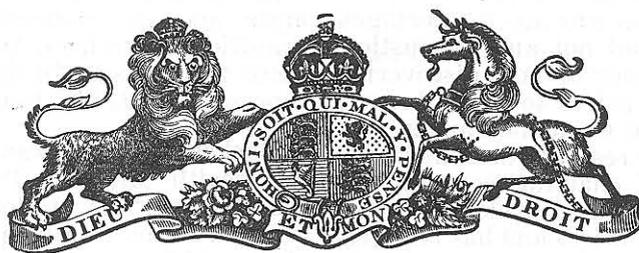
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GOLIATH PORTLAND CEMENT CO. LTD., RAILTON.

## TASMANIA.



## 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 on the 31st December, 1948.

The total value, based on Australian prices, of the output of minerals and mineral products was £3,566,361, as compared with £3,260,233 for the previous year, representing an increase of £306,128. On the basis of sterling metal prices, the composite gross value of the production was £4,884,660.

Production of coal and wolfram was substantially greater and increases occurred in the output of cobalt-oxide, kaolin, pyrites, scheelite, and talc but there were decreases in the production of bismuth, copper, cadmium, gold, granite, lead, ochre, osmiridium, silica, silver, tin, and zinc and in the combined output of carbide cement and limestone.

The number of men employed in mining, quarrying and metallurgical operations was 5,399, as compared with 5,316 for the previous year. There was a continued shortage of suitable labour for the requirements of development and production at established mines and for programmes of work on concessional areas occupied for planned exploration of mineral potentialities.

There was a sharp decline in the output of copper, due mainly to a reduced tonnage and lower overall grade of ore mined and processed.

The Mount Lyell Mining and Railway Company Limited continued to function as the major producer of copper. The output of crude ore, from surface and underground mining, was 1,304,675 tons, and 127 tons of copper precipitate resulted from the treatment of mine waters, representing a decrease of 129,810 tons of ore and 69 tons of copper precipitate as compared with the previous year.

Surface mining at West Lyell provided 1,237,959 tons, 63,983 tons resulted from operations at the Royal Tharsis mine, and underground mining at the North Lyell mine accounted for 2,606 tons of ore. Reduced ore tonnages continued to be due to the necessary implementation of a planned programme of overburden removal in the development of ore-breaking benches and to a shortage of miners for underground operations. A studied policy is being prosecuted in the mechanisation and modification of practices necessary in the mining and processing of low-grade ores. Short-

age of labour for underground mining has been of serious moment and is to be partially offset by the installation of mechanical loaders.

Selective flotation of crude ore resulted in a recovery of 27,075 tons of copper concentrate and 54,409 tons of iron-pyrite concentrate. The copper concentrate, together with 2,289 tons of high-grade ore and 127 tons of copper precipitate, was smelted for a recovery of 6,366 tons of blister copper.

Normal operations at the refinery resulted in the production of 6,326 tons of cathode copper. The cell residue, containing 22,763 oz. of silver and 4,052 oz. of gold, was exported for treatment.

Of the iron-pyrite concentrate, recovered by the selective flotation of the low-grade ores, 44,263 tons were shipped to the mainland for acid manufacture, the balance being stock-piled with reserves from previously unmarketed production.

The Electrolytic Zinc Company of Australasia Limited was in continuous operation, at Risdon, processing zinciferous calcines imported from the mainland and arising from the calcining of concentrates recovered from the selective treatment of Tasmanian ores.

Production from imported calcines was 62,175 tons of zinc, valued at £A1,430,025; 186.2235 tons of cadmium, valued at £A83,428; and 14.9569 tons of cobalt oxide, valued at £A7,039. Calcines, actually processed from Tasmanian ores, returned 19,137 tons of slab zinc, 44 tons of cadmium, 618 tons of lead, 108,343 oz. of silver, and 0.24 ton of cobalt oxide. An average number of 1,747 men was employed at these works.

The Tasmanian ores resulted from the mining of zinc-lead ore bodies at the Rosebery, Hercules, and Comstock mines on the West Coast, where 453 men were employed in mining, milling and calcining operations. The combined quantity of ore mined and milled was 123,034 tons. Selective flotation resulted in the recovery of 38,024 tons of zinc concentrate, 8,997 tons of lead concentrate and 3,094 tons of copper concentrate. The recoverable quantity of metallics was fixed at 18,288.26 tons of zinc, 6,423.83 tons of lead, 248.1 tons of copper, 34.22 tons of cadmium, 8,119.92 oz. of gold, and 779,367.54 oz. of silver. The lead and copper concentrates were exported. The zinc concentrate was calcined at Zeehan and railed to Risdon for processing until latterly when calcining was suspended at Zeehan and the concentrate was railed to Risdon for calcining and processing.

A persisting shortage of suitable labour continued to retard planned programmes in the exploration and development of the lead ore resources. The output of 7,327.661 tons of lead was

391,638 tons less than that for the previous year but this productive recession was due to shortages in labour and materials and not any exhaustion of resources. In the absence of new discoveries or appreciations in metal prices to bring known mineral occurrences within economic ranges, ore depletions must necessarily result in declining production but the policy of enabling concessional areas to be acquired for planned exploration has paralleled favourable metal prices and has resulted in intensive exploration by private enterprise in mineral regions of the West Coast.

The pattern of exploration followed by Zeehan Explorations in the Oceana area at Zeehan resulted in the location of silver-lead ore beyond the extremities of old workings and of sufficient magnitude to merit the sinking of a circular concrete lined shaft for the purposes of future productive mining.

Old workings and potential mineral areas in the Zeehan, Dundas, Farrell, and North Pieman regions are being subject to systematic investigation, and diamond drilling is proceeding at several locations in the search for new occurrences of ore.

Operations by the Electrolytic Zinc Company at the Hercules and Rosebery mines accounted for the greater portion of the recorded output of lead.

The Farrell Mining Company mined and milled 7,565 tons of ore for a recovery of 1,160 tons of silver-lead concentrate, containing 765 tons of lead and 82,320 oz. of silver. Stopping on Nos. 2, 4, 5, and 8 levels provided 6,362 tons of ore, an additional 1,203 tons accruing from developmental operations. Locations of payable ore were made by driving and crosscutting on Nos. 5 and 7 levels. A programme of diamond drilling was implemented, both underground and on the surface, in the search for new occurrences of ore. A shortage of suitable labour retarded developmental work and precluded a necessary sinking of the main shaft to open up lodes persisting below No. 8 level.

Metallic tin, in the product from lode and alluvial mining, was 777,124 tons, as compared with 830,176 for the previous year. Operations benefited materially from appreciated tin prices but there were no major developments. The production decline was due to a closing down of the Mount Bischoff Tin Mine and a reduction from large to small scale operations at the Briseis Tin Mine.

Aberfoyle Tin N.L., operating on a multiple lode series; Renison Associated, mining and milling tin pyrite ores; Briseis Tin Mine, sluicing relatively shallow ground along the course of a deep lead; and Dorset Tin Dredge, dredging river flats, continued as the principal producers and contributed 576,252 tons to the total output of metallic tin.

Hydraulic mining was continued by Goshen Tin Mines N.L., on areas of alluvial ground at St. Helens; the Endurance Tin Mining Company was engaged in mechanically-controlled sluicing at South Mount Cameron; and underground mining was continued on the wolfram-tin lodes at Storey's Creek mine. The output of concentrates from these operations contained 103,365 tons of metallic tin.

Small mines and miscellaneous parties were more actively engaged on alluvial, lode and granitic occurrences, throughout the State, and there was a rising in the production of tin-oxide, representing 91,507 tons of metallic tin.

Bucket-dredging was continued by the Commonwealth Minerals Production Directorate on the Dorset Flats at South Mount Cameron and resulted in the treatment of 1,662,000 cubic yards of ground for a recovery of a tin-gold concentrate, containing 144,2287 tons of metallic tin and 637.2 oz. of gold.

Briseis Consolidated N.L. abandoned all active interest in the Briseis Tin Mine but a cessation of mining was averted when a new company, Briseis Tin N.L., was formed, took over the mine and continued with gravity sluicing along the course of the Cascade lead. Operations were on a reduced scale, 258,000 cubic yards of alluvial drift being sluiced for a recovery of 50.49 tons of tin-oxide, containing 36 tons of metallic tin.

Dams, races, flumes, syphons, and water rights of Briseis Consolidated N.L. were purchased by the State and are to be developed for servicing water to miscellaneous sluicing projects, agricultural lands, and townships in the district.

Mechanically-controlled sluicing was continued as a major project, by the Endurance Tin Mining Company at South Mount Cameron. Treatment of 384,375 cubic yards of drift resulted in the recovery of 96.85 tons of tin-concentrate, containing 70.76 tons of metallic tin.

A progressive policy was prosecuted by Aberfoyle Tin N.L., Rossarden, in the exploration, development and mining of the multiple lode series and in milling innovations to appreciate recoveries of tin and wolfram. Production, from the mining and milling of 26,435 tons of ore, amounted to 473,399 tons of tin-concentrate and 74.16 tons of wolfram-concentrate, the former containing 339 tons of metallic tin and the latter containing 53.8 tons of tungsten. Positive and probable reserves of ore were assessed at 141,814 tons without regard for appreciations likely from depth persistence of the lode series.

Shortage of suitable labour continued to hamper operations by Renison Associated Tin Mines in the mining and milling of tin-pyrite ores at Renison Bell. Production of ore was mainly from open-cutting on the Battery lode but 3,327 tons accrued from stopping, and development work provided 176 tons. A total of 11,526 tons of ore was mined and milled for a recovery of 84,198 tons of tin-concentrate, containing 56.98 tons of metallic tin. A progressive housing scheme was initiated and, consistent with due regard for other factors affecting the recruitment of men, should mitigate the problem of labour.

With Government finance to meet operating losses and to cumulatively replace deteriorating race units, the Mount Cameron Water Race Board continued to function in supplying water to small parties engaged in the sluicing of tin-alluvials in the Gladstone district. Production of tin-oxide from all activities, serviced by the Board, was 30.94 tons. These operations usefully contributed to the total out-put of tin and to the stability of the township.

Markets and prices favoured the mining of tungsten ores and there was a rising in the production of both scheelite and wolfram, the combined output of concentrate being 871·828 tons as compared with 831·967 tons for the previous year. Developments continued to establish a tungsten potential capable of meeting market expansions.

Progressive quarrying and milling of scheelite ore was continued by King Island Scheelite (1947) Limited on King Island. The recorded throughput of ore was 148,263 tons and resulted in a recovery of 637·42 tons of scheelite concentrate. Ore quarried and milled averaged 0·53 per cent  $WO_3$  and the reserves of proved and payable ore were assessed at 2,948,383 tons. Innovations in milling units and practices appreciated the effective recovery but the objective recovery was not attained and a careful policy of research is being prosecuted to further elevate the effective recovery.

Storey's Creek Mine again functioned as the major producer of wolfram, 158 tons of wolfram-concentrate being recovered from the mining and milling of 9,915 tons of wolfram-tin ore. The recovery of tin-concentrate was 31·1 tons, containing 20·49 tons of metallic tin. Lode developments have substantially enhanced the productive potential of the mine but there was no improvement in the availability of suitable labour and it was not possible to implement the planned programme of reconstruction.

In addition to the 74·16 tons of wolfram-concentrate, resulting from operations at the Aberfoyle Tin Mine, small producers in the Moina and Mount Pelion districts contributed to the total output of 234·408 tons of wolfram. Access difficulties hampered operations at the Mount Pelion Mine.

There was a further decline in the production of gold. The recorded output of 12,904 oz. accrued mainly from the mining of copper and zinc-lead ores. Small quantities of gold resulted from the cyanidation of battery tailings, the treatment of tin concentrates recovered from the sluicing and dredging of gold-bearing stanniferous alluvials, and from minor activities on auriferous reefs and alluvials. A revival in prospecting for gold was not attended by any discovery or development of major importance but interest in gold production possibilities has not waned.

Osmiridium mining was less active, production receding to 92·393 oz. The average price was £A28·25 per oz. and, with the exception of 0·223 oz., of the output accrued from alluvial operations, by miscellaneous parties, at Adamsfield.

The combined value of carbide, cement, and limestone was £A489,277. The Australian Commonwealth Carbide Company at Electrona and Ida Bay, and the Goliath Portland Cement Company at Railton were the major producers and users of limestone in the manufacture of carbide and cement. There was an increase of 3801 tons in the production of carbide and the output of cement was 9792 tons more than for the previous year.

The recorded production of limestone was 158,561·5 tons of which 135,773 tons were used in the manufacture of carbide and cement. Metallurgical, agricultural, and building industries absorbed 22,788·5 tons in either crushed, pulverised or lime forms.

The Goliath Portland Cement Company expanded its activities to the production of asbestos-cement sheets and moulds, for the building industry, but supplies of asbestos were difficult. Asbestos occurs in northern, north-western, and western regions of the State but there is no production and in order to better determine the asbestos potential a detailed geological survey has been commenced of all asbestos-bearing serpentines in Tasmania.

There was a substantial increase in the output of clay for industrial uses, including the manufacture of paper. Small quantities of ochre, silica, and talc continued to be produced but there was no major development in operations connected therewith. The colour and texture of the red granite, at Coles Bay, remained consistently attractive but the demand lessened and the output declined to 159 tons.

Coal mining was characterised by freedom from industrial stoppages and the output increased to 179,393 tons. Rising trends in the demand for local coals, for established and new consumers, have called for increasing outputs. It is anticipated that the demand will range in the order of 360,000 tons during the next five years but the known coal resources are of considerable magnitude and, with organised development, equipment, recruitment of men to coal mining, and complementary transport from producing to consuming centres, provide no uncertainties in available reserves.

The Cornwall Coal Company continued as the principal producer and operations at the three collieries resulted in an output of 122,499 tons. Pillar extraction, bord and pillar work, and development operations resulted in a production of 94,219 tons at the Cornwall Colliery, 25,079 tons accrued from mechanised and other coal-winning at the Mount Nicholas Coal Mine, and small-scale operations provided an output of 3201 tons from the Duncan Colliery at Fingal.

Troubled seem conditions persisted at the Jubilee Coal Mine but as a result of organised development of the Main Heading section the output increased to 19,432 tons.

The Dalmayne Coal Mine was purchased by the Transport Commission. The lower section of the seam provides a coal suitable for use as a single fuel unit in railway engines and boring is to be undertaken to prove seam horizons and reserves with a view to more active development.

There was a forward move in productive activities at the Fingal Coal Mine, the output rising from 6,852 to 9,187 tons.

Productive mining remained constant at the Stanhope Coal Mine, the output of 11,779 tons arising from bord and pillar work, and from pillar extraction. Faulted conditions hampered a regular development of the colliery.

A shortage of labour retarded production at the Langloh Coal Mine, Hamilton, and the output declined to 7,545 tons. The colliery is sufficiently developed and equipped for a substantially greater production.

The balance of the output of coal accrued from operations at small collieries in the eastern, southern, and north-western districts.

Tasmanian coals have not been regarded as normal gas coals, where the production of gas and coke is desired, but technical investigations have suggested that some of the coals would be suitable for high-pressure gasification. Investigations have been advanced to a stage of pilot-plant processing, which is to be undertaken when pilot-units have been set up for the testing of bulk samples.

Departmental investigations were continued in the beneficiation of coals and have further illustrated the extent to which small coal may be improved in quality by lowering the ash content and correspondingly appreciating the heating value. The consumption angle should be a constant regard of the producer and where the heating value of coal is depressed by a normally high ash content elimination of waste should be a first consideration. Research has established that the quality of many of the marketed coals can be improved by beneficiation practices.

Developmental and productive operations are reviewed by district inspectors in connection therewith.

#### ALUMINIUM.

The Commonwealth-State project for the production of ingot aluminium continued to rest with a Commission and material progress was made in matters affecting the future establishment of the industry. The Commission decided to site an undivided alumina-reduction works on the eastern side of the Tamar River and investigations relevant to the positioning of plant units were commenced. Commonwealth resources of bauxite were surveyed, suitable metallurgical processes were determined, major plant sections were designed, and several essential units were purchased overseas. Delivery of plant units should commence early in the new year.

QUANTITY AND VALUE OF MINERALS.

STATISTICS RELATING TO THE MINING INDUSTRY FOR THE YEAR ENDING 31ST DECEMBER, 1948.

1949.

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(No. 49.)

Mineral.	MINERAL DIVISIONS.					Total Quantity.	VALUE.	
	Northern and Southern.	Eastern.	North-Eastern.	North-Western.	Western.		Sterling.	Australian Prices.
Bismuth ..... (tons)	....	....	....	.....078	....	.....078	£ 88	£ 107
Coal ..... (tons)	8,295	169,067	....	2,031	....	179,393	....	177,652
Copper ..... (tons)	....	....	....	....	6,574.1	6,574.1	881,363	991,345
Cadmium ..... (tons)	....	....	....	....	34.22	34.22	....	15,333
Cobalt Oxide ..... (tons)	....	....	....	....	.24	.24	....	110
Carbide, Cement, and Limestone ..... (tons)	16,515	....	....	99,826.5	4,906	121,247.5	....	489,277
Gold ..... (fine oz.)	34.095	47.232	637.2	13.25	12,172.285	12,904.062	111,127	138,872
Granite (Red) ..... (tons)	....	159	....	....	....	159	....	1,710
Kaolin ..... (tons)	1,278	....	5,463	....	....	6,741	....	21,955
Lead ..... (tons)	....	....	....	....	7,327.661	7,327.661	697,194	160,767
Ochre ..... (tons)	....	....	....	340	....	340	....	340
Osmiridium ..... (oz.)	92.170	....	....	....	....223	92.393	2,094	2,630
Pyrites ..... (tons)	....	....	....	....	44,263	44,263	....	61,968
Scheelite ..... (tons)	....	....	....	637.42	....	637.42	254,517	297,885
Silica ..... (tons)	....	....	....	517	3,245	3,762	....	1,378
Silver ..... (fine oz.)	....	....	....	7,840	899,375.613	907,215.613	168,726	214,045
Talc ..... (tons)	....	....	....	22	....	22	....	22
Tin ..... (tons)	4.036	392.038	321.907	1.371	57.772	777.124	427,372	452,578
Wolfram ..... (tons)	....	232.154	....	2.254	....	234.408	103,193	131,258
Zinc ..... (tons)	....	....	....	189	18,314.85	18,503.85	1,469,241	407,131
Total Value with Sterling Metal Prices .....	....	....	....	....	....	....	£4,884,660	
Total Value with Australian Prices .....	....	....	....	....	....	....	£A3,566,361	
Average Number of Men Employed .....	2,163	533	241	372	2,090	5,399	....	....
Limestone ..... (tons)	25,963	....	....	127,692.5	4,906	158,561.5	....	Included in Carbide, Cement and Limestone.
Iron Ore ..... (tons)	....	....	....	2,014	....	2,014	....	....

The Electrolytic Zinc Company of Australasia Limited, recovered 62,175 tons of zinc, valued at £A1,430,025; 186.2235 tons of cadmium, valued at £A83,428; and 14.9569 tons of cobalt-oxide, valued at £A7039, from other than Tasmanian ores; and employed an average of 1747 men at Risdon.

**ASBESTOS.**

*RETURN showing the Quantity and Value of Asbestos produced from 1899 to 1948 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.....	—	—
1941.....	3·5	120
1942.....	7	20
1943.....	18·25	365
1944.....	102·99	2242
1945.....	276·36	7193
1946-1948.....	—	—
<b>Total.....</b>	<b>3979·85</b>	<b>£17,142</b>

**BARYTES.**

*RETURN showing the Quantity and Value of Barytes produced to 31st December, 1948.*

Year.	Quantity.	Value.
	Tons.	£
Prior to 1916 .....	50	100
1916.....	83	359
1917.....	52	234
1918.....	217	977
1919.....	558	1886
1920.....	1029	4116
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
1941.....	11·2	43
1942-45.....	—	—
1946.....	33	70
1947-1948.....	—	—
<b>Total.....</b>	<b>2196·2</b>	<b>£8138</b>

**BISMUTH.**

*RETURN showing the Quantity and Value of Bismuth produced from 1904 to 1948 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
1922-1929.....	—	—
1930.....	·97	475
1931.....	1·75	1015
1932.....	1·02	541
1933.....	1·32	705
1934.....	—	—
1935.....	·328	146
1936.....	—	—
1937.....	·216	78
1938.....	·871	396
1939.....	·623	296
1940.....	·565	270
1941.....	·032	16
1942.....	·02	10
1943.....	·309	241
1944.....	·151	126
1945.....	·529	373
1946.....	·392	293
1947.....	·399	305
1948.....	·078	88
<b>Total.....</b>	<b>83·632</b>	<b>£28,426</b>

**COAL.**

*RETURN showing the Quantity and Value of Coal raised to 31st December, 1948.*

Year.	Quantity.	Value.
	Tons.	£
Previous to 1880.....	145,114	115,000
1880 to 1904 inclusive .....	828,370·5	710,952
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	86,134
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
1941.....	109,714	85,311
1942.....	134,442	108,241
1943.....	145,882	117,361
1944.....	143,641	122,673
1945.....	149,077	125,719
1946.....	158,751	137,736
1947.....	167,140	154,725
1948.....	179,393	177,652
<b>Total.....</b>	<b>5,212,117</b>	<b>£4,143,251</b>

**COPPER.**

The production for the year was 6574.1 tons, valued at £881,363.

*RETURN showing the Quantity and Value of Copper in Blister Copper, Copper Ore, and Zinc Lead Ore during the Years 1919 to 1948 inclusive.*

Year.	In Zinc Lead Ore.		In Blister Copper.		In Copper Ore.		Total	
	Qty.	Value.	Q'ty.	Value.	Q'ty.	Value.	Q'ty.	Value.
	Tons.	£	Tons.	£	Tons.	£	Tons.	£
1919.....	...	...	5014	503,977	304	4651	5318	508,628
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.....	...	...	8690.01	740,985	—	—	8690.01	740,985
1930.....	...	...	9940.68	620,578	—	—	9940.68	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.....	...	...	8,202	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.....	...	...	12,700.62	578,893	28.802	1345	12,729.422	580,238
1939.....	...	...	13,453	668,561	—	—	13,453	668,561
1940.....	...	...	11,570.2	717,356	1.8	108	11,572	717,464
1941.....	...	...	11,642.1	721,810	2.834	175	11,644.934	721,985
1942.....	529.58	32,827	11,255.132	697,818	478	30	11,785.09	730,675
1943.....	464.38	28,791	10,684	662,408	—	—	11,148.38	691,199
1944.....	381.75	23,666	9831	609,522	—	—	10,212.75	633,188
1945.....	275.51	17,080	7197	446,214	—	—	7472.51	463,294
1946.....	245.88	18,714	9134	697,498	—	—	9379.88	716,212
1947.....	286.31	37,726	7666.733	1,019,925	1.267	174	7954.31	1,057,825
1948.....	248.10	33.275	6326	848,088	—	—	6574.1	881,363
Total.....	2431.51	192,079	268,351.475	16,764,436	404.094	949.1	271,187.079	16,966,006

*The Mount Lyell Mining and Railway Company Limited.  
Return for the Calendar Year 1948.*

Ore and metal-bearing material smelted:—

Source of Material.	Tons (Dry).
Ore:—From the Company's North Lyell Mine	2,289
Concentrates:—From the Company's North Lyell Mine, Lyell Comstock Mine, Crown Lyell Mine, and West Lyell Mines ore	27,075
Purchased ore	—
Precipitate	127
<b>Total</b>	<b>29,491</b>

Source of Material.	Tons (Dry).
Limestone delivered at works (tons)	4,906
Silica delivered at works	3,245
Pyritic concentrate shipped from Regatta Point (tons), approximate value £A61,968	44,263
Bliester copper produced, 6366 tons, containing:	
Copper (tons) .....	6,326
Silver (oz.) .....	22,763
Gold (oz.) .....	4,052
	Approximate value £A1,000,157
Average number of men employed—	
Mining Department—At the Company's	
North Lyell Mine .....	5
Ditto, Royal Tharsis Mine .....	87
Ditto, West Lyell Mines .....	445
Miscellaneous .....	196
	733
Reduction Works Department (including Lake Margaret)	646
Railway Department—Mount Lyell Railway	93
<b>Total</b>	<b>1,472</b>

Copper produced from the inception of the Company to the 31st December, 1948, 426,945 tons.  
Silver produced from the inception of the Company to the 31st December, 1948, 15,476,225 oz. (fine).  
Gold produced from the inception of the Company to the 31st December, 1948, 508,887 oz. (fine).  
Dividends paid during the year, 77,500.  
Dividends paid from the inception of the Company to the 31st December, 1948, £6,820,945.

**CADMIUM.**

The quantity recovered was 34.22 tons, valued at £15,333, compared with 34.53 tons valued at £15,470 for 1947.

*RETURN showing the Quantity and Value of Cadmium recovered for the Years 1936 to 1948.*

Year.	Quantity.	Value.
	Tons.	£
1924-1936 .....	114.3057	31,713
1937 .....	45	18,161
1938 .....	49	18,636
1939 .....	48	16,249
1940 .....	50	18,242
1941 .....	47.07	21,087
1942 .....	41.39	18,462
1943 .....	40.34	18,072
1944 .....	39.68	17,840
1945 .....	29.38	13,161
1946 .....	33.74	15,116
1947 .....	34.53	15,470
1948 .....	34.22	15,333
<b>Total</b> .....	<b>606.6557</b>	<b>£237,542</b>

**CEMENT, CARBIDE, AND LIMESTONE.**

The combined value of output from these three industries amounted to £489,277, as compared with £360,845 for 1947.

**GOLD.**

The quantity won was 12,904·062 oz. fine valued at £111,127, as compared with 15,051·185 oz. valued at £129,619 for 1947.

*RETURN showing the Quantity and Value of Gold won to 31st December, 1948.*

Year.	Quantity.	Value.
	Oz.	£
Previous to 1867 and up to 1879 inclusive.....	131,583	512,557
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	15,037
1926 .....	4,222·748	17,936
1927 .....	4860·7	20,649
1928 .....	3603·43	15,306
1929 .....	5596·88	23,772
1930 .....	4467·2	18,975
1931 .....	4759·31	22,118
1932 .....	5937·17	34,943
1933 .....	6672·74	41,783
1934 .....	5612·26	38,930
1935 .....	8342·68	59,255
1936 .....	17,600·47	123,386
1937 .....	20,276·31	143,138
1938 .....	22,199·961	158,022
1939 .....	19,984·066	154,471
1940 .....	19,170·968	161,035
1941 .....	19,908·498	167,229
1942 .....	18,353·364	154,168
1943 .....	17,245·253	144,860
1944 .....	16,653·38	139,886
1945 .....	13,049·804	111,452
1946 .....	15,361·987	132,296
1947 .....	15,051·185	129,619
1948 .....	12,904·062	111,127
Total .....	2,305,632·739	10,216,631

**GRANITE (RED).**

*RETURN showing the Quantity and Value of Red Granite produced during the Years 1935 to 1948 inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1935.....	284	1432
1936.....	568	3209
1937.....	187	923
1938.....	173	885
1939.....	246	1300
1940.....	330	2031
1941.....	658·5	5661
1942.....	355	2937
1943-45.....	...	...
1946.....	60	600
1947.....	209	2211
1948 .....	159	1710
Total.....	3229·5	22,899

**IRON PYRITES.**

*RETURN showing the Quantity and Value of Iron Pyrites produced during the Years 1915 to 1948 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
1924-1930 .....	—	—
1931.....	506·7	253
1932.....	274	150
1933.....	1498	1498
1934.....	12,030	12,030
1935.....	25,555	25,555
1936.....	34,071	34,071
1937.....	40,630	43,723
1938.....	50,277	62,845
1939.....	54,229	67,786
1940.....	37,819	47,274
1941.....	40,076	50,093
1942.....	34,449	43,061
1943.....	33,203	41,504
1944.....	29,136	36,419
1945.....	40,168	50,208
1946.....	37,294	49,145
1947.....	42,329	59,260
1948.....	44,263	61,968
Total.....	626,100·973	£780,759

**KAOLIN.**

*RETURN showing the Quantity and Value of Kaolin produced during the Years 1940 to 1948 inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1940.....	835·5	988
1941.....	1130	1428
1942.....	1098	1334
1943.....	1655	2438
1944.....	4193·25	4778
1945.....	5718	11,562
1946.....	6330·5	11,886
1947.....	3076	8800
1948.....	6741	21,955
Total.....	30,777·25	65,169

**LIMESTONE.**

*RETURN showing the Quantity and Value of Limestone produced during the Years 1919 to 1936 inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1919-1922 inclusive .....	200,454	199,470
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.....	174,767	44,877
1935.....	254,438	68,367
1936.....	262,101	71,243
Total.....	2,108,943	£1,439,674

**LEAD.**

The output was 7327·661 tons, valued at £697,194, as compared with 7719·299 tons, valued at £660,861 for 1947.

*RETURN showing the Quantity and Value of Lead included in Silver Lead during the Years 1919 to 1948 inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1919-1924.....	21,918·625	639,592
1925.....	5525·99	197,452
1926.....	5892·58	183,167
1927.....	5583·12	135,403
1928.....	4786·78	101,616
1929.....	5983·07	138,793
1930.....	4237·84	77,590
1931.....	2189·47	29,024
1932.....	2694·06	32,637
1933.....	2644·12	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
1941.....	11,753·47	293,837
1942.....	9360·42	234,011
1943.....	8632·72	215,817
1944.....	8226·5	205,661
1945.....	6298·44	157,459
1946.....	6890·58	340,509
1947.....	7719·299	660,861
1948.....	7327·661	697,194
Total.....	182,563·425	£5,432,171

**NICKEL.**

*RETURN showing the Quantity and Value of Nickel produced from 1927 to 1948 inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1927-1931.....	193·6	33,162
1932.....	0·55	136
1933.....	8·65	1948
1934-37.....	—	—
1938.....	19·75	3604
1939-48.....	—	—
Total.....	222·55	£38,850

**OCHRE.**

*RETURN showing the Quantity and Value of Ochre produced during the Years 1918 to 1948 inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1918-1924.....	134	306
1925.....	—	—
1926.....	38	69
1927-1939.....	—	—
1940.....	3·5	9
1941.....	—	—
1942.....	21	53
1943.....	380	1681
1944.....	74·5	233
1945.....	66	191
1946.....	255	437
1947.....	395	405
1948.....	340	340
Total.....	1707	£3724

**OSMIRIDIUM.**

The quantity of metal won during the year was 92·393 oz., valued at £2094, as compared with 98·766 oz., valued at £2700 for 1947.

*RETURN showing the Quantity and Value of Osmiridium produced during the Years 1910 to 1948 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.....	1668·715	39,614
1920.....	2009·196	77,104
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.....	3202·5	61,908
1927.....	632·777	7456
1928.....	1627·186	42,458
1929.....	1324	30,624
1930.....	952·7	16,235
1931.....	1279·54	18,028
1932.....	784·95	9075
1933.....	548	4843
1934.....	487·7	4622
1935.....	234·82	2103
1936.....	280·6	3862
1937.....	586·42	9077
1938.....	190·87	2976
1939.....	283·065	5014
1940.....	464·740	11,604
1941.....	206·578	4212
1942.....	142·094	2930
1943.....	89·695	2087
1944.....	107·02	2619
1945.....	108·75	2665
1946.....	94·522	2581
1947.....	98·766	2700
1948.....	92·393	2094
Total.....	30,685·097	£664,230

**SHALE.**

*RETURN showing the Quantity and Value of Shale produced during the Years 1910 to 1948 inclusive.*

Year.	Quantity.		Value.	
	Tons.	£	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.....	9052	7754	—	—
1929.....	4299	2982	—	—
1930.....	5428	4356	—	—
1931.....	1402	600	—	—
1932.....	1907	1074	—	—
1933.....	3401	1483	—	—
1934.....	3276	1630	—	—
1935.....	30	15	—	—
1936-1948.....	—	—	—	—
Total.....	41,572	£31,231	—	—

*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
1935-48 ..	Tasmanite Shale Oil Company Ltd.....	—
	Total .....	357,115

**SCHEELITE.**

*RETURN showing the Quantity and Value of Scheelite produced during the Years 1917 to 1948 inclusive.*

Year.	Quantity.		Value.	
	Tons.	£	Tons.	£
1917-1920 ..	589·07	112,468	—	—
1921-1937.....	—	—	—	—
1938.....	30·53	6193	—	—
1939.....	170·695	33,301	—	—
1940.....	275·48	49,120	—	—
1941.....	246·913	42,700	—	—
1942.....	215·332	71,353	—	—
1943.....	199·201	68,908	—	—
1944.....	32·21	10,842	—	—
1945.....	527·54	158,093	—	—
1946.....	627·8	165,264	—	—
1947.....	630·92	240,006	—	—
1948.....	637·42	254,517	—	—
Total.....	4183·111	£1,212,765	—	—

**SILVER.**

The output was 907,215·613 oz. (fine), valued at £168,726, as compared with 918,791·094 oz., valued at £169,068 for 1947.

*RETURN showing the Quantity and Value of Silver contained in Silver-Lead, Blister, Copper, Copper Ore, Zinc Lead Ore, and Gold Ore during the Years 1919 to 1948 inclusive.*

Year.	In Silver-Lead.		In Blister Copper.		In Copper Ore.		In Gold Ore.		In Zinc Lead Ore.		Total.	
	Quantity.	Value	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Oz.	£	Oz.	£	Oz.	£	Oz.	£	Ozs.	£	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	75,598	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	564,056	66,386	105,270	12,515	...	...	...	...	...	...	669,326	78,901
1929	714,939	78,252	149,424	16,308	...	...	...	...	...	...	864,363	94,560
1930	518,641	41,485	182,978	14,583	...	...	...	...	...	...	701,619	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	803,269	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	98,913	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	155,596	58,659	5854	119	13	44	4	...	...	1,608,681	161,447
1941	1,282,795	134,693	43,830	4601	113	12	...	...	...	...	1,326,738	139,306
1942	207,050	21,739	36,207	3802	...	...	...	...	946,804·44	99,414	1,190,061·44	124,955
1943	193,070	20,273	44,321	4653	...	...	...	...	879,184·67	92,315	1,116,575·67	117,241
1944	143,640	15,082	38,047	3994	...	...	...	...	846,489·29	88,881	1,028,176·29	107,957
1945	136,390	17,188	24,232	2917	...	...	...	...	655,535·38	81,956	816,157·38	102,101
1946	134,450	28,102	34,194	7127	...	...	...	...	727,648·76	152,199	896,292·76	187,428
1947	146,775·56	26,979	27,891·9	5028	...	...	...	...	744,123·63	137,061	918,791·09	169,068
1948	105,085·07	19,520	22,763	4233	...	...	...	...	779,367·54	144,973	907,215·61	168,726
Total	15,601,269·18	1,823,288	3,092,678·9	412,749	232	25	44	4	5,579,153·71	796,839	24,273,377·79	3,052,905

**TALC.**

RETURN showing Quantity and Value of Talc produced during the Years 1928 to 1948 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
1937-1943.....	—	—
1944.....	4	16
1945.....	152·75	532
1946.....	49	192
1947.....	—	—
1948.....	22	22
Total.....	333·35	1077

**TIN.**

The output was 777·124 tons, valued at £427,372, as compared with 830·176 tons, valued at £353,045 for 1947.

RETURN showing the Quantity and Value of Metallic Tin exported from Tasmania from 1873 to 1904 (compiled from Customs Returns only), and Metallic Tin produced during the Years 1905 to 1948 inclusive.

Year.	Quantity.	Value.
	Tons.	£
1873-1879 inclusive.....	16,429	1,054,923
1880 to 1905 inclusive.....	56,419·93	7,530,234
1906.....	3130·925	557,266
1907.....	3039·925	501,681
1908.....	3164·56	421,580
1909.....	3157·84	418,165
1910.....	2590·707	399,393
1911.....	2767·135	513,500
1912.....	2599·775	543,103
1913.....	2807·287	531,983
1914.....	1809·899	259,300
1915.....	1819·463	292,306
1916.....	1998·245	350,852
1917.....	1846·135	427,917
1918.....	1579·342	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	253,919
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
1941.....	1255·729	328,340
1942.....	1148·048	297,919
1943.....	948·817	246,218
1944.....	809·671	235,612
1945.....	801·239	240,369
1946.....	700·886	240,584
1947.....	830·176	353,045
1948.....	777·124	427,372
Total.....	135,151·877	£21,788,228

**WOLFRAM.**

RETURN showing the Quantity and Value of Wolfram produced during the Years 1899 to 1948 inclusive.

Year.	Quantity.	Value.
	Tons.	£
1899 to 1904 inclusive].....	72·84	3304
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	9896
1928.....	176·15	12,094
1929.....	151·86	18,358
1930.....	112·6	12,216
1931.....	0·29	16
1932.....	—	—
1933.....	104·05	7,301
1934.....	194·19	27,375
1935.....	232·13	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
1941.....	235·502	42,536
1942.....	183·23	58,397
1943.....	230·025	82,965
1944.....	241·875	86,749
1945.....	211·11	69,896
1946.....	156·573	44,553
1947.....	201·047	82,928
1948.....	234·408	103,193
Total.....	5748·484	£1,139,972

**ZINC.**

RETURN showing the Quantity and Value of Zinc produced during the Years 1919 to 1948 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	181,240
1928.....	7112	188,691
1929.....	6977	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.....	26,262	715,632
1941.....	24,468·6	666,768
1942.....	21,472·15	585,116
1943.....	21,078·81	574,398
1944.....	20,833·15	567,702
1945.....	15,609·34	407,307
1946.....	17,990·08	800,072
1947.....	18,512·663	1,295,883
1948.....	18,503·85	1,469,241
Total.....	310,259·333	£9,586,875

\* 1917, 1918 have been deleted. Product of Broken Hill.

## ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED.

## RETURN FOR THE YEAR 1948.

EXTRACTIONS FROM ORES AND CONCENTRATES:	
RISDON.	
<i>From other than Tasmanian Ores—</i>	
Zinc .....	62,175 tons
Cadmium .....	186·2235 tons
Cobalt oxide .....	14·9569 tons
<i>From Tasmanian Ores—</i>	
Zinc .....	19,137 tons
Cadmium .....	44 tons
Cobalt oxide .....	·24 tons
Lead .....	618 tons
Silver .....	108,343 oz.
<i>Men Employed—</i>	
The average number of men employed was 1747.	

## Concentrates Produced—

Zinc concentrates .....	38,024
Lead concentrates .....	8,997
Copper concentrates .....	3,094
	50,115

## Recoverable Quantity in Ores Mined—

Zinc .....	18,288·26 tons
Lead .....	6,423·83 tons
Copper .....	248·1 tons
Cadmium .....	34·22 tons
Silver .....	779,367·54 oz.
Gold .....	8,119·92 oz. f.

WEST COAST DIVISION.	
<i>Ore Mined—</i>	
From Hercules Mine .....	38,630
From Rosebery Mine .....	84,312
From Comstock Mine .....	92
Total .....	123,034

## Average Number of Men Employed—

Hercules Mine .....	59
Rosebery Mine .....	370
Zeehan Smelters .....	23
Comstock Mine .....	1
Total .....	453

## QUANTITY AND VALUE OF METALS AND MINERALS RAISED.

RETURN showing Quantity and Value of Metals and Minerals Raised in Tasmania as at 31st December, 1948.

Mineral or Metal.	Quantity.	Value.
Asbestos .....	3,979·85	17,142
Barytes .....	2,196·2	8,138
Bismuth .....	83·632	28,426
Cadmium .....	606·6557	237,542
Carbide, Cement, and Limestone .....	2,973,635·6	4,957,481
Carbide to 1936 (now under Carbide, Cement, and Limestone) .....	62,090	1,212,207
Cement to 1936 (now under Carbide, Cement, and Limestone) .....	525,391	2,004,014
Coal .....	5,212,117	4,143,251
Cobalt Oxide .....	5·75	2,640
Copper (Blister) to 1918 (now shown under Silver and Copper) .....	166,600	13,788,527
Copper Matte .....	6,227	133,736
Copper Ore to 1918 (now under Copper) .....	41,768·63	577,873
Copper (from 1919) .....	271,187·079	16,966,006
Dolomite .....	10	25
Gold .....	2,305,622·739	10,116,631
Granite (Red) .....	3,229·5	22,899
Graphite .....	17	26
Ilmenite .....	550	1,256
Iron Ore .....	46,181·5	31,776
Iron Pyrites .....	626,100·973	780,759
Kaolin .....	30,777·25	65,169
Lead (from 1919) .....	182,563·425	5,432,171
Limestone to 1936 (now under Carbide, Cement, and Limestone) .....	2,108,943	1,439,674
Manganese .....	·6	3
Monazite .....	32·6	488
Nickel .....	222·55	38,850
Ochre .....	1,707	3,724
Osmiridium .....	30,685·097	664,230
Rutile .....	·5	18
Scheelite .....	4,183·111	1,212,765
Silica .....	84,736	38,622
Shale .....	41,572	31,231
Silver Lead to 1918 (now shown under Silver and Lead) .....	1,083,897·821	6,429,291
Silver (from 1919) .....	24,273,377·797	3,032,905
Talc .....	333·35	1,077
Tin .....	135,151·877	21,788,228
Wolfram .....	5,748·484	1,139,972
Zinc .....	310,258·993	9,586,875
<b>Total .....</b>		<b>£106,035,648</b>

**STATISTICS OF PRODUCTION.**

*RETURN showing the Annual Published Value of Mineral Products for the State of Tasmania from 1880 to 1948 inclusive.*

Year.	Value.	Year.	Value.
	£		£
1880	554,031	1916	1,521,050
1881	602,723	1917	1,580,354
1882	556,306	1918	1,444,814
1883	560,873	1919	1,301,090
1884	468,302	1920	1,421,104
1885	518,885	1921	822,851
1886	489,966	1922	1,013,415
1887	593,256	1923	1,219,456
1888	616,733	1924	1,496,804
1889	504,718	1925	1,700,861
1890	444,210	1926	1,808,847
1891	528,388	1927	1,621,027
1892	526,909	1928	1,593,828
1893	627,909	1929	1,790,653
1894	732,764	1930	1,270,114
1895	575,692	1931	894,986
1896	662,058	1932	897,168
1897	1,006,140	1933	1,053,373
1898	1,071,084	1934	1,037,351
1899	1,660,622	1935	1,387,511
1900	1,888,695	1936	1,979,637
1901	1,763,896	1937	2,653,822
1902	1,378,406	1938	2,294,735
1903	1,354,044	1939	2,520,282
1904	1,379,204	1940	3,137,330
1905	1,729,129	1941	3,055,838
1906	2,257,147	1942	2,832,189
1907	2,277,159	1943	2,686,664
1908	1,650,027	1944	2,581,366
1909	1,574,995	1945	2,201,324
1910	1,432,193	1946	3,190,033
1911	1,349,497	1947	4,595,685
1912	1,493,502	1948	4,884,660
1913	1,415,700	Value of production 1867-1945, previously unrecorded	2,067,650
1914	1,007,038		
1915	1,225,575		
		Total	£106,035,648

*RETURN showing the Total Number of Leases and Licences in Force on 31st December, 1948.*

Mineral.	Number.	Number of Sluiceways.	Area
			A cres.
Bauxite	1	...	129½
Barytes	1	...	10
Bismuth	...	...	...
Coal	27	...	4585
Clay	7	...	195
Copper	1	...	33
Galena	...	...	...
Gravel	1	...	31
Granite	4	...	30
Gold	26	...	464
Iron	2	...	107
Limestone	8	...	622
Lead-Zinc	1	...	80
Molybdenum	...	...	...
Minerals	35	...	5576
Marble	...	...	...
Nickel	5	...	249
Osmiridium	1	...	10
Ochre	2	...	24
Pyrites	1	...	80
Quartzite	...	...	...
Scheelite	3	...	281
Shale	...	...	...
Silica	1	...	15
Silver Lead	17	...	572
Stone	10	...	913
Sand	2	...	15
Serpentine, &c.	3	...	240
Tin	224	...	5668
Wolfram	1	...	20
Mining Easements and Machinery Sites	72	...	724½
Licences to Search	1	...	200
Water Licences	212	987	1807¾
Total	669	987	22,681¼

**STATISTICS OF MINING COMPANIES.**

*RETURN showing the Amounts Paid in Dividends by Mining Companies during the Year ending 31st December, 1947.*

Mines.	Dividends.
	£ s. d.
Copper	77,500 0 0
Gold	...
Tin	59,375 0 0
Silver	...
Coal	...
Scheelite	50,000 0 0
Zinc	* 450,000 0 0
Total	£636,875 0 0

\* This amount represents total dividends out of Tasmanian and ex-Tasmanian profits.

*RETURN showing the Mining Companies Registered during the Year ending 31st December, 1948.*

Number of Companies.	Capital.
One	£24,000

In addition to the above, one agent for foreign companies under the Mining Companies (Foreign) Act, 1884, was registered. One syndicate under Part V. of the Mining Companies Act, 1884, was registered.

*RETURN showing the Total Amount of Rents, Fees, &c., received by the Mines Department during the Year ending 31st December, 1948.*

Head of Revenue.	Amount.
	£ s. d.
Rent of Auriferous and Mineral Lands	7129 16 0
Fees, Auriferous and Mineral Lands	526 13 3
Survey Fees	877 17 2
Fees under the Explosives and Inflammable Liquids Act	2980 12 10
Total	£11,514 19 3

RETURN showing the Total Area of Land and Number of Sluiceways of Water Applied for during the Year ending 31st December, 1948.

Mineral.	Number.	Area.	Sluiceways
		Acres.	
Asbestos .....	...	...	...
Bismuth .....	...	...	...
Barytes .....	...	...	...
Clay .....	...	...	...
Copper .....	9	583	...
Coal .....	1	40	...
Dolomite .....	...	...	...
Gold .....	7	70	...
Galena .....	...	...	...
Iron .....	...	...	...
Lead—Zinc, Silver .....	...	...	...
Lead—Antimony .....	1	9	...
Manganese .....	...	...	...
Minerals .....	9	3780	...
Silver Lead .....	11	657	...
Silica .....	...	...	...
Stone .....	1	10	...
Sand .....	1	1	...
Talc .....	...	...	...
Tin .....	37	881	...
Wolfram .....	1	10	...
Zinc .....	...	...	...
Machinery Sites and Mining Easements ...	4	18	...
Water-rights and Dam Sites .....	18	7	60
Licences to search for Coal .....	1	200	...
Total.....	101	6266	60

RETURN showing Total Number and Area of Leases and Licences Issued during the Year ending 31st December, 1948.

Mineral.	Leases.	Area.	Sluiceways.
		Acres.	
Asbestos .....	...	...	...
Barytes .....	...	...	...
Clay .....	1	10	...
Copper .....	...	...	...
Copper-Nickel .....	...	...	...
Coal .....	...	...	...
Galena .....	...	...	...
Gold .....	...	...	...
Lead Zinc .....	...	...	...
Limestone .....	1	119	...
Minerals.....	1	359	...
Manganese .....	...	...	...
Nickel, &c.....	...	...	...
Ochre .....	...	...	...
Quartzite .....	...	...	...
Silver .....	...	...	...
Silica .....	...	...	...
Silver-Lead.....	1	40	...
Stone .....	...	...	...
Tin.....	14	209	...
Wolfram .....	...	...	...
Water-rights and Dam Sites .....	11	1½	23
Licences to Search for Coal and Oil .....	1	200	...
Mining Easements and Machinery Sites .....	2	3	...
Total.....	32	941½	23

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 1883 to 1903, and for Six Months ending 31st December, 1903, and for the Years ending 31st December, 1904 to 1948 inclusive.

Year.	Amount.			Year.	Amount.		
	£	s.	d.		£	s.	d.
1883.....	15,439	14	5	1915.....	17,679	3	6
1884.....	6981	11	10	1916.....	14,678	19	10
1885.....	11,070	5	7	1917.....	14,669	7	2
1886.....	12,523	10	4	1918.....	17,833	14	9
1887.....	14,611	11	5	1919.....	15,388	7	7
1888.....	23,502	8	4	1920.....	16,767	11	6
1889.....	17,254	9	0	1921.....	11,248	14	11
1890.....	26,955	4	9	1922.....	14,184	7	3
1891.....	37,829	16	5	1923.....	13,224	11	9
1892.....	17,568	18	4	1924.....	14,678	13	11
1893.....	16,971	9	2	1925.....	14,229	8	7
1894.....	16,732	7	7	1926.....	15,163	15	7
1895.....	15,323	1	9	1927.....	16,887	9	9
1896.....	20,901	13	2	1928.....	14,313	12	0
1897.....	25,631	0	3	1929.....	14,665	10	7
1898.....	33,661	13	9	1930.....	11,166	7	2
1899.....	24,696	10	5	1931.....	11,520	1	10
1900.....	28,380	11	10	1932.....	10,097	18	6
1901.....	21,569	5	2	1933.....	9459	6	9
1902.....	19,471	0	1	1934.....	11,166	2	11
1903.....	17,776	14	3	1935.....	10,548	10	0
1903, 1 July to 31 Dec. ....	14,758	17	1	1936.....	11,023	11	3
1904, Jan. to Dec. ....	16,631	8	2	1937.....	12,206	10	1
1905.....	20,203	17	0	1938.....	11,177	11	5
1906.....	24,136	12	5	1939.....	11,556	5	1
1907.....	24,794	7	7	1940.....	11,018	3	9
1908.....	20,311	3	0	1941.....	10,835	18	8
1909.....	22,804	1	5	1942.....	9,509	18	2
1910.....	22,221	18	0	1943.....	9,449	9	7
1911.....	20,556	15	10	1944.....	8,952	5	3
1912.....	17,639	19	11	1945.....	9,108	18	6
1913.....	19,410	17	8	1946.....	8,716	8	8
1914.....	14,087	0	6	1947.....	9,569	12	9
				1948.....	10,637	2	1

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, 1934 to 1948 inclusive.

Nature of Lease.	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.		In force on 31st Dec., 1941.		In force on 31st Dec., 1942.		In force on 31st Dec., 1943.		In force on 31st Dec., 1944.		In force on 31st Dec., 1945.		In force on 31st Dec., 1946.		In force on 31st Dec., 1947.		In force on 31st Dec., 1948.	
	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.										
For Minerals, Silver, Tin, &c.	444	18,716	500	19,802	585	21,096	603	21,368	595	23,497	463	18,843	474	16,838	436	15,892	377	15,135	333	15,075	423	16,517.50	373	14,665	320	13,291	348	14,441	304	13,858
For Coal, Stone, Shale, &c.	51	8439	47	6635	48	7249	50	6778	43	4904	49	6683	53	6517	56	7151	53	6732	53	6683	60	7032	63	6687	64	7059	70	7477	54	5808
For Gold Mining	167	3987	162	3190	155	3183	22	2619	117	2491	108	1850.5	110	1759.5	106	2041	75	1176	59	914	113	1948	55	955	56	992	53	953	26	464
Easements	94	578	107	629	112	634	112	663	97	630	86	617.25	85	616.25	83	529	83	511.25	78	570.75	82	633.75	81	760	83	744	85	830	72	724
Machinery Sites	2	3670	2	4200	5	10,900	6	10,600	2	1180	2	1180	—	—	—	—	—	—	—	1	3900	2	1800	—	—	—	—	—	1	200
Licences to search for Coal or Oil	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	386	2065 & 1428 sluice-heads	346	2031.75 & 1586 sluice-heads	293	2015.25 & 1319 sluice-heads	300	2062.25 & 1343 sluice-heads	264	2005 & 1230 sluice-heads	256	1994 & 1131 sluice-heads	256	1999.4 & 1221 sluice-heads	212	1807.4 & 987 sluice-heads

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

	Average for 1935.	Average for 1936.	Average for 1937.	Average for 1938.	Average for 1939.	Average for 1940.	Average for 1941.	Average for 1942.	Average for 1943.	Average for 1944.	Average for 1945.	Average for 1946.	Average for 1947.	Average for 1948.
	£ s. d.													
Copper—Standard, spot: per ton .....	31 18 1	36 12 6	60 5 9	45 16 9	49 17 7	62 0 0	62 0 0	62 0 0	62 0 0	62 0 0	62 0 0	75 10 0	131 0 0	134 10 0
Lead—Soft Foreign: per ton .....	14 5 8	16 7 9	23 6 1	15 6 5	15 13 7	25 0 0	25 0 0	25 0 0	25 0 0	25 0 0	25 0 0	48 17 6	85 7 6	95 10 0
Spelter: per ton .....	14 0 0	14 6 11	22 6 8	14 1 7	14 14 0	25 15 0	25 15 0	25 15 0	27 5 0	27 5 0	27 12 6	42 16 3	70 0 0	79 3 4
Tin—Standard, spot: per ton .....	225 14 6	208 6 6	242 6 7	189 12 1	226 5 6	256 12 3	261 8 0	259 10 0	259 10 0	289 17 6	300 0 0	342 15 0	422 17 6	547 4 2
Silver—Standard, spot: per oz. ....	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. 1 11·439	s. d. 1 11·439	s. d. 1 11·439	s. d. 1 11·439	s. d. 2 6	s. d. 4 1·75	s. d. 3 8·25	s. d. 3 9
Osmiridium per oz. ...	£ s. d. 9 0 0	£ s. d. 12 10 0	£ s. d. 15 12 6	£ s. d. 15 0 4	£ s. d. 17 15 0	£ s. d. 24 0 0	£ s. d. 20 7 2	£ s. d. 20 12 4	£ s. 23 10 11	£ s. d. 24 10 6	£ s. d. 24 10 6	£ s. d. 27 17 7	£ s. d. 27 18 0	£ s. d. 22 10 0
Wolfram: per ton .....	175 0 0	161 5 0	325 19 0	289 0 0	271 0 0	250 0 0	250 0 0	437 10 0	500 0 0	500 0 0	462 10 0	400 0 0	582 17 6	616 5 0
Gold: per f. oz. ....	7 2 6	7 0 4	7 1 3	7 2 6	7 15 2	8 8 0	8 8 0	8 8 0	8 8 0	8 8 0	8 10 10	8 12 3	8 12 3	8 12 3

## AID TO MINING.

The policy of assistance to mining was maintained to the extent provided for under the provisions of the Aid to Mining Act but no material advantage was taken thereof. An amount of £75 was expended and £493 was repaid against advances previously made.

Financial assistance, other than from the Mining Trust Fund and the Aid to Mining (Federal Grant) Trust Fund was afforded as follows:—

Name of Mine.	Source of Advance.	Amount Advanced.	Amount Repaid.
Jubilee Coal Company	Loan	£	£
	Funds	....	225
Renison Associated Tin	Loan	3500	....
	Funds		

The advance to Renison Associated Tin Mines was for the erection of dwellings and a community hall, as part of a loan of £10,000 authorised by the Renison Associated Tin Mines Act, 1946. The amount drawn against the loan now totals £5500.

## THE AID TO MINING ACT, 1927.

## STATEMENT OF RECEIPTS AND PAYMENTS OF THE MINING TRUST FUND FOR YEAR ENDED 31st DECEMBER, 1948.

RECEIPTS.			PAYMENTS.		
	£	s. d.		£	s. d.
Balance, 31st December, 1947	10,912	0 10	Assistance	76	12 2
Repayments of loans	493	4 10	Insurances		
Hire drilling plant	73	10 0	Miscellaneous	8	0 0
Sale of plant	125	0 0			
			Total payments	84	12 2
			Excess of receipts over payments	11,519	3 6
	£11,603	15 8		£11,603	15 8

## 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.				PAYMENTS.			
Item.	March, 1935 (commence- ment) to 31st Dec., 1948.	1st Jan., 1948. to 31st Dec., 1948.		Item.	March, 1935 (commence- ment) to 31st Dec., 1948.	1st Jan., 1948. to 31st Dec., 1948.	
	£	s. d.	£ s. d.		£	s. d.	£ s. d.
Provided by—				Prospecting	1,584	6 6	....
Commonwealth	£25,750			Batteries	1,328	14 0	....
State	9,250			Advances	22,785	5 7	....
	35,000	0 0		Plants and operation thereof	6,711	9 11	....
Transfer of balance from—				Metallurgical investigations	1,237	3 4	....
The Aid to Mining (Federal Grant) Trust Fund, 1936-37 (1 Edw. VIII. No. 20)	1,883	18 2		Roads and tracks	6,486	8 8	....
The Aid to Mining (Federal Grant) Trust Fund, 1937-38 (1 Geo. VI. No. 32)	798	9 11		Transport	829	10 10	....
Other credits—				Staff	574	11 1	....
Batteries	99	13 2		Total payments	41,537	9 11	....
Advances	9,009	8 7	148 0 2	Excess receipts over pay- ments	5,266	17 4	5,266 17 4
Plants and operation there- of	11	18 8					
Metallurgical investigations	0	7 11					
Staff	0	10 10					
Balance brought forward period ended 31st Decem- ber, 1947			5,118 17 2				
	£46,804	7 3	£5,266 17 4		£46,804	7 3	£5,266 17 4

## GOLD MINING ENCOURAGEMENT ACT, 1940.

(Commonwealth Act, No. 38 of 1940.)

## RECEIPTS AND PAYMENTS STATEMENT OF THE GOLD MINING ENCOURAGEMENT (COMMONWEALTH) DEPOSIT ACCOUNT FOR THE YEAR ENDED 31st DECEMBER, 1948.

RECEIPTS.			PAYMENTS.		
	£	s. d.		£	s. d.
Balance brought forward, 31st December, 1947	2,000	0 0	Advances	2,000	0 0
Repayments			Excess receipts over payments		
Interest					
	£2,000	0 0		£2,000	0 0

## STATEMENT OF LOANS UNDER THE AID TO MINING ACT, 1927.

EXPENDITURE.						REPAYMENTS.													
Year.	Federal Funds.			The Mining Trust Fund and Other Funds.			Total.	Year.	Federal Funds.			The Mining Trust Fund and Other Funds.			Total.				
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.				
1935	8,398	11	4	2,298	14	8	10,697	6	0	1935	300	4	9	87	10	0	387	14	9
1936	10,462	3	7	2,807	12	10	13,269	16	5	1936	1,286	12	5	1,078	5	11	2,364	18	4
1937	3,902	17	7	1,983	9	6	5,886	7	1	1937	1,244	15	5	2,246	13	9	3,491	9	2
1938	3,337	2	7	1,937	1	0	5,274	3	7	1938	3,796	4	7	422	15	3	4,218	19	10
1939	658	13	10	2,721	11	1	3,380	4	11	1939	716	19	2	390	4	0	1,107	3	2
1940	866	3	5	4,188	5	4	4,984	8	9	1940	599	6	2	944	3	9	1,543	9	11
1941	2	17	3	1,019	15	3	1,022	12	6	1941	240	7	11	684	3	8	924	11	7
1942				1,433	3	3	1,433	3	3	1942	357	7	10	262	11	4	619	19	2
1943				634	12	6	634	12	6	1943	1,091	5	8	1,486	1	0	2,577	6	8
1944				813	9	7	813	9	7	1944	233	3	2	653	16	0	886	19	2
1945	14	7	1	2,687	9	8	2,701	16	9	1945	1,368	10	5	3,176	11	2	4,545	1	7
1946				408	9	4	408	9	4	1946	201	17	0	1,810	0	9	2,011	17	9
1947				478	15	4	478	15	4	1947	137	2	5	520	14	4	657	16	9
1948				76	12	2	76	12	2	1948	148	0	2	493	4	10	641	5	0
Totals	£27,642	16	8	£23,419	1	6	£51,061	18	2	Totals	£11,721	17	1	£14,256	15	9	£25,978	12	10

## DRILLING.

Departmental drilling plants were in constant operation on hire to the holders of mining tenements, in drilling areas reserved against occupation under the provisions of the Mining Act and in boring for underground water on pastoral lands. Expenditure on all fields was £2612 6s. 9d. and £1832 18s. 5d. was repaid under drilling agreements.

A diamond-drilling unit was employed in testing the lateral persistence of a silver-lead series

at Tullah and in exploring the depth persistence and nature of an antimonial-lead lode system at Waratah.

Diamond-drilling was carried out for the Hydro-Electric Commission in determining rock structures for the siting of a dam at Bronte.

The new percussion boring plant was usefully employed in boring for supplies of underground water for pastoral and domestic purposes in the Oatlands district and at Old Beach.

## DETAILS OF EXPENDITURE ON DRILLING DURING THE YEAR ENDED 31ST DECEMBER, 1948.

Plant.	Location.	Amount. Expended.
		£ s. d.
Junior Straightline Diamond Drill	Tullah	304 15 2
Junior Straightline Diamond Drill	Waratah	624 2 10
G33 Percussion Drill	Oatlands	932 3 6
G33 Percussion Drill	Old Beach	308 16 2
Goldfields No. 10 Diamond Drill	Bronte	442 9 1
		£2,612 16 9

## DEPARTMENTAL ACTIVITIES.

Technical services continued to be usefully directed to the economics and geology of mineral deposits, research in ore-dressing, assaying and general analytical work, boring of mineral deposits, location of sources of underground water, and to the general development of mining.

Delays were again experienced in the delivery of laboratory units and continued to be a retarding factor in providing the planned assemblage of equipment for metallurgical research but installed units were usefully employed in resolving problems of mineral separation and ore-dressing and in the beneficiation of coals. General appreciation was expressed of research services afforded by the laboratory.

## STAFF.

Miss J. Thornbury, Typist, resigned as from the 2nd March, 1948.

Miss B. A. Muir, Clerk-Typist, resigned as from the 1st April, 1948.

Miss J. M. Firth was promoted to Clerk-Typist as from the 6th May, 1948.

Miss M. F. Ryan was appointed as Typist-Stenographer as from the 17th May, 1948.

Mr. D. R. Dickinson, B.Sc., resigned as Technical and Administrative Assistant as from the 16th July, 1948.

Mr. B. L. Taylor, B.Sc., was appointed as Geologist as from the 6th August, 1948.

Mr. St. C. Courtney was appointed as Registrar of Mines at Zeehan as from the 15th October, 1948.

Mr. W. H. J. Cropp was appointed as Metallurgist as from the 18th November, 1948.

Mr. C. B. Askey was promoted to the position of Registrar of Mines at Hobart as from the 18th November, 1948.

Mr. R. G. T. I. Clark was appointed as caretaker Magazines and Inspector of Explosives as from the 2nd December, 1948.

Mr. W. A. Smith retired as Registrar of Mines at Hobart after having completed more than 52 years' service on the clerical staff of the Department.

Mr. E. W. J. Dean, Caretaker Magazines and Inspector of Explosives, collapsed and died while on duty on the 23rd June, 1948.

**MINES DRAFTING BRANCH.**

The number of working plans in use and which are kept up-to-date is	225
Instructions issued to surveyors	101
Diagrams received from surveyors	97
Diagrams drawn on leases	106
Consolidated and other diagrams drawn	16
Lithographs entered to date	119
Various tracings prepared	30
Tracings and photostats for Launceston office	113
Manuscripts entered to date	12
Launceston working plans examined and brought up to date	Nil
Underground surveys examined	4

**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.
- Chief Inspector of Mines.
- 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,  
Hobart.

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## APPENDIX I.

## REPORT OF THE CHIEF GEOLOGIST.

The Chief Geologist (Mr. H. G. W. Keid, M.Sc.) reports:—

*Staff.*

The staff of the Geological Survey was increased by the appointment of Geologist B. L. Taylor, B.Sc. The field staff then comprised the Chief Geologist, H. G. W. Keid, M.Sc., and Geologists T. D. Hughes, B.Sc., and B. L. Taylor, B.Sc.

*Field Work.*

The greater portion of the year was occupied by Mr. Hughes in the investigation of the Round Hill Silver Lead deposits and the testing of the Sand Dumps at Mathinna.

Mr. Taylor was occupied in an investigation of the Asbestos deposits in the Beaconsfield district.

Reports on their activities have been submitted separately.

Chief Geologist (H. G. W. Keid, M.Sc.).

Early in January the Department inaugurated a boring campaign in the Oatlands district, designed to assist the landholders in securing water supplies. To advise landholders frequent visits to Oatlands were made and advice was tendered relative to bore sites and the possibility of a successful result from boring. At the end of the year, nineteen bores had been completed, of which sixteen had proved adequate supplies of water.

In February an examination was made of an occurrence of Jamiesonite in the Waratah district. Later in the year, the proprietors decided to test the occurrence by Diamond Drilling and Bore sites were selected. Boring has now been completed to show that there is no extensive deposit of Antimonial ore.

In March, an examination was made of the Dalmaine coal mine and a report was submitted on its future possibilities.

During the month of April an examination was made of the Mt. Nasseau Limestone Quarry. The then working faces were sampled and a report was submitted.

The month of May was occupied in preliminary boring of the Sand Dumps of the Golden Gate mine at Mathinna. This work was later completed by Geologist Hughes who submitted the final report.

The Gladstone Tin field was visited in June and a report was submitted on the Tin potential of the area situated to the north of Mt. Cameron.

From the end of August the time was occupied in testing the Native Point and Bell Bay areas for foundations in connection with the establishment of the Aluminium industry.

Geologist T. D. Hughes, B.Sc., reports:—

The following field work was performed during the year:—

1. Examination of Round Hill Silver Lead Deposits.
2. Examination of Alleged Oil Occurrence at Redpa.
3. Boring of Golden Gate Dumps, Mathinna.
4. Sampling of Coal at Jubilee Mine.
5. Contour Survey of various sites on East Tamar for Aluminium Commission (Three visits).
6. Examination of Clay Deposits at Surges Bay.
7. Examination of various Underground Water possibilities.
8. Observation of Geo-chemical Methods at Zeehan and Queenstown.
9. Examination of Underground Water possibilities on Closer Settlement Areas at King Island.

Reports and memoranda have been prepared as follows:—

1. Low Volatile Coal in Sandfly District (Field Work done in 1947) (4.2.48).
2. Alleged Oil Occurrence at Redpa (12.5.48).
3. Boring at Golden Gate Dump, Mathinna (26.8.48).
4. Coal Samples from Jubilee Mine (10.9.48).
5. Underground Water on property of D. W. Flack, Glenorchy (24.9.48).
6. Underground Water on property of W. Howard, Lindisfarne (12.10.48).
7. Contour Survey at Native Point (13.10.48).

8. Clay deposits at Surges Bay (15.10.48).
9. Silver Lead Deposits at Round Hill (9.11.48).
10. Notes on Geo-chemical Prospecting (with Chief Geologist) (20.12.48).
11. Underground Water for Closer Settlement Farms, King Island (23.12.48).

In connection with the above reports, 15 plans were prepared.

The most important field work performed during the year, was the Round Hill investigation and the results of this may be summarised as follows:—The area is dominated by the great Claude Creek Overthrust Fault, which has resulted in the throwing of the hard competent beds of the West Coast Range Conglomerates above those of the normally overlying Tubicular Series. After this faulting, the intrusion of the Devonian granite magma in the South West forced the relatively incompetent Tubicular beds against the solid wedge of the conglomerates and deformed the Tubicular quartzites, slates, &c., into a close series of anticlines and synclines.

Accompanying this folding, a certain amount of fracturing of the beds occurred, particularly along the axes of the anticlines. Into these fractures certain mineralising solutions emanating from the cooling magma found their way and crystallised in recognisable zonal distribution. The Claude Creek Fault marks the limit of the lateral extent of these solutions, for not only was the fault pug but also the wall of the conglomerate itself an impounding structure. By the time the solutions had reached this fault in the vicinity of the present surface, they had arrived at the lead deposition stage and the impounding structure not only dammed the solutions but also concentrated them.

Thus it is along the boundary of the fault that new deposits of silver lead ore should be sought and a boring campaign has been planned with this in view. In conclusion it should be stated that the structure of the country rocks together with the source reservoir of mineral solutions make the Round Hill Area a very promising location for future operations.

Geologist B. L. Taylor, B.Sc., reports:—

*Appointment.*

I commenced duty on the 6th August, 1948.

*Field Work.*

My first charge was to carry out a detailed survey of the asbestos deposits of the State. The investigation of two deposits those at Beaconsfield and Ulverstone, was completed.

*The Beaconsfield Asbestos Deposits.*

The Beaconsfield Serpentine belt lies some two miles due west of the township and covers an area of 4.5 square miles. The average width of the belt is one mile, the length being 4.5 miles. It is bisected meridionally by Anderson's Creek. The area is lightly clad with bush, mostly gum, and Tasmanian oak. An extension of existing roads, to open up the deposits, would present no difficult problems.

Chrysotile asbestos was won by open-cut methods in the northern portion of the field by Australasian Asbestos Company Ltd., in 1899-1901 and again by Wunderlich Ltd., in 1917-1919. Both of these Companies ceased work when the ventures were found unprofitable. A little amphibole asbestos was mined in the extreme north-west corner of the field, but these workings were abandoned owing to an influx of water.

The present survey has embraced the whole of the serpentine belt, and the following conclusions have been reached:—

- (a) Chrysotile asbestos, in the cross-fibre form, is the most important type available. It occurs in vein systems up to 2 feet wide, the systems coursing approximately north and south, separated by a variable width of barren rock.
- (b) The available fibre is of first class quality as regards tensile strength, and grades suitable for the manufacture of asbestos cement products could be produced.

- (c) The old quarry areas are almost worked out and do not offer encouragement for further work.
- (d) The most promising areas occur on both sides of Settlers' Range, at the southern end thereof.
- (e) A small quantity of slip-fibre chrysotile is available but is rather sparsely distributed.
- (f) Amphibole asbestos, both in the slip and cross-fibre form, is available in Charriols quarry, but the mining of this material will involve pumping operations. Another small area likely to contain amphibole asbestos has been located several chains north of Charriols quarry.
- (g) A prospecting and sampling programme has been outlined.

I am of the opinion that, while no spectacular developments can be expected at Beaconsfield, there is a reasonable quantity of good grade fibre available which may serve as a foundation for a profitable small industry, capable of supplying part of the asbestos requirements of Tasmania. Success will depend upon thorough preliminary prospecting and sampling of the deposits and efficient mining and milling methods. The establishment of an asbestos extraction plant at Anderson's Creek would be of great benefit to the township of Beaconsfield.

#### The Ulverstone Asbestos Deposits.

Serpentine appears in the valley of the Clayton Rivulet, some three miles east of Ulverstone, beneath micaceous and graphitic schists and quartzites of Pre-Cambrian age. Five small patches occur along the rivulet, over a distance of 1.5 miles. In addition, one very small patch was seen on the roadside, one mile south of Forth township, along the west bank of the Forth River. At the Clayton Rivulet, a little chrysotile asbestos, occurring in the largest patch of serpentine, was prospected several years ago by the Clayton Prospecting Syndicate. In a shaft, sunk to 30 feet, talcose material, in slip-fibre form, was found.

The following conclusions have been reached:—

- (a) While cross-fibre chrysotile is present in the serpentine, it is sparsely distributed and the quantity available is small.
- (b) The tensile strength of the fibre is good, but the average length is short.
- (c) The talcose material is not of economic importance.

There is no possibility of the establishment of an asbestos mill at Ulverstone. The only way in which the deposit could be utilized would be in the supplying of cobbled stone to a mill established elsewhere in the State. This is not, however, considered a likely possibility.

## APPENDIX II.

### REPORT OF THE CHIEF CHEMIST AND METALLURGIST.

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

#### DETERMINATIONS AND ANALYSIS.

Determinations were made of gold, silver, tin, lead, aluminium, arsenic, antimony, barium, bismuth, calcium, cadmium, chlorine, chromium, copper, iron, magnesium, manganese, molybdenum, nickel, potassium, phosphorus, silicon, sulphur, titanium, thorium, tungsten, zinc, zirconium, calorific and pH values.

Analyses were made of ores, minerals, plant and research products, bauxite, clays, coals, fireworks, water, &c. The number of determinations approximated 5000.

#### ORE DRESSING INVESTIGATIONS.

##### Dorset Dredge, Herrick (No. 1/1948).

A sample of dressing shed tailings was submitted for separation of Monazite and examination of contained minerals. Electro-Magnetic separation resulted in a monazite product amounting to 7.2 per cent by weight with a recovery of 92.5 per cent of the rare earth oxides. The monazite concentrate contained 62 per cent of rare earth oxides (including 6 per cent of Thorium Oxide) and 3.1 per cent of tin. The non-magnetic product 27.1 per cent by weight, contained 12.6 per cent of tin, concentration of which would be difficult owing to the high proportion of associated heavy minerals. The Ilmenite concentrate amounted to 65 per cent and contained 40 per cent of titanium oxide and some chromium.

##### Langloh Coal (No. 54/1948).

*Sample.*—One small bag of coal stated to be from the Langloh mine was received from the Director of Mines on the 4th February, 1948.

*Investigation.*—Langloh coal contains an unusual range of calcium carbonate, as facings, veinlets, &c., which lowers the normal fusion point of the ash.

Previous investigations (Coal—Beneficiation Tests, Registered No's. 313, 314, 315, 316, 28th November 1947) showed that at run of mine sizings no material rejection of calcium carbonate could be made by heavy media separation.

This investigation is therefore concerned with exploring the rejection of calcium carbonate after crushing the coal to minus  $\frac{1}{8}$ " and making sink-float tests in liquid media of varying specific gravity.

*Expression of Results.*—The results of ash and calcium carbonate determinations are expressed on a moisture-free basis.

#### Summary—

1. The sample contained 16.0 per cent ash and 4.9 per cent calcium carbonate. (Note: previous

samples referred to above contained from 17.2 to 23.7 per cent of ash and from 5.5 to 7.5 per cent of calcium carbonate).

2. To obtain maximum liberation of calcium carbonate the sample was jaw and roll crushed through a 6-mesh screen to give a minus  $\frac{1}{8}$ " product.
3. A portion of this sample was screen sized, as shown in Test 1, and each size was then treated in a liquid medium of specific gravity 1.4, and each float product examined for ash and calcium carbonate. The results shown in Test 1A indicate that the minimum calcium carbonate content that can be obtained is 0.65 per cent, and that to obtain this figure the coal must be ground to 60-mesh. Further, about 50 per cent of the original coal must be rejected in the sink to attain this minimum.
4. Another sample of the minus  $\frac{1}{8}$ " crushed coal was sized to a minus  $\frac{1}{8}$ " plus 60-mesh product which was then examined by floating in liquid media of specific gravities varying from 1.4 to 1.8. The minus 60-mesh portion was froth floated. The tables in Test 2 show that the combined beneficiated product resulting from a heavy liquid float at specific gravity 1.8 plus the froth float gives a product 92.3 per cent by weight of the original coal, and containing 11.8 per cent ash and 2.1 per cent calcium carbonate. Thus there has been a rejection of 32.1 per cent of the original ash and 60.4 per cent of the original calcium carbonate.
5. The results of floats in liquid media of specific gravity 1.4 to 1.7 are also tabled, and show that further rejection of calcium carbonate can be made only by rejecting further amounts of coal to sink. Thus a float at specific gravity 1.4 leads to a loss of 53.2 per cent of coal in the sink.

#### TEST 1.

##### Sizing After Crushing to Minus 6-Mesh.

Screen Aperture	Weight Per Cent	Cumulative
—6 + 22 mesh	53.6	53.6
+ 44 mesh	15.9	69.5
+ 60 mesh	5.9	75.4
+ 85 mesh	3.6	79.0
+ 100 mesh	3.0	82.0
+ 150 mesh	3.0	85.0
+ 200 mesh	2.3	87.3
—200 mesh	12.7	100.0
	100.0	

## TEST 1A.

*Products Floating in a Liquid Medium of Sp. G. 1.4*

Float Products	Per Cent	
	Ash	CaCO <sub>3</sub>
-6 + 22 mesh	6.46	1.22
+ 44 mesh	5.50	0.86
+ 60 mesh	5.30	0.74
+ 85 mesh	5.32	0.65
+100 mesh	6.60	0.60
+150 mesh	5.83	0.65
+200 mesh	6.92	0.60

This table clearly shows that 0.65 per cent CaCO<sub>3</sub> is the minimum obtainable and to obtain this the coal must be reduced to minus 60-mesh and the fraction not floating in Sp. G. 1.4 rejected as waste. This reject amounts to more than half the original coal. The 1.22 per cent CaCO<sub>3</sub> in the -6 + 22 mesh float product compares with the 1.5 per cent CaCO<sub>3</sub> in the Sp. G. 1.34 float product at - $\frac{3}{8}$ " + 10 mesh made from sample No. 313/1946.

## TEST 2.

*Beneficiation at Minus  $\frac{3}{8}$ " by Liquid Media at Various Densities and Froth Flotation.*

	Wgt.	Per Cent Ash	CaCO <sub>3</sub>	Wgt.	Per Cent Distribution Ash	CaCO <sub>3</sub>
Original Coal	100.0	16.0	4.9	100.0	100.0	100.0
<hr/>						
- $\frac{3}{8}$ " + 60 mesh, no beneficiation	74.3	15.6	5.0	74.3	72.4	74.9
- $\frac{3}{8}$ " + 60 mesh, separation at Sp. G. 1.8	68.7	11.7	1.9	68.7	50.3	25.7
- $\frac{3}{8}$ " + 60 mesh, separation at Sp. G. 1.7	67.7	11.2	1.7	67.7	47.5	23.0
- $\frac{3}{8}$ " + 60 mesh, separation at Sp. G. 1.6	64.3	9.9	1.5	64.3	39.8	19.0
- $\frac{3}{8}$ " + 60 mesh, separation at Sp. G. 1.5	59.2	8.5	1.3	59.2	31.4	15.8
- $\frac{3}{8}$ " + 60 mesh, separation at Sp. G. 1.4	46.8	6.3	1.1	46.8	18.3	10.1
<hr/>						
-60 mesh, no beneficiation	25.7	17.2	4.8	25.7	27.6	25.1
-60 mesh, flotation froth	23.6	12.0	2.9	23.6	17.6	13.9
<hr/>						
Reject Waste	Wgt.	Per Cent Ash	CaCO <sub>3</sub>	Wgt.	Per Cent Distribution Ash	CaCO <sub>3</sub>
- $\frac{3}{8}$ " + 60 mesh, reject at Sp. G. 1.8	5.6	63.0	43.4	5.6	22.1	49.2
-60 mesh, flotation tailing	2.1	75.9	26.4	2.1	10.0	11.2
<hr/>						
Total reject waste	7.7	66.5	38.7	7.7	32.1	60.4
<hr/>						
Total Beneficiated Product						
Float at Sp. G. 1.8 plus flotation froth	92.3	11.8	2.1	92.3	67.9	39.6

Flotation of the minus 60-mesh fraction was rapid and vigorous using only 0.4 lb. cresylic acid per ton. A small amount of Aerosol OT (0.1 lb./ton) was used to facilitate wetting of the fine coal and to ensure thorough wetting of the CaCO<sub>3</sub> and gangue and reduce mechanical entrainment in the froth. It is to be noted that froth flotation at -60-mesh does not achieve a product as low in ash and calcium carbonate as does separation in a medium of specific gravity 1.4.

*Siamese Tin (No. 191/48).*

A sample of heavy-mineral discards from alluvial operations containing ilmenite, chromite, monazite, zircon and cassiterite was treated by electro-magnetic separation. The sample contained 22.2 per cent of titanium oxide and 2.14 per cent of tin. An ilmenite product (1st and 2nd magnet) amounted to 39.9 per cent by weight and contained 50.5 per cent of titanium oxide and 0.28 per cent of chromium oxide. A second magnetic product contained ilmenite, chromite, monazite, &c., and amounted to 19.6 per cent. This product contained 9 per cent of titanium oxide, 12.5 per cent of chromium oxide, 3.3 per cent of tin and 16 per cent of monazite of low thorium content. The non-magnetic product amounted to 40.5 per cent and contained zircon, quartz and cassiterite. Assay values of the non-magnetic product were tin 3.7 per cent, zirconium oxide 51 per cent. Seventy per cent of the tin reported in the non-magnetic product.

*Cape Barren Island (No. 290/1948).*

A sample of beach sands, containing ilmenite and quartz with minor quantities of monazite, rutile and cassiterite, was concentrated by tabling and electro-magnetic separation to produce an ilmenite concentrate. The ilmenite concentrate amounted to 57.4 per cent by weight and contained 49 per cent of titanium oxide with a trace of chromium oxide. The monazite product

amounted to 1.1 per cent and contained 42.8 per cent of monazite and 2.6 per cent of thorium oxide. The sample also contained 0.17 per cent of tin.

*Aberfoyle Tin N. L. (No. 356/1948).*

A sample of mill sulphide tailing was submitted for concentration of copper content amounting to 10 per cent. Selective flotation tests resulted in the production of a concentrate containing 17.8 per cent of copper with a recovery of 50 per cent. After ball mill grinding to minus 100-mesh, with excess lime and one pound of cyanide, and flotation, the concentrate assayed 21.4 per cent of copper with a recovery of 81.3 per cent. Previous investigations have shown composite grains of chalcopyrite and other sulphides which limit the selective flotation of the contained chalcopyrite.

*Golden Gate Dump, Mathinna (No. 694/48).*

A comprehensive sampling of the dump was conducted by the Department of Mines and a composite sample from 36 bores was submitted to examination for cyanidation extraction of the gold by agitation tests. The composite sample was made up on a weight-footage basis from the following bore samples:—M13 to 16, N12 to 19, O13 to 17, P13 to 15, Q14 to 15, and R14. These bores were stated to represent a section of the dump amounting to approximately 71,000 tons.

*Sample.*—The sample assayed 1.55 dwts. of gold per long ton and contained some coarse gold in sizes from 40 to 260 microns. The coarse gold was separated from the sample by heavy liquid and amounted to 0.12 dwts. per ton.

*Sizing Analysis.*

Mesh B. S. Screen	Weight Per Cent
+ 22	1.3
+ 30	5.0
+ 44	8.2
+ 60	10.3
+ 85	10.8
+100	3.0
+150	6.7
+200	9.5
-200	44.8
H. M. Sink	0.4
	<hr/> 100.0 <hr/>

*Cyanidation Tests.*

Constant conditions—

Solid solution ratio — 1 : 2.  
 Barren solution : 0.098 per cent KCN.  
 Lime added : 7.5 lbs. per long ton.  
 Agitation time. Tests 1, 2 and 3 : 20 hours.  
 Test 8 : 6 hours.

Test	Pregnant Solution		Consumption		Indicated Extraction	
	Per Cent KCN	CaO	lb. per ton KCN	CaO	Gold dwt./ton	Per Cent
1	0.087	0.014	0.49	6.9	1.06	....
2	0.087	0.014	0.49	6.9	1.04	....
3	0.086	0.012	0.54	7.0	1.05	67.7
8	0.089	0.029	0.40	6.2	0.92	59.4

The extraction for 20 hours agitation is 1.05 dwts. of gold per ton and agitation for 6 hours shows an extraction of 0.92 dwts. or only 0.13 dwts. less than the 20 hour period.

*Cyanidation after ball mill grinding.*—A sample was ball mill ground to 84 per cent minus 200-mesh and a cyanidation test, in triplicate, was conducted as follows:—

Lime was added to all pulps at the rate of 7.5 lb. per ton and pre-aerated for 5 hours prior to cyanidation.

Constant treatment conditions—

Solid solution ratio 1 : 2.  
 Barren solution 0.098 per cent KCN.  
 Lime added 11.3 lb. per ton.  
 Agitation time : 20 hours.

(Total lime added 11.3 + 7.5 = 18.8 lb. per ton).

Test	Pregnant Solution		Consumption		Indicated Extraction	
	Per Cent KCN	CaO	lb. per ton KCN	CaO	Gold dwt./ton	Per Cent
9	0.0915	0.08	0.31	15.1	1.17	....
10	0.09	0.08	0.39	15.1	1.22	....
11	0.09	0.08	0.39	15.1	1.20	77.4

Strake concentration of the residues from the tests resulted in a recovery of 0.05 dwts. gold per ton in a very low grade concentrate.

Cyanidation after grinding to 84 per cent minus 200-mesh resulted in an extraction of 1.2 dwts. of gold per long ton (77.4 per cent) or only 0.15 dwts. more than without grinding.

*Aberfoyle Tin N.L. (No. 748/1948).*

Mill sulphide tailing. A check test on the procedure by which best results were obtained in investigation No. 356/1948 for selective flotation of the chalcopyrite. The sample contained 12 per cent of copper and 90 per cent of the copper was recovered in a concentrate containing 20 per cent of copper.

*Jubilee Coal (Nos. 884 and 879/48).*

Samples of seam and slack coal were submitted for heavy media beneficiation tests at a high density to reject band material only. Separations were made at Sp. G. 1.8.

*Seam Sample.*—A composite of 3' 6" of top seam and 3' 3" of bottom seam was screened and crushed through a one inch screen and separated with the following results:—

Product	Per Cent		Distribution Per Cent Ash
	Weight	Ash	
Float at Sp. G. 1.8	98.4	20.9	94.9
Sink at Sp. G. 1.8 ..	1.6	69.3	5.1
Composite .....	100.0	21.7	100.0

The degree of beneficiation was negligible.

*Slack from Bins.*—The sample was submitted to heavy media separation at a Sp. G. of 1.8 with the following results:—

Product	Per Cent		Distribution Per Cent Ash
	Weight	Ash	
Float at Sp. G. 1.8	79.2	21.8	56.1
Sink at Sp. G. 1.8 ..	20.8	64.9	43.9
Composite .....	100.0	30.8	100.0

The degree of beneficiation was considerable. The float product amounting to 79.2 per cent with an ash content of 21.8 and the sink product contained 64.9 per cent of ash.

*Analysis of the Two Samples as Received.*

Sample	Moist	V.C.M.	Per Cent			B.Th.U's
			F.C.	Ash	S.	
Composite seam sample .....	5.0	28.3	45.9	20.8	0.36	10,310
Slack from bins ..	4.0	24.6	40.5	30.9	0.37	8,640

During the year visits were made to the major ore dressing research laboratories in Great Britain and the data so obtained will be useful in the future development of the Departments research activities. Commercial plants concentrating tin ores and coal washing plants were also investigated.

**APPENDIX III.**

**REPORT OF THE CHIEF INSPECTOR OF MINES.**

The Chief Inspector of Mines (Mr. W. H. Williams) reports:—

**MINES AND WORKS REGULATION ACT.**

*Employment.*

The average number of persons employed in mining, quarrying, and metallurgical operations was 5399, as compared with 5316 for the previous year.

Programmes of development and production, at the principal mines and works, continued to be hampered by a shortage of suitable labour.

*Accidents.*

The total number of accidents, registered under the provisions of Section 23 of the Act, was 67, as compared with 74 for the previous year.

The appended tables relate to—

- (1) Fatalities and non-fatal casualties at mines, quarries, and works, which latter involved absence from work for not less than 14 ordinary days; and
- (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.

With the exception of the Western Division, where the accident incidence was substantially less, there was an increase in the number of accidents in each mineral division, but the overall number was less.

There were three fatalities and 64 accidents, involving non-fatal injuries to a like number of persons.

The three fatalities were primarily due to falls of ground, two occurring in underground workings and one being associated with the working of an open face of tin-bearing alluvials.

In one case, ore fell from the roof of a stope, previously examined and considered to be safe, struck the floor of the stope, rebounded, struck a miner and caused him to fall down an ore-pass. He sustained injuries to which he succumbed within one hour.

In the second case, miners were preparing to renew a set of timber in the main heading of a colliery when there was a fall of roof which struck one of them and inflicted fatal injuries. The place had been deemed safe for the work programmed.

The third fatality was due to a slip of ground from the open face of an alluvial mine, the dislodged ground striking and killing a miner who was working within the influence of the fall. Those concerned submitted that there had been no departure from normal sluicing practices and that death resulted from accidental causes.

Of the 64 accidents, resulting in non-fatal injuries to a like number of persons, 46 were allied with surface operations and 18 occurred in underground workings. Fourteen of the underground accidents were of a mis-

cellaneous nature, one was due to a fall of coal, one resulted from a fall of stone, and two were associated with trucking operations. Thirty-seven of the surface accidents were of a miscellaneous nature, three were allied with trucking operations, two were associated with mechanical movements, one resulted from an explosion of acetylene gas, one was due to electrical contact, and, in the last case, blasting operations cast a stone some 600 feet where it penetrated a building and caused timber fragments to strike and injure a person.

#### Health and Sanitation.

Constant regard was given to matters pertaining to health and sanitation, close surveillance being directed to the suppression of atmospheric dust.

#### Prosecutions.

Legal proceedings were instituted where offences were too serious to be satisfied with cautionary measures.

#### Inspectorial.

The inspectorial staff was maintained at normal level and officers diligently functioned in matters governing the health and safety of those employed in the industry. The appended reports cover the activities of all inspectors.

TABLE showing Rate per Thousand Killed and Injured in different Divisions for the Year 1948.

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 .....	2163	17	1	16	17	7.859	.462	7.397
North-Eastern .....	241	7	1	6	7	29.045	4.149	24.896
Eastern .....	533	12	...	12	12	22.514	...	22.514
North-Western .....	372	6	...	6	6	16.129	...	16.129
Western .....	2090	25	1	24	25	11.961	.478	11.483
Total .....	5399	67	3	64	67	12.409	.555	11.854

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 .....	1473	16	1	15	16	10.862	.678	10.184
Zeehan, &c. ....	617	9	...	9	9	14.586	...	14.586
Total .....	2090	25	1	24	25	11.961	.478	11.483

COMPARATIVE Table of Statistics of Accidents in and about the Mines of Tasmania from 1st July, 1892, to 31st December, 1948.

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	8.800	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
" 1941 " 1941	5856	85	5	85	90	15.368	0.853	14.515
" 1942 " 1942	5572	89	4	86	90	16.152	0.718	15.434
" 1943 " 1943	5535	73	6	67	73	13.188	1.084	12.104
" 1944 " 1944	5439	73	4	71	75	13.789	0.735	13.054
" 1945 " 1945	5178	46	2	44	46	8.883	0.386	8.497
" 1946 " 1946	5255	63	1	62	63	11.989	0.19	11.798
" 1947 " 1947	5316	74	...	74	74	13.920	...	13.920
" 1948 " 1948	5399	67	3	64	67	12.409	0.555	11.854

\* Mount Lyell disaster.

## APPENDIX IV.

## REPORT OF THE CHIEF INSPECTOR OF EXPLOSIVES.

The Chief Inspector of Explosives (Mr. W. H. Williams) reports:—

*Explosives Act, 1916.*

Importations of explosives were—	lb.
Monobel .....	91,750
Gelignite .....	1,121,700
Gelatine Dynamite .....	137,250
Blasting Powder .....	10,900
Sporting Powder .....	2,325
Ligdyn .....	14,200
Ajax .....	54,500
<b>Detonators:</b>	<b>Number.</b>
Ordinary .....	990,000
Electric .....	84,550
<b>Detonating Fuse:</b>	<b>Feet.</b>
Cordtex .....	192,000
	<b>Number.</b>
Fuse Igniters .....	12,000

Customary attention was directed to ensuring that all compounds were in good condition at the date of importa-

tion, and that there was no deterioration to render the explosives inert at the time of use.

The cycle of importation, storage, and consumption continued to provide a rotational balance which avoided long periods of storage and contributed to the observed absence of faulty compounds and detonators.

Regular supervision was maintained of shipments of explosives and effective measures were initiated in overcoming weaknesses in the structure of cases.

*Inflammable Liquids Act, 1929.*

There was increased activity in the commissioning of petrol pumps, installation of new outfits, building of compounds for storage in 44-gallon drums, alterations to bulk-storage depots, and in the provision of new terminals for the future storage of petrols and kerosenes.

Lack of recognition of the fire and explosion hazards caused indiscretions in the keeping of full and empty 44-gallon drums. Difficulties in policing the keeping of drums lessened the effective application of regularising methods of storage but it is programmed to extend surveillance services in the interests of public safety.

## APPENDIX V.

## REPORTS OF INSPECTORS OF MINES AND EXPLOSIVES.

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

*Employment.*—A re-arrangement of divisions brought the Zeehan-Heemskirk-Dundas areas within the Queenstown inspectorate, and the duties of this office were extended to the new areas as from the end of the first quarter of the year.

The Mount Lyell Mining and Railway Company Limited, Queenstown, employed an average of 1473 persons, representing an increase of 13 persons, as compared with the average number employed during the previous year. Eighty-four men were employed in the Zeehan and neighbouring districts, making a total number of 1557 persons employed in mining, quarrying, and metallurgical operations in the division.

*Accidents.*—Sixteen accidents, causing fatal injuries to one and non-fatal injuries to 15 persons, were registered under the provisions of the Mines and Works Regulation Act, 1915, as compared with 16 accidents, causing non-fatal injuries to a like number of persons, recorded for the previous year. All injured persons were employees of the Mount Lyell Mining and Railway Company Limited.

The fatal accident occurred in a stoping section of underground workings, and was primarily due to a fall of ground. The stope was being worked on the flat back, cut and fill, system and the new section was in process of being opened out. Three "firings" had been made, the last of which was on a Friday afternoon, after which the stope remained idle until the following Monday morning. On resuming work, two miners spent the first two hours in barring down. The stope was then considered, by them, to be safe. One miner then prepared to rig a machine bar while his mate commenced to shovel ore in order to clear a space around a pass-opening so that a safety cover could be put in place. Whilst doing this a large "stone" fell from the roof of the stope, rebounded, struck the miner, and caused him to fall some 35 feet down the pass. He sustained injuries which caused death within an hour.

The only other accident recorded in connection with underground mining was due to a "stone" rolling from a small heap, three or four feet in height, and striking a shoveller on the left foot. He sustained injuries to the great toe and was incapacitated for 22 working days.

All other accidents were associated with surface operations. One serious mishap occurred during blasting operations at an open-cut working. In this case a series of "toe" holes was fired in a bench some 600 feet from where the person was injured. The blasting dislodged a stone and caused it to fly at a flat trajectory and with such velocity that it penetrated the roof and passed out through the wall of an annexe of main repair shops. The height of this roof was about 20 feet above the floor level. When penetrating the roof the "stone" shattered two 5-inch by 4-inch rafters and hurled several pieces into the room below. One fragment, weighing several pounds, struck a man and caused severe internal bruising of his stomach and lacerations to his arms. The man had not returned to work at the close of the year, and it is probable that he will be unable to do so for several months.

A ganger was supervising the demolition of a large coke bin, which had been partially destroyed by fire, when he was struck by a "flat-sheet" which was being pulled, by winch power, from a pile of debris. The ganger attempted to release the end of the sheet with a bar when it jerked out and struck his right leg. He sustained bruises which caused incapacitation for 50 working days. While operating a power shovel at an open-cut, a driver was injured through a large "stone" falling off the dipper teeth. The "stone" had been lifted some 12 to 14 feet vertically, and, while the dipper was being swung, the stone slipped, fell, struck the dog-lever clutch underneath the shovel, and caused a hand-control lever in the cabin to snap back. The lever struck the driver's right leg and inflicted a severe laceration. He was incapacitated for 28 working days.

A man employed as a guard on a railway transporting ore from underground to surface bins was helping to unload a truck at the bins. He was standing on a step of the truck and when he stepped down to the floor, a distance of 20 inches, his left foot contacted a small stone and caused him to fall and twist his leg. An examination revealed that the fibula bone had been fractured. He was absent from work for 43 ordinary days.

Whilst removing an electric motor from a grab crane at a smelter, an electrical fitter contacted a live wire. The electric shock caused him to fall a distance of three or four feet on to an iron floor and sustain a concussion which incapacitated him for 30 working days.

An off-sider on a power shovel at an opencut entered the cab of a truck to sit down while he waited for his next job of work. When shutting the cabin door his right thumb was jammed in the door frame. A bruised thumb was sufficient to allow this man to be absent from work for 24 days.

A young man who had just been rated as a fitter attempted to grind a small punch on the side of an emery wheel. The punch slipped between the wheel and guard and caused abrasions to one finger of his right hand. He was incapacitated for 24 working days.

A moulder employed at a foundry was assisting the "tapper" to run molten cast iron from a blast furnace. At the end of the "tap" the moulder plugged the furnace vent with a clay plug in a manner that caused molten metal to scatter and strike him, causing burns to his face, arms, and body. He was absent from work for 23 ordinary days.

A carpenter engaged in replacement work at a refinery was injured when positioning a concrete beam of a vat foundation. While an overhead crane was lowering the beam the carpenter attempted to push one end of it into place with his foot. His foot was jammed and he sustained bruised toes which caused him to lose 21 working days.

A fitter's labourer was lifting a heavy box when he strained the muscles of his back and was incapacitated for 21 ordinary days.

An assistant to a truck driver was helping to unload some 44-gallon drums of oil when one drum rolled and jammed his right hand, causing bruises which resulted in the loss of 19 working days.

During a night when a very strong wind was blowing a mill hand attempted to close an iron door. The wind caused the door to shut rapidly and jam his hand in the frame of the door. His thumb was severely bruised and caused incapacity for 17 working days.

*Safety.*—Inspection work has been regularly directed to the production and maintenance of safe working conditions. When necessary, representations were made to effect safe working conditions. In general, good co-operation has been afforded by those concerned.

In all mining operations, strict attention has been directed to having affected ground made safe before persons are allowed to work within the danger zone. Occasionally it has been necessary to question the judgment of those concerned and to cause persons to make the places safe under my supervision. In wide flat-back stopes, attention has always been given to locating structural weaknesses in lodes and walls. The provision of extra rock pillars in stopes showing weakness has proved satisfactory. Filling and timber supports have been kept well up to the backs of stoping sections.

At a mine commencing development it was found that conditions in the shaft being sunk were unsafe and it was necessary to condemn the work and to require the sinking of a new shaft.

Ladderways, shaft equipment, lighting conditions, ore pass covers, opencut faces and batters, explosives in use, surface and underground transport, and other details of mining practice have regularly been examined. In the metallurgical works and workshops allied with mining operations similar inspection work has been carried out.

*Ventilation.*—The ventilation of underground workings and surface installations received due attention and was generally maintained in a reasonable manner.

In a stope at the end of a long drive the air movement was assisted by mechanical means and appeared to be satisfactory until a komimeter survey revealed the existence of concentrations of very fine dust. This fault was immediately rectified by an alteration of the ventilation system and by increasing the flow of air through the stope.

Excessive temperatures were not encountered in any working place.

*Health and Sanitation.*—Regular supervision was maintained in connection with conditions affecting the health of employees in mines and works. Crib-places, changing and bathing accommodation, and latrines have been kept in reasonably good order. Many atmospheric dust samples have been taken in order to check persons being exposed to industrial hazards.

First-aid equipment has been kept in good order and effective service has been rendered in the treatment of injured persons.

*Explosives.*—As is recorded under the heading "Accidents" in this report, one serious accident occurred during blasting operations. Investigations revealed that nine toe-holes, two lifters, and three stabs were fired by detonating fuse in one group. The toe-holes ranged in depth from 17 to 12 feet and were loaded with 685 lbs. of gelignite. The two centre holes, 14 feet in depth, were each loaded with 150 lbs. of gelignite. The ground was fairly hard and affected by many shear planes and heads. The stone which hit the building travelled in a line nearly parallel with the face and at right angles to the direction of the blast holes. The cause of this unusual throw of "blast-debris" is considered to be due to overloading of the two centre holes.

As a result of this happening, additional precautions have been required in the strengthening of shelters and in placing all persons under substantial cover during blasting operations.

Defective nailing and quality of the timber of the wooden cases used for packing explosives caused some concern and was the subject of a Departmental enquiry. Representations were made to the manufacturers and resulted in an improvement in the making and nailing of cases.

Plastic cordtex detonating fuse has maintained its quality and is used extensively.

Polar ammonium nitrate gelignite, as used during the year, has been satisfactory both in use and under conditions of storage. No complaint has been recorded regarding the quality or behaviour of detonators and safety fuse.

*Machinery.*—Maintenance and protection of machinery and appliances received the attention required by the provisions of the Mines and Works Regulation Act.

An overwind occurred at a service shaft. This mishap was investigated by the Inspector of Machinery and myself and it was found that the driver had made an error of judgment. The safety controls and gear of the hoist and cage were in good order. A minor alteration to the set-up of the switch of the overwind control was approved.

The record books containing the results of various tests and examinations, as made by registered managers, were found to be satisfactory.

*Prosecutions.*—One case was prepared for prosecution against a miner for unseemly behaviour, but, as the miner had been dismissed by the management and had left the State, the summons was not issued.

Proceedings were taken against a surface miner on two charges—firstly, under Section 66 of the Act for being guilty of working in a place that was apparently unsafe; and secondly, under General Rule 13 for having failed to use an appliance for the prevention of dust. He was convicted and fined on these charges.

*Inflammable Liquids Act.*—Inspections were made of premises licensed under the provisions of the Inflammable Liquids Act. Reasonable conditions have been maintained.

*The Workers' (Occupational Diseases) Relief Fund Act.*—Certificates showing that 179 new employees in the Queenstown district and 28 in the Zeehan district were received and registered.

Applications were made by 25 persons to be examined for industrial diseases. Five of this number were found to be affected by silicosis. As shown below, three of these persons had been previously certified as having silicosis.

A comparative analysis of the affected persons is as follows:—

	1947.	1948.
Incapacitated (affected by silicosis 100 per cent) .....	Nil	3
Partial incapacity (over 50 per cent affection) .....	1	1
Partial incapacity (under 50 per cent affection) .....	4	1
Totals .....	5	5

The tabulation below illustrates the age, length of service, and some details of examination of the five persons found to be affected:—

Certified incapacity due to silicosis.	Age of person affected.	Remarks.
Per Cent.	Years.	
100	60	Certified in 1946 as 70 per cent incapacitated. Worked underground as miner 1913 to 1944 (31 years). Then worked underground as a pass runner for two years and on surface for two years.
100	54	Certified in 1944 as 40 per cent incapacity from silicosis. Worked underground as a miner 1915 to 1940 (25 years). Surface mining from 1940 to 1944, and then worked as a blacksmith's helper until this examination.
100 Tuber- culosis	41	Certified in 1947 and 1948 as not incapacitated but appealed to the Medical Referee who found tuberculosis in an early stage and certified this man as 100 per cent incapacity. From 1934 to 1946 worked as underground miner, then on to surface work.
70	65	From 1905 to 1922 underground mining, 1922 to 1928 surface mining work, 1928 to date (20 years) as a labourer in a machine shop. Not previously examined.
20	52	Certified 1943 at 20 per cent incapacity from silicosis. From 1912 to date has worked underground (25 years as a miner and 5 years at mining work).

*Explosives Act.*—Supervision was maintained in respect of the importation, landing, transport, and storage of explosives. Explosives landed at Regatta Point for Queenstown were:—

	lbs.
Polar A.N. Gelignite "50", 1½" x 13" .....	626,600
Polar A.N. Gelignite "60" 1" x 7" .....	462
Total .....	627,062
	Number.
Detonators, No. 6 .....	85,000
Detonators, No. 6 Electric .....	1,550
Fuse Igniters .....	31,140

	Feet.
Plastic Cordtex Detonating Fuse .....	128,500

	Cases.
Blue Sump Safety Fuse .....	175

Because of a revision of the regulations relating to the shipping of explosives from Victoria, it is required that there shall be no more than 2500 No. 6 detonators with other explosives on a ship used for the carriage of explosives to Regatta Point. Under this regulation it is now impossible to maintain the required stock of detonators by shipment through Regatta Point, and this has necessitated importation of detonators through Burnie and rail-age to Queenstown. In the latter half of the year 152,500 No. 6 detonators and 400 electric detonators were conveyed to Queenstown by rail from Burnie.

All safety fuses gave satisfactory tests for burning rate and quality. Magazines licensed for the storage of explosives were maintained in a satisfactory condition.

#### PRODUCTION AND DEVELOPMENT.

##### Copper.

*The Mount Lyell Mining and Railway Company Limited.*—The output from all mines was 1,304,548 tons of ore mined and 127 tons of copper precipitate recovered from mine drainage water, representing a decrease of 129,810 tons of ore and 69 tons of copper precipitate as compared with the previous year.

Surface mining at the West Lyell group of mines produced 1,237,959 tons of ore which is 104,612 tons less than the total ore mined last year. In addition, 22 tons of copper precipitate were recovered from the drainage water. The lower tonnage of ore is explained by the fact that a large amount of overburden had been left during the war years and now has to be removed before the benches can be worked at lower levels. This year 601,641 tons of waste rock was mined and transported to dumps, thus making a total of 1,839,600 tons of material mined at these workings. Underground production revealed a decrease of 25,197 tons of ore mined. This was caused by a serious lack of labour available for underground work. In an attempt to remedy the position the Company has decided to install mechanical loaders in the stopes. One machine was procured during the year and others are on order.

Underground operations were confined mainly to the Royal Tharsis mine where production resulted from stoping. At the North Lyell mine some development work was done to test an upward extension of an ore body on No. 6 level. This work so far has not proved any substantial ore reserve.

The following tabulation represents the disposition of ore and copper precipitate produced:—

	Ore Mined.	Copper Precipitate.
	Tons	Tons.
West Lyell Opencut Mines	1,237,959	22
Royal Tharsis Mine .....	63,983	Nil
North Lyell Mine .....	2,606	89
Lyell Comstock Mine .....	Nil	16
Totals .....	1,304,548	127

At the West Lyell Opencut workings the installation of a large 84-inch by 60-inch jaw crusher and its auxiliary equipment was completed in August, and the unit has been giving satisfactory service. Work is proceeding with the preparation of a new site for the West Lyell workshops. To cope with the growing demand in plant maintenance, it has become necessary to centralise and enlarge the workshops, and it is planned to move the old shops to an enlarged building sited near the main ore transfer pass.

Exploratory diamond drilling, under the direction of Mr. H. C. J. Connolly, has been commenced by the Australian Drillers Pty. Ltd. This work has the objective of testing the structural set-up of the field at depths below the mined areas, and it is hoped that, if such structures are proved to agree with the sectional projections as made from Mr. Connolly's geological survey, some valuable repetition of the known ore deposits may be found. At the Reduction Works the concentration plant operated for 347 days and treated the bulk of the ore mined. From this, 27,075 tons of copper-bearing concentrate was treated at the Smelters. In addition, 54,409 tons of pyritic concentrate was recovered, of which 44,263 tons were shipped from Regatta Point to the Mainland for acid manufacture while the balance was stored in reserve dumps at Queenstown and Regatta Point.

A new 10 x 7 feet ball mill, together with a 21-foot bowl classifier, is being installed to increase the fine grinding capacity and throughput of the mill.

The Smelting Plant, operating for 196.3 days, treated the copper concentrate, together with 2289 tons of ore from the North Lyell mine, and 127 tons of copper precipitate, for a recovery of 6366 tons of blister copper in anode form. The blister copper was treated in the electrolytic refinery section.

The Electrolytic Refinery, under normal running conditions, treated the blister copper and produced 6326 tons of cathode copper and cell residue, which was shipped away for treatment and contained 22,763 oz. of silver and 4052 oz. of gold.

The gross value of the copper, silver, and gold produced was approximately £1,000,157 in Australian currency.

Industrial unrest in Australia has caused a shortage of essential supplies and is resulting in a falling off in the Company's production. This applies particularly to coke, which has caused loss of operational time at the smelters and to a shortage of steel balls, which is retarding the fine grinding process at the mill.

During the night of the 22nd January, 1948, a bush fire endangered the Reduction Works of the Company and threatened the town of Queenstown. Many employees and citizens worked throughout the danger period and by their efforts the fire was kept under control. Some small buildings and the coke storage bins were destroyed. A change of wind accompanied by rain prevented the fire from causing a major disaster.

*Gold and Osmiridium.*—Prospector B. A. Abel obtained 0.598 oz. of concentrate from various creeks on the western side of Macquarie Harbour whilst engaged intermittently over a period of years in prospecting that area. The concentrate contained 0.375 oz. of gold valued at £3.229 and 0.223 oz. of osmiridium valued at £4.46. The gold production added to that of the Mount Lyell Company is therefore 4052.375 oz., valued at £34,900.73, for this district.

*Copper-Nickel.*—The Lead-Nickel Mining Company, a subsidiary of the Gold Boring and Prospecting Company N.L., continued operations during the first four months of the year at the old Copper-Nickel mine, Five-Mile, Zeehan. Some stoping in the upper old levels resulted in the production of a total of 750 tons of ore. No market was obtained for the ore and operations ceased. The Company transferred its employees to the Great South Comet mine, near Dundas, where they have employed an average of 14 men on road and mill construction. Good progress has been made with this work and it is expected to produce lead, silver, and zinc during the next year.

*Silver-Lead-Zinc.*—The enhanced price of metals continued and was responsible for a general revival of mining activities at Zeehan and in the surrounding districts. An average of 84 men has been employed in prospecting, productive, and metallurgical activities.

Production of silver-lead and silver-lead-zinc ores employed an average of 18 men who obtained, for sale, 354,990 tons of ore, containing 15,327.973 oz. of silver, valued at £2844.349 sterling; 121.759 tons of lead, valued at £12,166.442 sterling; and 45.06 tons of zinc, valued at £3310.75 sterling.

*Zeehan Explorations.*—This Company, representing the interests of the North and South Broken Hill Mining Companies, employed an average of 27 men on prospecting and development work. A large area, covering the main

portion of the old Zeehan mining field, was taken up as a consolidated lease and the Company is also interested in extensive prospecting areas north, south, and east of Zeehan. Development work is proceeding at the Oceana mine, where prospecting by diamond drilling disclosed a very promising silver-lead deposit. An attempt was made to sink a vertical timbered shaft in a pug formation, but, at 75 feet in depth, the shaft failed and had to be abandoned. An adjacent site was selected by diamond drilling and it is planned to sink a reinforced concrete circular shaft to a depth of 600 feet. Ore extraction is to commence at the bottom level and proceed upwards.

At the Spray mine preparations are in hand to de-water the old working by pumping from the two old service shafts. These shafts appear to be in fair condition. Power for compressor, pumping, and other units is obtained from semi-portable diesel engines. The main pumping is done by Pomona pumps. Road construction and repairs have been effected during the year.

*The Comstock Mine.*—This mine was again brought into production by Mr. M. C. Howard, who employed four men and equipped a small vertical shaft with a compressor and winding gear. These operations produced 194.54 tons of ore which was sold to the Electrolytic Zinc Company, Rosebery, and contained 1229.80 oz. of silver, 14.97 tons of lead, and 45.06 tons of zinc, valued at £4888.354 sterling. Mr. Howard transferred his interest to the Electrolytic Zinc Company, Rosebery, and the Company is now engaged in testing the formation by diamond drilling, but has discontinued productive operations.

*The Electrolytic Zinc Company of Australasia Ltd.*—This Company employed an average of 23 men in the Roasting Plant at the old Zeehan smelters. Zinc concentrates from the Rosebery and Hercules mines were calcined until July when the Company decided to close the works.

Since then a declining number of men has been employed in cleaning up old dumps of concentrate and in dismantling the plant.

*The Western Montana Silver-Lead Mine.*—This mine was again brought into limited production by three men working under a tribute agreement with the holding Company. The work done consisted of picking up and re-timbering an adit and drives on the west side of the main shaft; repairing a diesel engine; installing a Cornish lift pump and piping; and installing a small compressor. Water in the main shaft was lowered a few feet to allow drainage of the adit workings and all the ore obtained was from overhead stoping in north and south drives. No actual new development was done and the 85.344 tons of ore obtained for sale was derived from a lode channel which had been opened up by the Company before the War. The ore sold contained 8473.575 oz. of silver and 54.855 tons of lead, valued at £7188 sterling.

*The Swansea Silver-Lead Mine.*—This mine, located south-west of Zeehan, has been held by Mr. J. J. Hill for many years. The owner, with the assistance of his two sons, resumed mining operations and produced 34.393 tons of ore containing 2085.17 oz. of silver and 24.121 tons of lead, valued at £2822.301 sterling. The ore was won by shafting, driving, and stoping on a narrow vein of ore.

*Maestries Mill, Dundas.*—Messrs. Hodge, Clarke, and Smith, working for part of the year, recovered 26.503 tons of concentrate, containing 2455.999 oz. of silver and 18.257 tons of lead, valued at £2255.75 sterling, by treating old mill residues.

*F. Bradshaw, East Dundas.*—F. Bradshaw obtained 4.688 tons of concentrate, containing 343.63 oz. of silver and 2.779 tons of lead, valued at £374.347 sterling, from the treatment of old dumps.

*S. A. Clarke.*—From small-scale operations in the West Zeehan area S. A. Clarke obtained 3.47 tons of ore containing 243.247 oz. of silver and 2.273 tons of lead, valued at £299.171 sterling.

*W. C. Clark.*—This person was engaged in small-scale mining at North Zeehan and produced 2.87 tons of ore containing 441.112 oz. of silver and 2.178 tons of lead, valued at £278.758 sterling.

*W. Ledger.*—This miner produced 3·182 tons of ore containing 55·5 oz. of silver and 2·272 tons of lead, valued at £214·858 sterling, from workings west of Zeehan.

*Tin.*—No major activity was allied with the working of the tin-bearing areas. Six men have been intermittently employed in producing 1·089 tons of concentrates containing 0·7133 ton of tin, valued at £396·174 sterling.

*H. G. Watson.*—Two men working alluvial ground at Eureka Creek, North Heemskirk, obtained 0·6465 ton of concentrate containing 0·4452 ton of tin, valued at £249·752 sterling.

*Midson and Dukeson.*—Working a lode formation at South Heemskirk, this party obtained 0·2924 ton of concentrate containing 0·1878 ton of tin, valued at £103·738 sterling.

*E. Coleman.*—This person engaged in mining lode matter on his claim at South Heemskirk and produced 0·0977 ton of concentrate containing 0·0592 ton of tin, valued at £30·695 sterling.

*R. Smith.*—This person recovered 0·052 ton of concentrate containing 0·0211 ton of tin, valued at £11·989 sterling, from the treatment of old tailings at North Heemskirk.

### Inspector L. F. Egan, Upper Burnie, reports:—

*Employment.*—The average number of men employed in mining and metallurgical activities was 715, as compared with the divisional average of 823 for the previous year.

The contracted employment was due to a closing down of the Mount Bischoff Tin Mine and to an excise of the Zeehan district from the inspectorate. A rearrangement of the boundaries of the inspection division was made for the purpose of exercising Departmental control over the discharge of oil tankers at Devonport, under the provisions of the Inflammable Liquids Act.

*Accidents.*—Nine non-fatal accidents, causing injuries to 9 persons and involving absence from work for periods of not less than 14 clear working days, were registered under the provisions of the Mines and Works Regulations Act, 1915. In addition, one machinery accident was referred to the Inspector of Machinery for investigation.

Of the 9 accidents, 7 occurred underground and two happened during surface operations. Of the underground accidents, the most serious was that in which the sufferer, attempting to re-wind the bucket lifting chain on a mechanical loader, inadvertently moved the throttle control, thereby causing his right hand to be dragged in behind the bucket elevator drive shaft. Badly lacerated fingers and crushed right hand resulted.

Two men were hit by falling stones. In one instance a stone fell from a chute lip onto a man's back as he was pushing a truck past the chute. He sustained a broken rib. In the other case a piece of mullock fell, breaking a bone in the right foot of an employee.

While two men were carrying a diamond drill, one of them slipped, thereby throwing the full weight of the drill onto the right forearm of the other person, causing lacerations and fracture.

While attempting to free a steel that had jammed in the hole, a miner miss-hit the steel and struck himself a severe blow with the spanner on the right leg, breaking a bone below the knee.

Another man was injured when, attempting to drive a nail into a piece of springy timber, the nail flew out and struck him in the eye, causing incapacitation for more than 14 working days.

When lifting a heavy piece of timber, an employee slipped and sustained a fracture in the lumbar region, as the result of undue weight of the timber on his body.

Two surface accidents occurred in the bush. In one instance the sufferer, a Baltic Migrant, was struck with a wire winch rope due to a sudden and unexpected switch back of rope. In the other case, the "Jeep" which the sufferer was driving, overturned, breaking two of his ribs.

*Safety and Accident Prevention.*—An examination of the accident rate revealed that 27 accidents occurred in 1947, and represented a rate of 32·5 per 1000 men employed. In an effort to reduce the accident rate, conferences were held and an intensified campaign of accident prevention was initiated. That this scheme has been effective, is evidenced by a greatly reduced accident incidence for 1948, the rate being 12·5 accidents per 1000 men employed.

As in other years, regular and frequent visits of inspection have been made to the mines, and it is pleasing to record that the fullest co-operation has been accorded

me by the various managements in the endeavour to ensure safe working conditions. On all mines, works, quarries, and metallurgical plants, where applicable, a strict but reasonable adherence to the provisions of the Mines and Works Regulation Act 1915 has been required.

*Machinery.*—As required by those sections of the Mines and Works Regulation Act 1915 relating to machinery, inspections have been made of mining and metallurgical plants relevant thereto. At least one machinery accident was examined and referred to the Inspector of Machinery for investigation.

*Health and Sanitation.*—Underground, as well as on the surface, unremitting efforts were directed to the attainment of optimum hygienic and healthful conditions. To this end, strict attention was paid to the drainage of levels, the proper use of receptacles for food scraps, &c., and the maintenance of satisfactory latrine arrangements, particularly underground.

*First Aid.*—The provision of first aid rooms, adequate first aid equipment and certificated first aid attendants on all mines and works, where warranted, has received very special attention and practically right throughout the inspectorate, reasonably satisfactory first aid facilities are available. In one or two instances, some improvement can be looked for and early rectifications can be expected.

*Ventilation.*—Generally speaking, ventilation of underground workings in all mines throughout the inspectorate was satisfactory. The continuance of "all day shift" at all mines, during the year, ensured a sixteen hour interval between firing and cleaning up on the next shift. Firing during the shift, except at the conclusion of same, was avoided as far as possible.

Dust control in ore dressing and metallurgical works showed improvement during the year. In one case, in particular, the introduction of more adequate dust collection appliances and the provision of scrubbers and more effective hooding, &c., combined to make better conditions than had hitherto existed.

*Explosives Act 1916.*—All relevant phases of the Act received attention during the year. Registers were kept outstanding fees collected, where necessary, and strict supervision was exercised over the importation, transport and handling of three shipments of explosives through the Port of Burnie.

Inspections were made of Private Magazines, and in one instance a licensee was required to put down a leaden floor covering in a town magazine where gun-powder and nitro-compounds were being stored. In another instance a sawmilling company was required to correct certain irregularities of storage and to conform with the provisions of the Act.

At King Island, the Marine Board authorities continued to co-operate in exercising control over those sections of the Act relating to the importation and conveyance of explosives. This work was supervised by the Harbour-master. Details of importations are as follows:—

#### King Island (Port of Currie):—

Polar A.N. Gelignite	800 cases i.e., 40,000 lbs.
Polar Gelatine Dynamite	400 cases i.e., 20,000 lbs.

*Tasmania (Port of Burnie) :—*

Polar S.N. Gelignite	690 cases i.e.,	34,500 lbs.
Polar A.N. Gelignite	1,922 cases i.e.,	96,100 lbs.
Polar Quarry Monobel	140 cases i.e.,	7,000 lbs.
Gelatine Dynamite	40 cases i.e.,	2,000 lbs.
Polar A.N. Ligdyn	50 cases i.e.,	2,500 lbs.

## Detonators—

Electric 6X96	5 cases i.e.,	5,000 Deton.
No. 6 (Non-electric)	8 cases i.e.,	75,000 Deton.

*The Inflammable Liquids Act, 1929.*—Increased activity in the new car industry and the consequent increase in overall petrol consumption have added to the work of administering the provisions of the Inflammable Liquids Act, 1929.

Many proposals for the installation of new petrol pumps at premises were submitted by major oil companies and each was examined on its merits. In all cases, approvals were issued although in certain cases some alterations were required in order to conform with the provisions of the Act.

During December, at the direction of the Chief Inspector of Explosives, the responsibility of ensuring that the discharge of oil tankers at Devonport be performed in a safe manner and in conformity with the Inflammable Liquids Act, was undertaken.

Prior to this, control had been exercised by the Devonport Marine Authority, which had assumed full responsibility for the safety of the Port during pumping operations. Details of the December shipment are as follows:—

Name of Ship: M.S. "Arena":

Motor Spirit delivered to bulk storage tanks: 348,882 gallons.

Power Kerosene delivered to bulk storage tanks: 66,745 gallons.

Throughout the whole of the pumping operations, the strictest control was enforced and every safety precaution taken.

*Workers' (Occupational Diseases) Relief Fund Act, 1928.*—Records were kept of all new employees on the mines throughout the inspectorate and, in general, the business of the Board was performed in accordance with the provisions of the Act.

Five applications for compensation were received and clinical and X-ray examinations were arranged.

Some details of these examinations are shown hereunder:—

Applicant.	Age of Applicant.	Nature of Work.	Period Engaged in Mining.	Percentage Incapacity.
No. 1	47	Mining	15½ years	Nil.
No. 2	47	Mining	14 years	Nil.
No. 3	.....	Mining	17 years	Nil.
No. 4	42	Mining	25 years	Nil.
No. 5	37	Milling and Mining	7½ years	Nil.

In addition to the foregoing, arrangements were made for the examination of 41 former employees of the Mount Bischoff Tin Mine, which was conducted under the auspices of the Commonwealth Department of Supply and Shipping. Of the 41 men examined, only one was pronounced incapacitated, the extent of his disability being assessed at 50 per cent.

*Aid to Mining and Mineral Resources.*—As a result of investigations, a recommendation was made that a grant of £60, on a £ for £ basis, be made available to a party of tin miners, working beach sands on the East Coast of King Island. No other applications were made for financial assistance.

The rising interest in the search for radio-active minerals prompted a great deal of investigation in the Jacobs Boat Harbour, North-West Coast area. Samples of many likely looking minerals, suspected of being radio-active were obtained and submitted to the Director of Mines for testing with the newly acquired Geiger-Muller

Counter. Skeleton Creek was thoroughly prospected and rough concentrates—(zircons and other minerals, including Chromite) were obtained and tested with the Geiger-Muller Counter, but gave no positive reaction for radio-activity.

## MINING OPERATIONS AND PRODUCTION.

*Cadmium.*—The only Cadmium produced in Tasmania came from the West Coast mines of the Electrolytic Zinc Company of Australasia Ltd. The tonnage for the year amounted to 34.22 valued at £A15,331, the refined metal being obtained as a by-product in the electrolytic refining process of the company at Risdon. Production was little different from 1947, the figures then being 34.53 tons valued at £A15,470.

*Copper.*—The entire production of copper, for the Burnie district, resulted from operations by the Electrolytic Zinc Company of Australasia Ltd. at the Williamsford and Rosebery mines. Actual production amounted to 248.10 tons valued at £S33,275.92.

The copper concentrate is obtained in the form of a sulphide and is recovered in the flotation treatment of the zinc-lead ores at the Rosebery mill. There was no other recorded production of copper. Apart from a little fossicking, by one prospector in the Balfour area, no other activity was recorded.

*Gold.*—Production, which was again confined to the mines of the Electrolytic Zinc Company of Australasia Ltd. on the West Coast, resulted from the flotation treatment, at Rosebery, of the zinc-lead ores and the subsequent electrolytic refining of the concentrates at Risdon. The resulting "sludge" was further treated for a recovery of 8,119.93 ounces of fine gold, valued at £S69,931.995. No other gold mining or prospecting was carried on during the year.

*Osmiridium.*—Prospecting of a desultory nature occupied the attention of two persons in the Nineteen Mile Creek area. There were no sales and no recorded production.

*Limonite.*—Employing a total of 5 men, A. Pearson mined 318 tons of limonite from the old Penguin Iron Mine, Iron Cliff Road. The material was required in gas production at the Launceston Gas Works, where it is used as a catalyst.

*Silica.*—Valued, by the producer at £17, a quantity of 17 tons of silica sand was obtained from the Ulverstone deposit and sold to a Mainland firm.

*Talc.*—At Gawler, production of talc was resumed for a short period during the second quarter of the year. The production of 22 tons was valued by the producer at £22.

*Red Oxide.*—During the second quarter of the year 22 tons of red ochre, valued at £22, was extracted from Mr. Pearson's pit at Spalford. The five men employed, by Mr. Pearson, were engaged on the silica, talc, red oxide, and limonite as occasion demanded.

*Scheelite.*—A record total of 637.42 tons of scheelite resulted from operations by King Island Scheelite (1947) Ltd. and this represents the only scheelite mining carried on in the inspectorate.

*King Island Scheelite (1947) Ltd.*—Ranked as equal to, if not the biggest, scheelite deposit in the world, imposing production figures were recorded by the Company during the year. For purposes of comparison, production figures for 1946 and 1947 are shown as follows:—

	1946. tons.	1947. tons.	1948. tons.
Crude ore mined and treated	130,545	139,883	148,263
Scheelite concentrates produced	627.82	630.92	637.42
WO <sub>3</sub> Content	412.365	398.27	418.20
	£	£	£
Value in Sterling Currency	165,264	240,006	254,522.05
	No.	No.	No.
Average number of men employed	158.	155	133

The following information was made available by the Managing Director, Mr. A. R. Bruhn, in a report on the Company's activities for the year ended 31.10.48:

*Quarry: Grade.*—The ore mined and sent to the mill averaged 0.56 per cent  $WO_3$ , being slightly under average grade.

*Ore Reserves:—*

Proved ore reserves as at 1st November, 1947, 3,091,028 tons.

Less ore extracted from 1st November, 1947 to 31st October, 1948, 142,645 tons.

Proved and Payable ore as at 31st October, 1948, 2,948,383 tons.

*Additions to Plant.*—Two Lorrain Shovels and one H.D.7 Tractor were purchased, during the year, for use in the quarry.

*Mill.*—The overall mill recovery for the year was equal to 62.25 per cent, comprising 40.335 sale grade units  $WO_3$  (52.49 per cent) recovery and approximately 7,500 units  $WO_3$  (9.76 per cent) recovery from the flotation plant for future retreatment. The recovery rate for the second half of the year was 72.46 per cent. Although considerable improvement in the overall recovery rate was shown in the second term, the recovery objective was not reached and all flotation concentrate was not dressed to marketable grade. A considerable amount of research work was done and is being done towards securing the required improvement.

*Construction.*—The principal works carried out comprised:—

*Quarry.*—Assembly of two Lorrain Shovels; foundation for new quarry workshop.

*Mill.*—Removal of No. 1 Classifier to new position; rearrangement of flotation plant; and extensions to main mill building.

*Power House.*—Installation of No. 2 Compressor.

*Works Buildings.*—Minor extensions to store and workshop buildings.

*Township.*—Removal of five single men hut buildings, from lower to upper township. Erection of new service and social building for the single men's quarters. Erection of store with home attached, for Grassy Co-Operative Society Limited; seven new houses for employees; reconditioning of two other houses, after purchase; two tennis courts and completion of recreation ground for football and cricket. Earthenware pipe drainage scheme was also started.

*Galena.*—With a total of 1160 tons of high grade galena concentrates, Farrel Mining Company Limited, Tullah, continued as a major producer of Silver-lead for the State.

Apart from this 3.182 tons of galena concentrates were produced by W. Ledger of Zeehan, during the first quarter of the year, when the Zeehan area was part of the Burnie Inspectorial District.

*Silver-Lead-Zinc.*—A total of 63 tons of silver-lead-zinc concentrates, containing 567 ounces of silver, valued at £S106.029, and 6.3 tons of lead valued at £S567, as well as 13.75 tons zinc, valued at £S962.5, was produced from the old Comstock Mine at Zeehan, during the first quarter of the year. Four men were employed.

This silver-lead-zinc ore was sold to the Electrolytic Zinc Company of Australasia Ltd., Rosebery, to which Company special reference is made further on in the report.

*Farrell Mining Company Ltd., Tullah.*—The following account of operations by this company has been assembled from Departmental records and from information supplied by the courtesy of the General Manager, Mr. R. D. Midson:—

*Production Figures:*

Crude ore treated, 7565 tons.

Silver-lead concentrates produced, 1160 tons.

Silver 82,320 ounces valued at £S15,325.

Lead 765 tons valued at £S72,568.

The values are based on the average sterling price for metals for each quarter.

*Employment.*—An average of 63 men was employed.

*Power.*—According to the management, the power supply of the Hydro Electric Commission proved very efficient and no major interruptions were experienced.

*Treatment Plant.*—Milling operations were confined to one shift per day and, even then, the plant was run below full capacity.

*Mining Operations.*—The general manager, Mr. R. D. Midson, reports as follows:—

*Development.*—370 feet of development cross-cuts and drives were opened up and payable ore was located at No. 7 Level North and at No. 5 Level Quartz Lode North. Various rises were connected for ventilation purposes and for travelling ways but development work was retarded by the shortage of labour.

*Diamond Drilling: Underground.*—Our diamond drill was in operation during the first six months of the year and payable ore was located and subsequently opened up at No. 7 Level North.

*Surface.*—A lease was secured on the old Mount Farrell section, adjoining our southern boundary, and an option was taken over J. Dutton's prospecting area, adjoining that lease; a pipeline, for compressed air supply, was completed over a length of 4000 feet and diamond drilling from the surface was commenced on the 23rd September. Four holes have been completed and the fifth hole is under way, the total footage drilled to the end of the year being 1000 feet. Payable ore has not yet been located, but an extensive drilling campaign will be carried out on the two leases along the known line of lode.

*Main Shaft.*—Owing to lack of sufficient skilled miners, the main shaft was not sunk during the year and prospects of securing sufficient labour for the work in the near future are not bright.

*Summary of Crude Ore Mined and Milled:—*

	Tons.
No. 8 Level, North Stope	597
No. 8 Level, South Stope	1363
No. 5 Level, North Stope	1234
No. 4 Level, Branch Stope	412
No. 4 Level, South Stope	1191
No. 4 Level, North Quartz Stope	55
No. 4 Level, South Intermed Stope	705
No. 2 Level, North Stope	805
Total	6362
From Development	1203
Grand Total	7565

*J. Dutton and Party, Tullah.*—Operations on this Prospecting Claim consisted mainly of track cutting and the laying of compressed aid lines. This was for the purpose of diamond drilling the claim by the Farrel Mining Company Ltd.

*Zeehan Field.*—As mining operations on the Zeehan field were under my jurisdiction only up till the end of the first quarter, reports thereon have been left to the Inspector of Mines at Queenstown, in whose territory they now lie.

*Antimonial-Lead-Zinc Ores. L. and M. Newman Prospecting Syndicate, Waratah.*—Work on this Company's leases has been confined to investigating the two main lodes on the surface in a Northerly direction. Mr. H. A. deLautour, mine manager, advises that these two main ore bodies give every indication of continuing into the old Bischoff Extended mine and his Syndicate has taken an option over the leases held by Mr. Stanley. No. 9 Level is to be picked up and cleaned out.

The interesting observation has been made by Mr. de Lautour that tin-oxide is associated with the antimonial lead ore, the content in one sample being 0.5 per cent metallic tin.

Approximately 1650 feet south of the Bischoff Extended boundary, testing operations are proceeding on some formations close to the eastern boundary of the Company's leases. On the surface there has been no indication, so far, of lead and antimony in these lodes.

*Tin.*—Decreased tin production was recorded in this district. It is certain that the closing of the Mount Bischoff Tin Mine contributed in no small measure to this easing off in production.

Operations by small parties in the Zeehan area, during the first quarter of the year, amounted to 0.354 ton, valued at £S183.63. Production for the remainder of the inspectorate was recorded at 57.88 tons metallic tin valued at £S32,164.943. The industry gave employment to an average of 36 men.

*Renison Associated Tin Mining Company N.L.—Renison Bell.*—This mine was again the principal producer, the recorded production being as follows:—

- Ore Milled, 11,526 tons.
- Concentrates Produced, 84.206 tons.
- Metallic Tin Content, 56.976 tons.
- Value, £S31,662.22.
- Average Number of Men Employed, 30.

Figures supplied by the General Manager, indicate that 11,660 tons of crude ore was mined of which 8157 tons was from open-cuts, 3327 tons from stopes and 176 tons from development.

Overburden removal amounted to 2004 tons while 1280 cubic yards of surface filling was introduced to stopes.

A progressive housing scheme was initiated, during the year, and five new all electric cottages were completed. This additional accommodation should go far towards relieving the manpower shortage with which the mine has been hampered.

*King Island: Gatenby and Patterson.*—Using self designed and improvised plant, this party successfully treated 219 cubic yards of beach sands at the Fraser River Tin Mine, Naracoopa for the recovery of 0.7628 ton of tin concentrates, containing 0.4135 ton of metallic tin. The value of this production was assessed at £S231.87. The recovery of tin from these beach sands is rendered difficult by the presence of rutile, ilmenite, zircon, monazite, &c., and this party was compelled to table the sands for a "rougner" concentrate and then to re-dress on a "cleaner" table. Certain impurities were removed by treatment on a home designed electro-magnetic separator. Two men were employed.

*Waratah.*—Desultory operations, by miscellaneous parties, in and around Waratah was responsible for the production of 0.6588 ton of tin concentrates, containing 0.3456 ton metallic tin, valued at £S187.94. The greatest number of persons operating at one time was six, and the average for the year was three.

*H. C. L. Glozier, Tinstone Creek.*—Towards the latter end of the year, this person was engaged in the construction of a concentrating and roasting plant.

His outfit consists of a screen, 3 head of stamps, Wilfley concentrating table, and roaster. Motive power is supplied by a water wheel assembled by Mr. Glozier on the job.

*Nineteen Mile Creek.*—Some casual prospecting, for osmiridium, was performed by two fossickers, but no sales were recorded.

*Rosebery-Exe River: Jas. Copping.*—Working single-handed and hampered by spells of ill health, Mr. Copping continued his prospecting work, but no sales were recorded.

*Olympic Mine, Colebrook Hill, Exe River.*—No work was performed on the mine during the year.

*A. J. Salmon, Exe Gorge.*—Due to the disappearance of the leasee, midway through the year, the only work performed on the lease consisted of prospecting by Mr. Salmon during the first six months of the period under review.

*Tasmanian Mines N.L.*—This company, whose headquarters are located in Adelaide, South Australia, was interested in prospecting areas some three miles west of

the junction of the Pieman and Huskisson Rivers. With a view to systematically exploring the region, the cage crossings over the Pieman and Huskisson Rivers have been rehabilitated and an extensive track cutting programme has been put into operation.

Severe winter conditions, dense scrub and shortage of manpower have made conditions difficult, but, even so, reasonably satisfactory progress has been made. No specific metal has been mentioned as the object of the quest, but any mineral discovered will be investigated with a view to its economic exploitation.

*Zinc-lead-copper.*—With a production of zinc, lead, copper, silver, and gold valued at £S2,309,943 from its West Coast mines, the Electrolytic Zinc Company of Australasia Ltd. has again emphasised its importance as one of the major base metal mines of Australia.

In addition, the Company has pursued an energetic programme of exploration with a view to further expanding its activities. Large areas were secured through the Mines Department in the form of special prospecting areas. Prospecting operations involved the establishment of camps, cutting of tracks, formation of "Jeep" roads, topographical and geological surveys, diamond drilling and interpretation of data assembled.

Areas under examination during the year were:—

- Special Prospecting Area No. 191 (Sterling Valley, 7300 acres).
- Special Prospecting Area No. 188 (McIntosh Area, 2880 acres).
- Special Prospecting Area No. 192 (Godkin Area, 338 square miles).

Investigations are still proceeding.

Details of ore treated and concentrates produced for 1948 are shown hereunder:—

	Tons.
Crude ore mined, <i>ex</i> Hercules Mine, Williamsford	38,630
Crude ore mined, <i>ex</i> Rosebery Mine	84,312
Crude ore mined, <i>ex</i> Comstock Mine, Zeehan	92
Total Tonnage	123,034

Concentrates Produced:—

	Tons.
Zinc	38,024
Lead	8,997
Copper	3,094

Recoverable Quantities and Values of Metals contained therein:—

Metal.	Tonnage.	Gross Value in £S's.
Lead	6,423.83	612,719
Zinc	18,288.26	1,449,047
Copper	248.10	33,275
	Fine Oz.	
Silver	779,367.54	144,973
Gold	8,119.92	69,929
Total Gross Value		£S2,309,943

*Note.*—This value does not include cadmium, of which 34.22 tons were produced valued at £A15,331.

*Employment.*—The Average number of men employed was as follows:—

	Surface.	Underground.
Hercules Mine	13	46
Rosebery Mine	243	128
	256	174

Grand Total both Mines .....430

Mr. F. G. Burns, Superintendent, has made available the following information for purposes of this report. Diamond drilling and development footages, together with production figures relate to the end of the financial year, i.e., 30.6.1948.

*Diamond Drilling:—*

	Feet.
Rosebery Mine underground .....	4572
Rosebery Mine surface .....	1375
Hercules Mine underground .....	1482
Special Prospecting Areas (Surface) .....	2469
Total .....	9898

*Development:—*

	Driving.	X-Cutting.	Rising.	Winzing.	Total.
Rosebery .....	1153'	95'	195'	110'	1553'
Hercules .....	152'	....	....	....	152'
Total .....					1705'

In addition, the Rosebery incline shaft (Main Shaft) was sunk 50.5 feet, the No. 10 Level Plat was cut and timbered and the excavation of the bin and loading station below 10 level was completed.

*Ore Production:—*

	Tons	Tons	Tons	Tons
	Stoping.	Development.	Dumps.	Total.
Rosebery Mine .....	76,488	5,768	261	82,517
Hercules Mine .....	42,004	683	....	42,687

*Remarks: Blast Hole Stoping.*—Experimental work on blast hole mining continued during the year.

*Black P. A. Sand Filling Project.*—Mining work on the excavation of Conveyor Crosscut and Bin for the sand filling project has continued.

*Milling.*—The milling rate for the year ended 31.12.48 was approximately 15.4 tons per hour. No major alterations were made in the milling plant during the above period.

### Inspector R. J. Muir, Launceston, reports:—

*Employment.*—Mining and allied industries throughout the inspectorate, other than coal mining, gave employment to 766 men. Due to a slight improvement in the labour position this figure shows an increase of 52 on the previous year's figure. The majority of the larger mines, however, would have employed additional men if they had been available.

*Accidents.*—Twenty-four accidents, resulting in fatal injuries to one person and non-fatal injuries to twenty-three others, were registered under the provisions of the Mines and Works Regulation Act. Of these, six occurred underground and the remainder on the surface at the various mines, quarries and works. Of the underground accidents three occurred when handling timber. In the first, a cap was being placed in position on the legs when it slipped, the miner suffering fractured ribs. In the second case, when the timber-cap was being placed in position, a man's fingers were jammed underneath the cap and the top of the leg, causing lacerations. In the other case a man's finger was lacerated when it was caught between two pieces of timber which were being stacked. Of the other underground accidents a miner's eye was injured by a piece of steel breaking off the star bit of the drill and entering the eye. Fortunately, the sight was not affected. Another worker, whilst walking across a flat-sheet, slipped, fell against an ore truck and suffered a torn cartilage of the chest. The remaining underground accident resulted in a man receiving a jarred hand whilst spalling rock.

Of the surface accidents, the one resulting in fatal injuries occurred at an alluvial mine where the victim was working near the face, cutting up a stump, when some of the ground collapsed, striking him. The usual inquest was held and a finding of accidental death was recorded. In the other surface accidents, one man strained the muscles in his knee when a trailer to a motor lorry passed over his foot and twisted the leg. In another case, an employee was walking through a large quarry when a steel scat flew from the action of a hammer blow on a jammed drill steel, causing lacerations to the eye. A quarry employee was "popping" a stone when the stone broke in two and crushed his ankle. At one of the larger works, during the operation of unloading coal, the overhead electric-crane bucket caught the side of a truck lifting it and throwing the injured person against the side bruising the muscles of his stomach. A race caretaker, at one of the large alluvial mines, was inspecting a water race when a board in the walk-way broke causing him to sprain his ankle. During dredging operations an employee walked past the bucket line of the dredge at the instant when a piece of wood, which had been brought up by the digging buckets, fell, striking him on the leg and fracturing it. An attendant, at one of the large works, was working near a conveyor belt when his arm was caught, necessitating amputation above the elbow. Another attendant whilst greasing machinery, had his trouser leg caught in a motor coupling, with the result that a bone in his left foot was fractured. Whilst work-

ing in a quarry, spalling stones, a person was struck by a piece of stone, with resulting lacerations to the shin. Whilst carrying out repair work to one of the roads, at the larger alluvial mines, a log, intended to repair a bridge, rolled on to the employee and sprained the ligaments of his knee. In the crushing section of a quarry, a man had a finger of his right hand jammed by a stone, whilst feeding stone into a jaw crusher. The injury became infected and more than 14 days employment was lost. A broken right leg was suffered by an employee of a dredge when he was struck by one of the wire ropes. A watchman, at one of the mines, slipped whilst walking up a stairway, striking his elbow which later became septic. One employee of a quarry sustained a strained back on two occasions, once when his foot slipped and he fell backwards. On the second occasion, the strain was caused by the awkward manner in which he lifted a machinery part. At another works, a crusher attendant endeavoured to clear a conveyor belt, without stopping the machine, and received lacerations to the forearm and finger when he was caught by the belt. While unloading mine timber from a lorry, a timber dog pulled out of the timber and the employee fell backwards onto a stack of timber, sustaining a bruised kidney.

*Safety.*—The major portion of the time spent in the field was occupied in maintaining a standard of safe and satisfactory working conditions. With this end in view regular inspections, particularly of the larger mines and works, were carried out, and every endeavour was made to promote a high standard of safety in all operations. It is desired to here record the co-operation of the managements of the various mines and works in this regard. No large earth movements, either underground or in surface workings, took place and careful consideration was given to the general method of working each mine or quarry as well as attention to details such as shaft equipment, ladderways, explosives, &c.

*Prosecutions.*—Proceedings were not instituted against any person during the year. A suitable warning was sufficient in all cases to obtain satisfactory compliance with the Regulations.

*Health and Sanitation.*—The maintenance of a satisfactory standard in the care of change houses, crib houses and latrines was insisted upon at the various mines and works, to safeguard the health of employees. The installation of underground lavatories took place at one other of the underground mines and were maintained in a clean condition and no unpleasant odour was allowed to escape into the workings.

The canteen at one of the larger works, housing schemes at the larger mines and works, and central mess houses at the more isolated mines continued to function satisfactorily.

The underground mines were sufficiently well ventilated by natural means and the dust hazard underground was kept at a minimum. Due to alteration in plant at one of

the quarries dust control was not satisfactory but a dust collecting system was being installed at the close of the year.

Arrangements were made, throughout the year, for the necessary medical examination of miners, as required by the W.O.D. Relief Fund Board, and other assistance was given to the Chairman of this Board as required.

*Explosives.*—Devonport was deleted from this inspectorate and the control of the importation of explosives and inflammable liquids is now carried out from the Burnie centre.

Importation of explosives took place at a normal rate at Launceston and personal supervision was exercised over the unloading and transportation to the Government Magazine. A satisfactory certificate of analysis was forwarded with each shipment and unloading proceeded without unusual incident. All the explosives arrived in good order and condition but a few of the cases, containing same, were slightly damaged in transit. No reports were received during the year of defective explosives, detonators, or fuse.

*Machinery.*—A new jaw crusher was installed at one mine and considerable alterations were made to a plant at a quarry crushing limestone. Apart from this, the amount of new machinery installed was not great. In co-operation with the Inspector of Machinery regular inspection was carried out and where safety guards were required these were installed.

*Inflammable Liquids.*—The supervision of installation of petrol bowsers and inflammable liquid storage compounds occupied the major portion of the time spent in the administration of the Inflammable Liquids Act. General enquiries were answered and existing installations inspected.

One unusual incident occurred in connection with the use of inflammable liquid when a passenger bus was involved in an accident. Due to the collision, the petrol from the petrol tank caught fire and the bus was totally destroyed. However, the passengers escaped without injury.

*Aid to Mining.*—Whilst the ordinary duties of inspection were being carried out suggestions and advice were given, particularly at the smaller mines, in order to promote more efficient and safer working. Some samples were also obtained and tested at the Mines Department Laboratory to assist genuine prospectors in their operations. Reports were made in connection with various applications under the Aid to Mining Act and other data obtained in connection with the mining activities in the inspectorate.

#### MINING OPERATIONS AND PRODUCTION.

*Tin.*—Production for the year showed a decrease of 20·82 tons metallic tin on the previous year's figures. This was mainly due to reduced activity at one of the larger alluvial mines. The sterling price for tin increased during the year and was £569 at the close of the year. This increase in price did not result in the anticipated activity of smaller producers, due mainly to the general shortage of labour and the high wages payable in other industries. Production for the year was 714·3042 tons metallic tin, valued at £392,484·32 sterling.

*W.X.X. Mine, Moorina.*—The ownership of this mine was taken over by Mr. S. Hill of Ringarooma who by an arrangement with a working party of four men carried on operations in a small way to produce 2·8604 tons concentrates, containing 1·8444 tons metallic tin, valued at £1007·96 sterling.

*Miscellaneous, Moorina.*—Eight men were employed on the smaller mines in this district and this increased activity resulted in the production of 3·6808 tons metallic tin, which was shipped away in the form of 5·8997 tons of concentrate, valued at £2027·72 sterling.

*Weld Tin Syndicate, Weldborough.*—(T. H. Bryce and others.) This Syndicate operated, as usual, for about six months of the year, when water was available, and the two men employed, using ordinary hydraulic sluicing methods, treated 12,000 cubic yards of alluvial material to recover 1·6206 tons of concentrate, containing 1·1403 tons metallic tin, valued at £648·83 sterling.

*Cambria Mine, Weldborough.*—During the latter half of the year, when water was available, R. R. Symons and partner continued the treatment of the old dumps, selectively sorting the better grade material. Production amounted to 1·4339 tons concentrate, containing 0·9667 ton metallic tin, valued at £550·50 sterling.

*Miscellaneous, Weldborough.*—Eleven men found employment prospecting, and in the operation of small mines, in this district. Their total production amounted to 3·6678 tons of concentrate, containing 2·3218 tons metallic tin, valued at £1287·55 sterling.

*Anchor Tin Mine, Lottah.*—Owing to the shortage of water and insufficient labour this mine did not work at full capacity. By selective mining, 1430 tons of tin-bearing granite were quarried and treated with the aid of stamp batteries, concentrating tables and vanners, for a recovery of 8·0468 tons of concentrate, containing 5·7607 tons metallic tin, valued at £3199·64 sterling. The average number of men employed was five.

*Miscellaneous, Lottah.*—Only three men found employment on the small mines in this district, their operations being in the vicinity of Blue Tier. The major portion of their time was taken up prospecting but they did produce 0·4629 ton of metallic tin, valued at £259·61 sterling, in the form of 0·7004 ton of saleable concentrates.

*Miscellaneous, Goshen and Goulds Country.*—The small producers won from this area 1·7334 tons of concentrate containing 1·2660 tons metallic tin, valued at £698·96 sterling. An average of three men was responsible for this production.

*Albion Tin Syndicate, Priory.*—This Syndicate abandoned their operations, during the year, mainly because their tin recoveries were not as large as was expected and the engines used for motive power of the gravel and pressure pumps were too small for the duty required, with resultant unsatisfactory service. Two men were employed, during the period of the year in which the Syndicate operated, and produced 0·4362 ton concentrate, containing 0·2399 ton metallic tin, valued at £127·70 sterling.

*Goshen Tin Mines, St. Helens.*—Due mainly to the unsatisfactory labour position, work was carried out spasmodically by this company. Some production was, however, obtained from each of the three faces, Bog No. 2, Argonaut, and Georges Bay. Alluvial material amounting to 102,700 cubic yards was treated by normal sluicing methods. The production amounted to 20·1236 tons concentrates, containing 12·1153 tons metallic tin, valued at £6566·48 sterling. This output includes the small quantity of concentrate obtained by tributors re-treating old residues.

*Bell Creek Tin Mines, St. Helens.*—Owing to insufficient rain, the production period at this mine was confined to less than six months of the year. An average of two men found employment and from the treatment of 6000 cubic yards of alluvial material 2·6758 tons of concentrates were obtained, containing 1·9908 tons metallic tin, valued at £1067·91 sterling.

*Miscellaneous, St. Helens.*—A production of 0·856 ton of concentrates, containing 0·5467 ton metallic tin, valued at £304·42 sterling, was obtained from small mines operating in this district and, together with prospecting, gave employment to six men.

*Aberfoyle Mine, Rossarden.*—This mine continued to maintain its position as the largest tin producer of the inspectorate and produced practically the same as the previous year. From the treatment of 26,435 tons of ore, 473·3991 tons of tin concentrates were obtained, containing 339·0356 tons of metallic tin, valued at £186,214·73 sterling. The majority of this ore come from stopes on the Nos. 3, 4, 5, and 6 levels and development work on the Nos. 5 and 6 levels. During the year, the total footage of development work carried out amounted to 1356 feet, which was divided amongst driving 647 feet, crosscutting 93 feet rising 470 feet, and shaft sinking 146 feet. Sinking of the main shaft from the No. 6 to No. 8 level was commenced and had not been completed at the close of the year. A large scale diamond drilling campaign was embarked upon, drilling being carried out in accordance with recommendations made by Mr. H. J. C. Connolly, consulting geologist. The total footage drilled, by the end of the year, was 1101 feet from the surface and 1422 feet from underground workings. An additional

jaw crusher was installed, in the crushing section, to more satisfactorily cope with increased output. The Company's progressive policy of providing amenities was continued. A new change house, for staff and shift bosses, was completed. Several cottages for employees, as part of the housing programme, were erected, in addition to other minor improvements, as contributory factors to the welfare of employees. Owing to the present labour position, the labour turnover at the mine was large but at an average 145 men was employed.

*Storey's Creek Tin Mine, Storey's Creek.*—For review of this mine see under Wolfram which is the major product. Tin production amounted to 31.1 tons of concentrates, containing 20.49 tons metallic tin, valued at £11,063.12 sterling.

*Miscellaneous, Avoca.*—One parcel, only, of concentrates was sold from this district amounting to 0.1469 ton, containing 0.1028 ton metallic tin, valued at £53.30 sterling. This production and prospecting occupied the time of the one man.

*Miscellaneous, Scottsdale.*—A little more interest was taken in the small mines, in this district, but the production, by four men, employed was not large, amounting to 0.7857 ton concentrate, containing 0.5358 ton metallic tin, valued at £303.25 sterling.

*Miscellaneous, Ringarooma.*—Five men were employed, principally on a part time basis, operating the small mines of this district and, between them, produced 0.7272 ton of concentrates, containing 0.5097 ton metallic tin, valued at £287.42 sterling.

*Arba Tin Mine, Branhholm (Walsh and Co.).*—Work continued as in previous years at the Grouper Face and entailed the re-treatment of large quantities of tailings from previous operations. On an average, 10 men were employed and the metallic tin production was almost identical with 1947. This quantity of metallic tin, 9.3808 tons, was contained in 12.5693 tons concentrates, valued at £5168.62 sterling.

*Bakers Discovery, Branhholm.*—Productive operations were confined to the latter five months of the year, owing to lack of water for sluicing purposes. During the production period, three men were employed and handled 5000 cubic yards of tin-bearing granite formation, by straight sluicing methods, for a recovery of 2.1415 tons concentrate, containing 1.4305 tons metallic tin, valued at £813.95 sterling.

*Ruby Flat Mine, Branhholm (Walsh and Co.).*—Two men continued the sluicing of shallow ground at this mine but operations were hampered somewhat as a considerable amount of clearing was required before sluicing. However, approximately 4500 cubic yards of alluvial material were sluiced for a recovery of 1.9893 tons of concentrates containing 1.4660 tons metallic tin, valued at £770.78 sterling.

*Miscellaneous, Branhholm.*—A production of 4.729 tons of concentrate, containing 3.3926 tons metallic tin, valued at £1889.03 sterling, was obtained from the small mines in this area. This production and the average number of 9 men employed in these operations, has remained practically constant during the last few years.

*Briseis Mine, Derby.*—The Company operating this mine, Briseis Consolidated N.L., ceased operations in August and the mine was taken over by a new Company, Briseis Tin N.L., the latter Company being controlled by local interests. This change in management did not cause any cessation of operations and productive activity was carried on, throughout the year, using hydraulic methods exclusively to treat 258,000 cubic yards of drifts for a recovery of 50.4915 tons of concentrate, containing 36.0535 tons metallic tin, valued at £19,636.22 sterling. The average number of men employed was 36. The new Company carried out some prospective boring, and productive operations will probably take place in the Cascade section during the coming year.

*Miscellaneous, Derby.*—There was an increase in activity by the smaller producers of this area, an average of 14 men being employed intermittently, as conditions permitted, to produce 8.6915 tons of concentrate, containing 5.6668 tons of metallic tin, valued at £3049.33 sterling.

*Miscellaneous, Herrick and Winnaleah.*—An average of three men, operating the smaller mines in this district, produced 1.3090 tons of concentrate, containing 0.9222 ton of metallic tin, valued at £504.42 sterling. P. V. Cross, who operates a small mine in the vicinity of the Boobyalla River, was the main contributor to the output.

*Banca Tin Mine, Winnaleah.*—R. L. Rainbow continued the operation of this mine with the aid of one assistant. Sluicing water was available for approximately nine months of the year. A production of 3.1585 tons of concentrate containing 2.2186 tons of metallic tin, valued at £1245.28 sterling, was obtained from the treatment of 7250 cubic yards of alluvial material.

*Dorset Terraces, Bradshaws Creek, (Walsh & Wood).*—Owing to the difficulty in obtaining pipes and plant, the majority of the plant, at this mine, has been removed to other mining activities. There were no productive operations during the year.

*H. and V. Wood, Bradshaws Creek.*—These two men diverted the course of the Wyniford River, on portion of their mining tenement, and carried out sluicing operations in the old river bed. From the sluicing of 5160 cubic yards of ground, 1.2638 tons of concentrates was recovered in their sluice box, the metallic tin content of this concentrate being 0.916 ton, valued at £521.2 sterling.

*O. J. Walsh and Hookway, Bradshaws Creek.*—These two men continued their operations on the banks of the Wyniford River but, as in the past, large quantities of stone in the alluvial wash curtailed the quantity of ground treated. Owing to lack of sluicing water, productive operations were confined to the latter half of the year but nevertheless 5450 cubic yards of material were handled for a recovery of 1.4857 tons concentrates, containing 1.0773 tons metallic tin, valued at £612.99 sterling.

*Miscellaneous, Bradshaws Creek and South Mount Cameron.*—An average of 12 men found employment in working the various small alluvial mines in these areas and their production amounted to 8.051 tons concentrate, containing 5.8434 tons metallic tin, valued at £3272.69 sterling.

*Dorset Dredge, South Mt. Cameron.*—Approximately 34.65 acres of the Dorset Flats were dredged to an average depth of 32 feet, causing 1,662,000 cubic yards of alluvial material to be treated by the jig concentration plant, on the dredge, for a recovery of a gold-tin concentrate which, after dressing, amounted to 196 tons of tin concentrate, containing 144.2287 tons of metallic tin valued at £78,905.12 sterling. The alluvial gold, which is extracted during the dressing process, was sold as a separate product, the amount being shown under "Gold". The average employment figure was 44 men. During the year, prospecting was carried out on the Great Northern Plain near Gladstone with a view to obtaining information which would throw light on the possibility of new dredging areas. However, at the close of the year no conclusive information had been obtained due to lack of suitable prospecting equipment. Improvements effected were the construction of a new mine office, enlargement and rearrangement of stores, reconstruction of water supply to the dredge and renovations and additions to the staff houses.

*Endurance Tin Mine, South Mt. Cameron.*—The position of the gravel pump barge was not altered and sluicing was carried on without incident. Towards the end of 1948, work was commenced in preparing a new site for the barge, the intention being to work some of the marginal ground which it is considered will be payable with the present high price of tin. Mr. Alexander relinquished his position as manager during the year and Mr. N. Pratt came from Queensland to take over the management. A total of 384,375 cubic yards of material, some of which had already been treated, was sluiced with the nozzles to the barge where it was pumped to the sluice boxes for the extraction of 96.8464 tons of concentrate, containing 70.7629 tons of metallic tin, valued at £39,550.95 sterling. Fifty-seven men were employed during the year. The Company's power station, on the Frome River, supplied electric power during the major portion of the year, power only being taken from the Hydro-Electric Commission's lines when insufficient water was available to operate the Company's station.

*Mt. Cameron Water Race, Gladstone.*—This Government controlled scheme supplied water for sluicing purposes to an average of 13 men and was an important factor in maintaining the tin production of the Gladstone district. With water supplied under a royalty system 60,990 cubic yards of tin-bearing alluvial ground were treated for a production of 19·0532 tons tin concentrate, containing 13·5671 tons of metallic tin, valued at £7464·17 sterling.

*Lanka Tin Mine, Gladstone.*—The ownership of this mine changed hands and additional areas were acquired, including sections on the Mussel Roe River. Some production was obtained with the use of water from the Mount Cameron Water-race and is included under that heading. Other than this production, 1·7277 tons of tin concentrate were produced, containing 1·2358 tons of metallic tin, valued at £667·68 sterling. This production was obtained with the usual sluicing methods, the necessary water coming from privately held water rights.

*Star Hill Syndicate, Gladstone.*—Under a contract system, this Syndicate purchased water from the Mount Cameron Water Race, delivered to a storage dam. With the aid of two centrifugal pumps, each driven by a 125 h.p. electric motor, sluicing water was supplied to two nozzles which were used almost continuously, throughout the year for straight sluicing operations. The sluicing of 107,500 cubic yards of material gave a production, for the period under review, of 23·7983 tons of concentrate, containing 17·1114 tons of metallic tin, valued at £9376·83 sterling. Five men were employed.

*Miscellaneous, Gladstone.*—In addition to the operations already mentioned, 15 men found employment in the Gladstone district, during the wetter period of the year or when sluicing water was available, to operate the various small mines and also in carrying out some prospecting. Their combined production amounted to 7·9968 tons of concentrate, containing 5·3896 tons of metallic tin, valued at £3001·93 sterling.

*Strait Islands.*—On Flinders and Cape Barren Islands an average of three men found employment in mining activity. However, production from these islands was not large and was wholly produced on Cape Barren Island. The output was 0·4642 ton of concentrate, containing 0·2697 ton of metallic tin, valued at £151·48 sterling.

*Shepherd and Murphy Mine, Moina.*—Owing to the difficulty in obtaining labour very little work was carried out at this mine, the average employment being one man. A few small parcels of mixed concentrates constituted the year's production. The tin portion amounted to 0·6719 ton of concentrate, containing 0·4011 ton of metallic tin, valued at £213 sterling.

*Wolfram.*—The sterling price of wolfram fluctuated between £550 and £665 and was £600 at the close of the year. Production for the year was slightly higher than for 1947, consisting of 234·4129 tons of wolfram, valued at £103,195·21 sterling, and was practically all produced by the Storey's Creek and Aberfoyle Mines.

*Storey's Creek Mine.*—This mine, as the major producer of wolfram, mined and treated 9915 tons of ore for a wolfram production of 158 tons, the tungstic trioxide content being 114·7 tons, valued at £70,310·5 sterling. Shortage of labour again retarded operations and very little work was done in connection with the sinking of a new vertical shaft and erection of a new concentrating plant. Development work, underground, was proceeded with. On the No. 1A lode, drives were carried along on the Nos. 1, 3, and 4 levels, in each case approximately 400 feet. The lode width and values were such that these driving operations were still being proceeded with. Lateral extensions of the lodes at this mine have now been proved over a distance of approximately 2000 feet. An average number of 70 men was employed.

*Aberfoyle Mine.*—Wolfram production amounted to 74·1567 tons with a tungstic trioxide content of 53·8053 tons, valued at £31,963 sterling. Activities at the mine are reviewed under tin.

*Shepherd and Murphy Mine.*—From the mixed concentrates produced at this mine 0·2951 ton was wolfram, with a tungstic trioxide content of 0·1591 ton, valued at £102 sterling.

*Mount Pelion Mine.*—Messrs. Bloomfield and partners continued productive operations at this mine throughout the period under review. The purchase of a petrol driven rock-drill assisted with their ore breaking in the open cut and no underground operations were carried on. However, owing to the difficulty of access to the mine and the amount of time expended in maintaining the track to Lorinna, the production, by the two men, only amounted to 1·9611 tons of wolfram concentrate, containing 1·3265 tons of tungstic trioxide, valued at £819·71 sterling.

*Gold.*—The sterling price of gold remained constant at £8·61 per fine oz. and the production from the inspectorate was approximately the same as for the previous year. The Dorset Dredge, at South Mount Cameron, had an increased production which compensated for cessation of operations by the syndicate re-treating the old dumps at the Golden Gate Mine, Mathinna. Total gold production amounted to 731·777 fine ozs., valued at £6300·58 sterling. There was some revival in gold prospecting but no finds of importance were reported, the major amount of work being done on the old gold-fields.

*Golden Gate Dumps, Mathinna.*—The syndicate, re-treating the old tailing dumps of the Golden Gate Mine, ceased operations after having one clean up early in the year. Six men were employed by the syndicate up to this stage and, from the re-treatment of 1102 tons of tailings, bullion with a gold content of 46·297 fine oz., valued at £398·62 sterling, was obtained. The reason given for the cessation of the syndicate's operations was the depletion of reserves of suitable material for treatment in their cyanidation plant. In conjunction with the syndicate the Department of Mines carried out research work with a view to maintaining productive operations by the syndicate. At the close of the year, however, no decision had been made by the syndicate as regards their future activities and the whole of their plant was being maintained intact at the site of previous activities.

*Dorset Dredge.*—Treatment of gold-bearing tin concentrates, using mercury amalgamation methods, resulted in the recovery of gold, containing the equivalent of 637·2 fine oz., valued at £5486·28 sterling.

*Miscellaneous.*—The remaining production, from the smaller activities in the inspectorate, amounted to 48·280 fine ozs., valued at £415·68 sterling, and was recovered mainly in the form of alluvial gold. The Lisle gold field produced the major portion, with small amounts from Mathinna Lefroy, and Mt. Pelion. The production of this gold was the result of operations in conjunction with prospecting carried out by 9 men.

*Bismuth.*—Although the price of this metal continued to rise to £1120 sterling, production was very small, being obtained in two parcels from the Shepherd and Murphy Mine. The metallic bismuth content was 0·0794 ton, valued at £88·93 sterling.

*Limestone.*—Limestone was produced for cement making, agricultural purposes and the manufacture of burnt lime. The total quantity of limestone quarried for those purposes was 128,564·5 tons.

*Melrose Agricultural Lime Works.*—These works, which produce agricultural limestone, continued with their programme of taking over the quarries and portion of the plant previously used by the Broken Hill Pty. Ltd. Annual output was steadily increased and was approximately five times as much as the previous year. Number of men employed also increased to 18. The production was 9644 tons limestone, valued at £14,465 Australian currency.

*Railton Lime Works.*—Operating in a small way and using three kilns, the production of lime was carried out with the employment of two men. The quantity of limestone used for burning to lime was 925·5 tons, valued at £377 Australian currency.

*Beaconsfield Lime Products, Flowery Gully.*—This company continued the production of burnt lime in some old type kilns and also ground limestone for sale for agricultural purposes. Total limestone production amounted to 1312 tons, valued at £A2599, and employment was given to 8 men.

*Cement: Goliath Portland Cement Company, Railton.*—The production of cement and asbestos sheeting was carried on, throughout the year, by this company, a record output of low-heat cement, used in the construction of large concrete masses, such as the wall of the Clark Dam, being manufactured. In conducting the operations at the works 171 men were employed and 117,123 tons of limestone and 2014 tons of iron ore were quarried. Considerable progress was made in the asbestos sheet plant and a greater variety of shapes of asbestos sheets and mouldings was produced. The construction programme of the housing scheme inaugurated by the company had been practically completed at the close of the year. The commencement of a new bagging installation was the

major improvement around the works. In an endeavour to reduce accidents an accident-free competition between departments was inaugurated.

*Clay.*—Clay was produced for use in connection with paper and brick manufacture.

*Endurance Clay Pit, South Mt. Cameron.*—The Endurance Tin Mining Company continued the operation of this pit and 5463 tons of white clay, valued at £A15,837.5, was bagged and forwarded to the paper mills.

*Haines Brick Works, Dulverton.*—For use in brick manufacture, 870 tons of clay was quarried at these works. Nine men were employed.

### Inspector D. Besford, Hobart, reports:—

*Employment.*—The average number of persons directly employed in Mines, Quarries, and Works, operating under the Mines and Works Regulation Act, was 2,378 compared with 2,317 for the previous year.

The distribution was as follows:—

Works .....	1,903
Coal Mining .....	277
Quarries and Brickworks .....	137
Limestone Quarries .....	45
Osmiridium and Tin .....	16
Total .....	2,378

*Accidents.*—One fatal accident occurred during the year, when a workman was killed by a fall of roof in the underground workings of a coal mine.

The mine was not working on coal production on the day of the accident, the deceased being engaged with other workmen, repairing an old roadway, in which the roof supports had deteriorated. He was preparing a place, at the side of the roadway, for a new timber support when the roof commenced to move, his mate shouted to him to get out, but unfortunately one of the old "caps" fell in front of him, and before he could get round the obstruction the roof collapsed and he received fatal injuries. An inquest was held and the Coroner found that the deceased accidentally came by his death.

Seventeen non-fatal accidents were registered under the provisions of the Mines and Works Regulation Act, compared with twenty non-fatal accidents for the previous year.

Four of the non-fatal accidents occurred in underground colliery workings, and thirteen mishaps were associated with surface operations at mines and works.

All persons involved in non-fatal injuries resumed their normal duties after a short absence from work.

*Safety.*—Attention was directed to the safe working of mines, works, and quarries.

All coal mines were regularly tested for the presence of inflammable gas and it is very pleasing to report that no gas was found.

Pillar extraction continued satisfactorily, and there were no accidents recorded in connection with these operations.

Underground electrical apparatus was regularly examined and tested to ensure that it was in safe working condition.

The barring down of loose ground and the maintenance of safe batters at quarry faces was under regular surveillance, and no serious accident occurred in any of the quarries operating under the Mines and Works Regulation Act. A complaint was investigated regarding dangerous blasting at one quarry and steps were taken to remove the cause for complaint.

*Ventilation.*—Main air currents were regularly tested by means of the anemometer, and these were generally found to be in excess of the requirements, but it was found that a large proportion was lost before reaching the working face. Inspections often disclosed points of leakage and suitable remedies had to be applied in order to prevent loss.

Wet and dry bulb temperatures were regularly recorded in every underground working place, and also in all main in-take and return airways. The highest recorded temperature was 69 degrees Fahr. on the wet bulb with a corresponding reading of 71 degrees on the dry bulb. This reading was obtained, on one visit, in a working place engaged in pillar extraction. The temperature in all the working places in this section were higher than usual on this occasion. An investigation into the cause disclosed some weaknesses which were remedied and lower temperatures resulted. The temperatures recorded at a subsequent visit were 64 degrees, 66 degrees, Wet and Dry bulb respectively. Temperature recordings in other underground working places, during the year, did not exceed 64 degrees Fahr. on the Wet Bulb and 66 degrees Fahr. Dry Bulb, down to a minimum of 48 degrees and 50 degrees wet and dry bulb respectively.

The ventilation of the workings on one seam was reduced when the fan motor was burnt out. This damaged motor had to be replaced and it was only possible to get a smaller motor to drive the fan. The quantity of air was consequently reduced until repairs were made to the motor. The motor was re-installed, after repairs, and normal ventilation was restored.

The quantity of air was also reduced, at one mine, as the result of corrosion and damage to the fan blades. The damaged blades were replaced during the shut-down period for Christmas Holidays. A fall occurred in the Main Return airway, at another mine, and upset the ventilation until a new connection had been driven.

*Health and Sanitation.*—Matters affecting health and sanitation have been given due attention, and where it was considered that working conditions were unhealthy, the workmen were withdrawn until healthy conditions were provided.

Exposure of workmen to unhealthy fumes and dust conditions was also under regular surveillance, and healthy conditions have been maintained.

The provision of suitable sanitary conveniences was ordered at one mine. Conveniences were provided where required.

It was necessary to insist on the provision of shelters for workmen engaged at the tipplers, at one mine, as the men were exposed to the weather.

*Explosives.*—The storage and use of explosives has been given due attention. Unsatisfactory storage was remedied.

The unloading of shipments of explosives was supervised.

Blasting incidents were investigated and suitable precautions were ordered to be carried out to remove the cause for complaints.

No miss-fired shots were reported at any of the coal mines, during the year. The majority of shotfiring is by electric detonation, and the absence of miss-fired shots indicates the amount of care being exercised by those engaged in shotfiring.

*Inflammable Liquids.*—Petrol installations were inspected and were generally found to be in a satisfactory condition.

*Machinery.*—Inspections of machinery, installed underground, have been regularly carried out, and suitable tests have been made to ensure that the electrical equipment was maintained in safe working condition. Some faulty equipment was found and was immediately put out of service until properly repaired and tested.

The insulation resistance of underground supply cables and apparatus was often found to be below the required standard of one megohm, and in some cases, the cables had to be replaced. In other cases, the low reading was due to dampness. The insulation resistance of cables and equipment falls sharply when damp conditions are encountered, and the standard resistance can only be maintained by the introduction of special apparatus such as S.W.A. Cables and flameproof equipment. It may become necessary to limit underground apparatus to such special equipment where damp conditions prevail in order to maintain safe standards.

Earth-leakage-protection units were regularly tested and in some cases, were found faulty. The machinery protected by the faulty units was thereby rendered unsafe and was not allowed to work until the Earth-leakage-unit was repaired and adjusted to provide suitable protection. In one case, a new installation was tested and the Unit failed to pass a satisfactory test. The Unit was found to have a faulty Core Balance Leakage Relay, and the manufacturers replaced this unit after which the drill was allowed to be used. The machine has operated satisfactorily since the replacement of the faulty unit.

The efficient earthing of motor frames and switchgear enclosures was constantly checked. Some faulty earthing was discovered and had to be remedied.

*General.*—Some prospecting was carried out in the vicinity of the Fingal coal mine, to locate the seam on the opposite side of the creek. The seam was located, a shaft was sunk to the seam and an adit was driven for several yards, but work was suspended when a satisfactory agreement was reached between the two owners.

Surveys were carried out at the small mines in the North-West and South-East.

#### OPERATIONS AND PRODUCTION.

The total production of coal was 179,393 tons valued at £177,652 at the mine bins. The average number of persons directly employed at the mines was 274. The corresponding figures for the previous year were 167,140 tons valued at £154,725 and 289 persons.

The output was a record and was 7.33 per cent greater than the previous year's production, notwithstanding a small reduction in the average number of persons employed.

The largest increase resulted at the Cornwall Coal Mine, which produced 10,890 tons more than during the previous year. The Jubilee Coal Mine at St. Marys showed an increase of 2,521 tons; the Fingal Coal Mine increased production by 2,335 tons and the Merrywood Coal Mine increased production by 462 tons. The Stanhope Coal Mine at Avoca and the Sandfly Coal Mine showed small increases.

The largest reduction occurred at the Dalmaine Coal Mine where 1,025 tons less coal was produced. The Langloh Coal Mine showed a reduced output of 621 tons. The combined loss in production from the two small mines in the North-West was 614 tons, and Mount Nicholas Coal Mine produced 561 tons less.

The average yearly output per employee varied between 263 tons and 835 tons for the various mines, the former average output being produced from a small mine where the thickness of the coal seam was less than twenty-four inches.

The average output per underground employee varied between 310 tons and 975.8 tons, the former average again being produced from a small mine working a seam of coal less than twenty-four inches.

The Electrolytic Zinc Company increased production of Zinc, Cadmium, Cobalt, and Superphosphate.

Carbide production at Electraona was also increased with a corresponding increase in limestone production.

*Fingal—Mount Nicholas—Dalmaine Coalfield.*—The total production from this coalfield was 152,866 tons, representing 85 per cent of the total production for the State. The corresponding figures for the previous year were 139,465 tons and 83 per cent.

*The Cornwall Coal Mine* was the chief coal producer and accounted for 94,219 tons, valued at £84,797, and employed an average of 116 persons. The corresponding figures for the previous year were 83,329 tons valued at £73,236 and 119 persons.

The output was a record and represents 52.5 per cent of the State's total coal production.

Some delays were caused by shortage of railway trucks, and if these delays could be eliminated further increased production is possible. The Company commenced the erection of suitable storage bins in order to offset the delays but a shortage of materials hampered the work.

Operations continued on the same lines as in the previous year.

*The Mount Nicholas Coal Mine* produced 25,079 tons, valued at £22,571 and employed an average of 41 persons compared with 25,640, valued at £22,618, and 41 persons for the previous year.

No new developments occurred at this mine and operations were the same as the previous year.

The Cable-reel did not prove a satisfactory means of haulage and a Diesel engine was substituted to provide mechanical haulage from the tunnel to the mine bins.

*The Jubilee Coal Mine* produced 19,432 tons, valued at £19,483, and employed 38 persons, compared with 16,911 tons, valued at £16,725, and 37 persons for the previous year.

Output from this mine was produced from the Main Heading section, and the extraction of a few pillars on the East of the Main Haulage. The coal in the Main Heading section is cut by means of Arc-wall coal cutting machine, and some difficulty was experienced due to faulting in some of the places. Two developing headings were turned away in a North-Easterly direction to develop the area in front of the old Cardiff workings where the middle band of dirt was only a few inches thick.

Owing to the Main Heading having been standing for a long time, weighting occurred in the Return Airway and this roadway has collapsed in many places. The airway will have to be opened up and reconditioned in order to provide adequate ventilation, and this work will take some time to accomplish.

*The Dalmaine Coal Mine* produced 1,768 tons, valued at £1,706, and employed 4 persons. The corresponding figures for the previous year were 2,793 tons, valued at £1,761, and 4 persons.

The extraction of pillars continued for the first six months but when the mine was taken over by the Transport Commission it was decided to cease pillar extraction, and to develop the area to the south. Places were driven into this area which is also to be tested by means of bores. Delays were caused by water accumulations in the dip-places as the water has to be pumped out by means of a hand pump, which is slow work.

*The Fingal Coal Mine* produced 9,187 tons, valued at £10,099, and employed an average of 11 persons, compared with 6,852 tons, valued at £6,434, and 10 persons for the previous year.

This mine had the largest percentage increase, the output being 34 per cent greater than last year.

The highest average yearly output per person was produced from this mine.

Electric power was made available at the beginning of the year and a new ventilating fan was installed resulting in improved ventilation of the underground workings. A small electric pump was also installed underground in order to pump out the accumulated water from the Main Heading. After the removal of the water the two headings were advanced and new places developed. No serious faulting was encountered during the year.

*The Duncan Coal Mine* produced 3,201 tons, valued at £2,881, and employed an average of 6 persons. The previous year's figures were 3,391 tons valued at £2,948, and 6 persons.

Some prospecting was carried out in the hill on the western side of the creek, and while the workmen were engaged in sinking a shaft, and opening up a new adit, the output from the mine decreased. The workmen later

returned to the original workings and were engaged in driving two developing headings to develop the Company's leases in front of the Fingal Coal Mine. The whole of the output was produced from this pair of developing headings, including the cut-throughs.

*Avoca Coalfield.*—The Stanhope Coal Mine produced 11,779 tons, valued at £13,982, and employed an average of 27 persons, compared with 11,642 tons, valued at £11,415, and 24 persons for the previous year.

Work was carried out in the Main Heading section after re-opening, but faulted conditions were met within a short distance. The heading met, what appear to be, a large fault and work was suspended. Some pillars were extracted on the East side of the Main Heading, but most of the production was obtained from the West side of that heading.

The Main Return airway collapsed and had to be re-opened. Work is being carried out to provide a more substantial air return as most of the return is showing signs of deterioration.

The blockage of the return airway caused some difficulties in the workings, and also caused trouble to the electric cables owing to dampness. The insulation resistance of the cables has not yet been restored to a sufficiently high standard, and is causing some concern.

*The Merrywood Coal Mine* produced 4,402 tons, valued at £4,394, and employed an average of 6 persons, compared with 3,940 tons, valued at £3,425, and 6 persons for the previous year.

The output was the highest yet recorded from this mine, and the average output per underground employee, was the highest for the State.

Overburden removal was continued and a section of the seam on the Western side of the lease was exposed. A small quantity of the exposed coal was hand-filled. The transport of coal from the mine to the railway at Avoca, a distance of eighteen miles, caused delays.

*Upper Derwent Coalfield.*—The Langloh Coal Mine, at Hamilton, produced 7,545 tons, valued at £12,218 employed an average of 20 persons. The corresponding figures, for the previous year, were 8,166 tons, valued at £9,711, and 26 persons. The output was 621 tons less, but the average number of persons employed was 6 less than the previous year; the average output per person being greater.

Production continued as in the previous year, the output being obtained by means of an arc-wall coal-cutting machine and hand filling methods. The middle band of dirt maintained a thickness of from 2 feet 6 inches to 3 feet.

*Sandfly—Cygnet Coalfield.*—Sandfly Coal Mine produced 750 tons of coal, valued at £1,779, and employed an average of 3 persons, compared with 649 tons, valued at £1,183, and the same number of persons.

The production was obtained by hand mining from the dip-tunnel workings, from a seam which averages about 3 feet 6 inches thick, and the coal is all used for hop drying.

*The Mersey Coalfield.*—The output from this field was 2,031 tons, valued at £3,743, and an average of 7 persons was employed. The corresponding figures for the previous year were 2,645 tons valued at £3,830 and 9 persons. The output was 600 tons less than the previous year, but the output per person employed remained fairly constant.

Only two small mines operated in this coalfield and the average thickness of the coal seam was less than twenty-four inches.

The Illamatha coal mine at Spreyton operated in a faulted area which caused a reduction in output.

Small faults were met with at the Aberdeen mine, at Spreyton, and caused a reduction of production.

*Ore Treatment.*—The Electrolytic Zinc Company treated 173,125 tons of imported and Tasmanian calcines, at the Risdon Works, compared with 141,945 tons treated last year. The 22 per cent increase throughput resulted in an increased production of 17.1 per cent zinc, 19.8 per

cent cadmium and 28 per cent cobalt oxide. The production figures were 81,312 tons zinc, 230 tons cadmium and 15.3 tons cobalt oxide, the corresponding figures for the previous year being 69,421 tons zinc, 190 tons cadmium, and 12 tons cobalt oxide. In addition, more than 40,000 tons of Superphosphate were produced, some of which was 25 per cent grade. There were also substantial increases in the production of Zinc Sulphate, Zinc Dust, Die Casting Alloy, and Sulphuric Acid.

The new Counter Current Gas Scrubbing System commenced operating during October and resulted in more efficient cleaning of exit gases from the works.

The first Flash Roasting Furnace commenced operations towards the end of the year. The plant is of a new type and it was found necessary to carry out some alterations and additions to the designed plant in order to satisfactorily handle the Risdon Ore. Operators were inexperienced in the operation of this type of plant, and conditions were not good during the early period of operation, but these conditions improved as operators gained the necessary working experience.

The New Contact Acid Plant commenced operating in December with satisfactory results.

*Carbide and Limestone.*—The Australian Commonwealth Carbide Company produced 9,202 tons of Calcium Carbide, valued at £240,331, and employed an average of 156 persons at the works. The corresponding figures for the previous year were 5,401 tons of Carbide, valued at £138,554, and 128 persons.

Although production was much higher than the previous year it is still below the capacity of the plant, and only one furnace operated during part of the year, due to shortages of essential materials from the mainland. The employment of displaced persons from Europe eased the labour situation.

The production of Carbon Black continued satisfactorily during the year.

The installation of the new electric furnace is proceeding at a very slow rate owing to a shortage of materials.

*Limestone* was produced from Ida Bay and Granton the total production being 24,651 tons, valued at £26,709, at the quarries. The number of persons employed increased from 37 in the first quarter to 52 during the last quarter of the year. The employment of Baltic Immigrants at Ida Bay was responsible for the increase.

Most of the limestone produced at Ida Bay was delivered to the Carbide Works at Electrona to be used in the production of Calcium Carbide. A total of 18,650 tons of limestone was delivered to Electrona compared with 11,900 tons for the previous year, 4,086 tons were delivered to the Zinc Works at Risdon and about 2,000 tons were used for building and agriculture. Granite production from the quarry at Coles Bay was 159 tons, valued at £1,710. An average of 8 persons was employed. The corresponding figures for the previous year were 209 tons, valued at £1,780, and 8 persons.

*Osmiridium.*—The production of Osmiridium from Adamsfield was 92.17 oz., valued at £2,090, the previous figures were 98.77 oz., valued at £2,700.

*Tin.*—The production of metallic tin from Cox Bight and Coles Bay was 4.036 tons, valued at £2,223, and 4 persons were employed, compared with 1.83 tons, valued at £780, and 2 persons for the previous year.

*Kaolin.*—The production of Kaolin from Surges Bay increased to 1,278 tons, valued at £6,118. Five persons were employed. The previous year's output was 285 tons, valued at £1,282, and 2 persons were employed.

The clay is used by the Associated Pulp and Paper Mills at Burnie.

*Quarries.*—The average number of persons employed at the quarries operating under the Mines and Works Regulation Act was 137 compared with 143 persons for the previous year. Most quarries and brickworks were short of labour necessary to meet the demands for building material and road works.

## APPENDIX VI.

REPORT OF THE MOUNT CAMERON WATER-RACE BOARD FOR THE  
YEAR ENDED 31st DECEMBER, 1948.

SIR,

We have the honour to submit the report of the Mount Cameron Water-race Board for the year ended the 31st December, 1948.

Production of tin-oxide from all activities, serviced by the race, was 30.94 tons, as compared with 29.078 tons for the previous year, representing an increase of 1.862 tons. The output under the fixed scale of payment for water was 11.3348 tons and that under the royalty scale was 19.6053 tons, representing a decrease of 8.6582 tons in the former and an increase of 10.5203 tons in the latter productions.

Revenue was £1,612 7s., as compared with £818 13s. 9d. for last year. Included in the revenue was £21 for the sale of water for township purposes and £2 4s. for the sale of tar.

Expenditure was £1,115 0s. 8d., as against £1,026 14s. 9d. for the previous year, the increase being due mainly to adjustments in the cost of living allowance, race cleaning debited against operational costs, purchase of tools and payment of a car allowance to the manager.

Compared with recurring losses over the previous five years, there was a profit of £497 6s. 4d. on the normal working of the race system.

The marked improvement in revenue was due mainly to a further appreciation in the price of tin and the substantial increase in production from operations supplied with water under the royalty scale of charges. On a unit basis of 100 sluiceway-head-weeks the output was 0.745 ton under the royalty scale and 1.345 tons under the fixed scale but revenue under the former was £63.1 per ton of tin-oxide as compared with £31.0548 per ton of tin-oxide under the latter scale of charges.

There was an additional expenditure of £3,006 18s. 7d. from a special appropriation, in connection with a duplication of the Edina Syphon to provide for a diversion of water to eastern mining areas when advanced deterioration renders the Ringarooma Syphon useless for servicing Gladstone with water for domestic purposes. Duplication of the Edina Syphon and early completion of conditioning of races, flumes and subsidiary syphons will consummate the planned programme of rehabilitating the entire system for servicing mining activities and will provide a long-term elimination of heavy capital expenditures that have been incurred during the past four years.

*Races.*—Race conditioning was continued as circumstances permitted. The main system has been restored and attention is to be directed to sectional troubles, growths of aquatic-weed, and incursions of scrub to complete the planned programme of rehabilitation.

*Syphons.*—No. 3 syphon across the Ringarooma River continued to deteriorate and an early collapse is to be expected. To ensure against loss of water for mining, with a collapse of this syphon, work of duplicating and repairing the Edina Syphon was commenced and early completion should result. The new syphon will be a flexible line of 18 inches diameter concrete pipes with an overall length of 4,120 feet. Other syphons have been maintained in good condition but a development of defects in the No. 7 Amber Creek syphon will necessitate correction in the near future.

*Flumings.*—Necessary maintenance work has been carried out and all flumes are in reasonably good order.

*Dams and Culverts.*—The intake weir, across the Mussel Roe River, which was re-constructed and moulded in concrete, has withstood all river conditions and has satisfied all requirements of stability and diversions of water to the race system. Dams and culverts, generally, are in good order.

*Buildings.*—Attention was given to improving amenities at cottages but material shortages retarded completion of domestic appurtenances.

*General.*—The average rainfall was eight inches less than for the previous year but distribution was more equitable for productive operations. There were no further developments in the use of Hydro-Electric Power for mining purposes.

We have the honour to be

Sir,

Your obedient servants,

W. H. WILLIAMS, Chairman of the Board.

C. G. RYAN, } Members.  
V. C. DAWE, }The Hon. the Minister for Mines,  
Hobart.

## STATEMENT FOR THE YEAR ENDED 31ST DECEMBER, 1948.

*Rainfall.*

The registered rainfall for the year was as follows:—

Great Mussel Roe	31 inches 13 points.
Little Mussel Roe	30 inches 64 points.

*Revenue.*

Revenue from the sale of water for mining and domestic purposes was £1,610 3s., representing an increase of £791 19s. 3d. compared with that of the previous year. Total revenue, from all sources, amounted to £1,612 7s.

*Disbursements.*

Expenditure amounted to £1,115 0s. 8d., representing an increase of £88 5s. 11d. compared with that of the previous year.

*Statistics.*

The statistics for the year are as follows:—

Average number of claims supplied per week	5
Greatest number supplied in any one week	7

Total number of heads supplied:—

Fixed or cash scale	843
Royalty or credit scale	2,630

Tin ore raised:—

	tons.	cwts.	qrs.	lbs.
Under fixed scale	11	6	2	22
Under royalty scale	19	12	—	12
	30	18	3	6

Average number of men employed per week—14.

Statement of Receipts and Payments of the Mount  
Cameron Water Race Suspense Account for the Year  
Ended 31st December, 1948.

Receipts.

	£	s.	d.
Water sold under fixed scale .....	352	0	0
Water sold under royalty scale .....	1237	3	0
Water sold for domestic purposes .....	21	0	0
Sale of tar .....	2	4	0
	<u>£1,612</u>	<u>7</u>	<u>0</u>

Payments.

	£	s.	d.
Salaries and wages .....	962	10	9
Pay-roll tax .....	24	1	3
Repairs to Amber Creek Syphon .....	16	13	5
Cleaning portion Amber Creek branch race	9	4	6
Cleaning race to H. C. Lawry's mine .....	18	0	3
Tools for use on race .....	25	1	11
Gum boots .....	4	8	8
Car allowance .....	23	16	0
Petrol allowance .....	11	2	1
Pipes .....	2	8	0
Cartage .....	1	10	0
Freight .....	0	4	0
Insurance .....	12	9	10
Printing .....	1	15	0
Advertising .....	1	15	0
Total payments .....	<u>£1,115</u>	<u>0</u>	<u>8</u>
Balance—Excess of receipts over payments	497	6	4
	<u>£1,612</u>	<u>7</u>	<u>0</u>