

TASMANIA

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REPORT

OF THE

DIRECTOR OF MINES

FOR

YEAR ENDED 31ST DECEMBER

1947

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

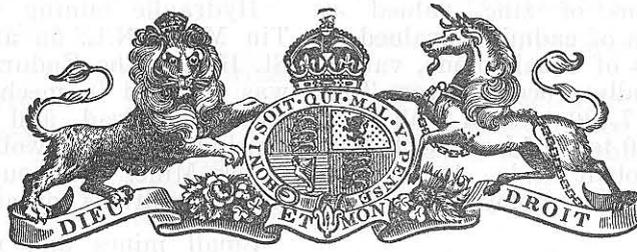


TASMANIA.

1948,

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## REPORT OF THE DIRECTOR OF MINES.

Department of Mines,  
Hobart.

SIR,

I HAVE the honour to present my report on the mining industry of the State for the year ended on the 31st December, 1947.

The total value, based on Australian prices, of the output of minerals and mineral products was £3,260,233, as compared with £2,953,167 for the previous year, representing an increase of £307,066. On the basis of sterling metal prices, the composite gross value of the production was £4,595,685.

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

The number of men employed in mining, quarrying and metallurgical operations was 5316, as compared with 5255 for the previous year. There was a continued shortage of suitable labour for the requirements of development and production at the major mines.

Rising trends in the output of metals characterised the capacity of established mines to respond to improving markets and prices but ore depletions must be balanced by new developments and appropriate policies must be implemented to induce planned exploration of mineral potentialities if industrial prosperity is to be progressively maintained. Research in market trends, studies of mineral potentialities and an apparent necessity for new approaches to the location of ore deposits developed a policy of enabling concessional areas to be acquired for planned programmes of exploration. Large areas are in occupation by private enterprise and substantial expenditures of money are being incurred in geological, geophysical and drilling investigations. This pattern of exploration is producing positive results, the developments in one case portending a rehabilitation of silver-lead mining in an area which has been non-productive since 1941. A phase of instability disappeared in the marketing of tungsten minerals, market prices appreciated and production exceeded that for the previous year. Depletion of established mines and an absence of new discoveries continued to react against tin mining but progressive increments in the price induced greater productive activity and the recorded output of metallic tin increased from 700·886 to 830·176 tons.

Coal mining was again characterised by freedom from major industrial stoppages and the output inclined from 158,751 to 167,140 tons.

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 1,434,358 tons and 196 tons of copper precipitate was recovered from the treatment of mine waters. Surface mining at West Lyell—including the West Lyell, Prince Lyell and Royal Tharsis sections—accounted for 1,342,571 tons of ore. This was 56,580 tons less than the output for the previous year, but the decrease was due mainly to a planned removal of 584,373 tons of overburden in the development of ore-breaking benches. The provision of five new 20-ton trucks for the transport of ore and waste and three heavy-type bulldozers for use on ore benches and the installation of an 84-in. by 60-in. jaw crusher should contribute substantially to an increase in the output of ore from surface mining.

Exploration of the West Lyell ore deposit, by diamond drilling, confirmed the results of previous investigations and indicated the limitations of the ore body. There was no recalculation of ore reserves and the following tabulation represents the published assessment of reserves:—

	Tons.	Copper. %	Silver. oz.	Gold. oz.
West Lyell .. .. .	31,500,000	0·72	0·045	0·008
Royal Tharsis .. ..	1,300,000	1·60	0·08	0·016
Lyell Tharsis .. ..	900,000	1·00	0·15	0·010
Crown Lyell .. .. .	190,000	1·50	0·25	0·015
North Lyell .. .. .	1,000	4·00	0·50	0·015
	<u>33,891,000</u>	<u>0·77</u>	<u>0·05</u>	<u>0·0084</u>

Crude ore submitted to selective flotation returned 32,329 tons of copper concentrate and 55,951 tons of iron-pyrite concentrate. The copper concentrate, together with 1880 tons of high-grade ore and 196 tons of copper precipitate, was smelted for a recovery of 7730 tons of blister copper.

Normal operations at the refinery resulted in the production of 7666·733 tons of cathode copper. The cell residue, containing 27,891·9 oz. of silver and 5401 oz. of gold, was exported for treatment.

Of the iron-pyrite concentrates recovered by the selective flotation of the low-grade ores, 42,329 tons were shipped to the mainland for acid manufacture.

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 52,241 tons of zinc, valued at £1,201,543; 153.8162 tons of cadmium, valued at £68,910; and 11.933 tons of cobalt oxide, valued at £5488. Calcines, actually processed from Tasmanian ores, returned 17,180 tons of slab zinc, 38.3 tons of cadmium, 460 tons of lead, 80,442 oz. silver and 0.18 tons of cobalt oxide. An average number of 1704 men was employed at these works.

The Tasmanian ores resulted from the mining of zinc-lead ore bodies at the Rosebery and Hercules mines on the West Coast where 425 men were employed in mining, milling and calcining operations. The combined quantity of ore mined and milled was 121,588 tons. Selective flotation resulted in the recovery of 38,365 tons of zinc concentrate, 9122 tons of lead concentrate, and 3370 tons of copper concentrate. The recoverable quantity of metallics was fixed at 18,478.13 tons of zinc, 6433.71 tons of lead, 286.31 tons of copper, 34.53 tons of cadmium, 8896.42 oz. of gold, and 744,123.63 oz. of silver. The lead concentrate was exported and the zinc concentrate was calcined at Zeehan and railed to Risdon for processing.

A persisting shortage of suitable labour retarded planned programmes of exploration and development in the mining of lead ores but firm prices, for exported products, resulted in a recovery of the declining output and production was 1420.859 tons greater than the depressed output of 6298.44 tons of metallic lead in 1945.

Operations by the Electrolytic Zinc Company at the Rosebery and Hercules mines accounted for the greater portion of the recorded output of 7719.299 tons of lead. Whereas the Farrell Mining Company, Tullah, had been the sole producer of straight silver-lead ores, for several years, the results of exploration and a return to production at small mines portend a revival in the mining of silver-lead ores at Zeehan.

The Farrell Mining Company mined and milled 9584 tons of ore for a recovery of 1735 tons of silver-lead concentrate containing 1222 tons of lead and 140,585 oz. of silver. Ore locations at No. 8 level have enhanced the productive future of the mine and have provided sufficient merit for sinking the main shaft but scarcity of experienced miners has not enabled this project, designed for the opening-up of deeper levels, to be implemented. Stopping on Nos. 2 to 8 levels provided 8028 tons of ore and the balance of 1556 tons resulted from developmental operations.

Risings in prices for exported silver-lead ores encouraged a return to prospecting and productive operations, by miscellaneous parties, in the Zeehan district.

Metallic tin in the product from lode and alluvial mining was 830.176 tons, as compared with 700.886 for the previous year. There were no new developments but progressive increases in the price of tin induced greater productive activity at the principal mines.

Aberfoyle Tin N.L., operating on a multiple lode series; Renison Associated and Mount Bischoff Mines, mining and milling tin-pyrite ores; Briseis Consolidated, sluicing along the course of a deep lead; and Dorset Tin Dredge, dredging river flats, continued as the principal producers and contributed 588.34 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 on a deep lead, and underground mining was continued on the wolfram-tin lodes at Storey's Creek Mine. The output of concentrates from these operations contained 157.977 of metallic tin.

Small mines and miscellaneous parties continued to be engaged on alluvial lode and granite occurrences throughout the State but these activities were of less magnitude and the production receded to 83.954 tons of metallic tin.

The modern bucket-dredge, installed by Commonwealth Minerals Production Directorate, was in continuous operation at Dorset Flats and treated 1,680,000 cubic yards of alluvial ground for a recovery of 109.392 tons of concentrate, containing 79.998 tons of metallic tin and 304.705 oz. of gold.

Operations by Briseis Consolidated, on the Cascade lead, were on a modified scale, following the collapse of the basalt overburden. Sluicing was confined to relatively shallow drifts and 104 tons of tin-oxide, containing 74.88 tons of metallic tin, was recovered from the treatment of 248,000 cubic yards of ground.

Mechanically-controlled sluicing was continued by the Endurance Tin Mining Company on a unit of the ancient deep-lead system at South Mount Cameron and the recovery was 138.352 tons of concentrate, containing 102.68 tons of metallic tin from the treatment of 492.725 cubic yards of drifts.

Progressive approaches continue to be made by Aberfoyle Tin N.L. to the exploration, development and mining of the multiple lode series and to milling improvements to provide appreciated recoveries and an increase in the through-put of ore. Production amounted to 474 tons of tin concentrate, containing 341.38 tons of metallic tin, and 72.93 tons of wolfram, and resulted from the mining and milling of 30,643 tons of ore.

On the basis of a Commonwealth-State project, operations were continued at the Mount Bischoff Tin Mine to determine if, under reconstructed mining and milling practices, reserves of low-grade ore could be economically exploited so as to prolong the productive life of the mine. New milling units were installed to replace gravity concentration and calcination with sulphide-flotation and gravity concentration. Innovations in milling practices resulted in a stepping-up of the effective recovery of tin-oxide but average grades of mined ore were much less than grades calculated from a boring and sampling campaign and were not sufficient to provide an economic balance at the current price of tin. The project was abandoned in consequence. The recorded quantity of ore mined and milled was 21,788 tons for a recovery of 53.385 tons of tin-oxide, containing 31.547 tons of metallic tin.

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 was mainly from open-cutting on the Battery Lode. A total of 13,409 tons of ore was mined and milled for a recovery of 87.395 tons of concentrate containing 60.442 tons of metallic tin.

Improved conditions in the marketing of tungsten minerals resulted in increased productive activity and the combined output of wolfram and scheelite concentrate advanced to 831,967 tons, as compared with 784,373 tons for the previous year. Developments throughout the State have continued to establish a tungsten potential sufficient to meet market requirements in excess of those available.

Progressive quarrying and milling of scheelite ore was continued by King Island Scheelite Limited on King Island. The recorded throughput of ore was 139,883 tons and resulted in a recovery of 630.92 tons of scheelite concentrate. Development of ore benches involved the stripping and dumping of 113,441 tons of waste ground. Ore reserves were recalculated and appreciated to 3,091,028 tons.

Storey's Creek Mine was the major producer of wolfram, 126 tons of concentrate being recovered from the mining and milling of 8695 tons of ore. A development in the southern extension of the lode series added substantially to ore reserves and materially enhanced the productive capacity of the mine. This development of ore extends from No. 5 level, the lowest working level, to the Adit level last in operation more than 60 years ago. There was no improvement in the availability of suitable labour and it was not possible to advance the planned programme of reconstruction.

In addition to the 72.93 tons of wolfram concentrate resulting from operations by Aberfoyle Tin N.L., small producers in the Moina and Mount Pelion districts contributed to the total output of 201 tons of wolfram.

There was a slight decrease in the production of gold, the recorded output of 15,051 oz. accruing 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 working of gold-bearing stanniferous alluvials and from minor activities on auriferous alluvials.

The average market price of osmiridium was £A35 per oz. but there was no material increase in production. The recorded output of 98.766 oz. resulted from operations by miscellaneous parties at Adamsfield.

The Australian Commonwealth Carbide Company at Electrona, the Goliath Portland Cement Company at Railton, and the Broken Hill Proprietary Company Limited at the Melrose Quarries continued as the main producers of calcium carbide, cement and limestone. The total output of combined products was 121,406.5 tons valued at £360,845. There was an increase of 235 tons in the production of calcium carbide and a reduction of 11,368 tons in the output of limestone due to a tapering off and cessation of operations by the Broken Hill Company. Production of cement was 5240 tons more than for the previous year.

The resources of kaolin, limestone, ochre, silica and other members of the group of non-metallic minerals continued to satisfy industrial and agricultural requirements.

There was increased activity in the quarrying and marketing of red granite for building and monumental purposes.

Production and consumption of Tasmanian coal continued to increase, the recorded output being 167,140 tons. Rising trends in the demand for local coals for established and new industries portend increased future activity in coal mining.

The Cornwall Coal Company was the major producer and operations at three collieries resulted in a total output of 112,360 tons. Pillar extraction, bord and pillar work and developmental operations resulted in an output of 83,329 tons at the Cornwall Colliery, whilst 25,640 tons accrued from mechanised and other coal-winning at the Mount Nicholas Coal Mine. Small-scale mining was pursued at the Duncan Colliery, Fingal, the output being 3391 tons.

Faulted seam conditions and operating troubles retarded production at the Jubilee Coal Mine and the output declined to 16,911 tons. A programme of development was implemented in the main heading and it is expected that increased production will result.

The Stanhope Colliery was worked under more settled seam conditions and the output of coal increased to 11,642 tons.

A shortage of suitable labour continued to hamper operations at the Langloh Coal Mine, Hamilton, and production declined to 8166 tons.

Innovations were made at the Fingal Colliery and the output of coal was progressively advanced to 6852 tons.

The balance of the output of coal accrued from operations at small collieries in the eastern, southern and north-western districts but there were no new developments in connection therewith.

Developmental and productive operations are reviewed by district inspectors in the appended reports.

#### *Aluminium.*

The Commonwealth-State project for the production of ingot aluminium rested with a Commission set up to control the industry. Activities were mainly directed to investigating bauxite resources of the Commonwealth, to arranging plant design and to selecting a suitable plant site on the eastern side of the Tamar River following the decision to vacate the area selected on the western side of the river. Material progress was made in matters affecting the future establishment of the industry.

## QUANTITY AND VALUE OF MINERALS.

STATISTICS RELATING TO THE MINING INDUSTRY FOR THE YEAR ENDING 31ST DECEMBER, 1947.

Mineral.	MINERAL DIVISIONS.					Total Quantity.	VALUE.	
	Northern and Southern.	Eastern.	North-Eastern.	North-Western.	Western.		Sterling.	Australian Prices.
Bismuth .... (tons)	.....	.....	.....	.....	.....399	.....399	£ 305	£ 374
Copper .... (tons)	.....	1,267	.....	.....	7,953,043	7,954,31	1,057,825	1,004,529
Coal .... (tons)	9,156	155,339	.....	2,645	.....	167,140	.....	154,725
Cadmium .... (tons)	.....	.....	.....	.....	34.53	34.53	.....	15,470
Cobalt Oxide .... (tons)	.....	.....	.....	.....	.18	.18	.....	83
Carbide, Cement, and Lime-stone .... (tons)	13,215.5	.....	.....	103,343	4,848	121,406.5	.....	360,845
Gold .... (fine oz.)	55,720	373,734	322,881	.....	14,298.85	15,051,185	129,619	161,978
Granite (Red) .... (tons)	.....	209	.....	.....	.....	209	.....	2,211
Kaolin .... (tons)	326	.....	2,750	.....	.....	3,076	.....	8,800
Lead .... (tons)	.....	.....	.....	.....	7,719,299	7,719,299	660,861	173,654
Osmiridium .... (oz.)	98,766	.....	.....	.....	.....	98,766	2,700	3,379
Ochre .... (tons)	.....	.....	.....	395	.....	395	.....	405
Pyrites .... (tons)	.....	.....	.....	.....	42,329	42,329	.....	59,260
Scheelite .... (tons)	.....	.....	.....	630.92	.....	630.92	240,006	193,528
Silica .... (tons)	.....	.....	.....	.....	5,047	5,047	.....	1,646
Silver .... (fine oz.)	.....	.....	.....	.....	918,791,094	918,791,094	169,068	239,821
Tin .... (tons)	1,876	415,943	317,664	33,114	61,579	830,176	353,045	380,409
Wolfram .... (tons)	.....	199,430	.....	1,617	.....	201,047	82,928	78,034
Zinc .... (tons)	.....	.....	.....	.....	18,512,663	18,512,663	1,295,883	421,082
Total Value ....	.....	.....	.....	.....	.....	.....	£4,595,685	
Total Value Australian Currency ....	.....	.....	.....	.....	.....	.....	£A3,260,233	
Average Number of Men Employed ....	2,083	535	219	441	2,038	5,316		

The Electrolytic Zinc Company of Australasia Limited, recovered 52,241 tons of zinc, valued at £A1,201,543; 153,8162 tons of cadmium, valued at £A68,910; and 11,933 tons of cobalt oxide, valued at £A5488, from other than Tasmanian ores; and employed an average of 1704 men at Risdon.

## ASBESTOS.

RETURN showing the Quantity and Value of Asbestos produced from 1899 to 1947 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
1946-1947.....	—	—
Total.....	3979·85	£17,142

## BARYTES.

RETURN showing the Quantity and Value of Barytes produced to 31st December, 1947.

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.....	—	—
Total.....	2196·2	£8138

## BISMUTH.

RETURN showing the Quantity and Value of Bismuth produced from 1904 to 1947 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
Total.....	83·554	£28,338

## COAL.

RETURN showing the Quantity and Value of Coal raised to 31st December, 1947.

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
Total.....	5,032,724	£3,965,599

**COPPER.**

The production for the year was 7954·31 tons, valued at £1,057,825.

*RETURN showing the Quantity and Value of Copper in Blister Copper, Copper Ore, and Zinc Lead Ore during the Years 1919 to 1947 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	435,262	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
Total.....	2183·41	158,804	262,025·475	15,916,348	404·094	9491	264,612·979	16,084,643

*The Mount Lyell Mining and Railway Company Limited.  
Return for the Calendar Year 1947.*

Ore and metal-bearing material smelted:—	Tons (Dry).
Ore:—From the Company's North Lyell Mine	1,880
Concentrates:—From the Company's North Lyell Mine, Lyell Comstock Mine, Crown Lyell Mine, and West Lyell Mines ore	32,329
Purchased ore	13
Precipitate	196
<b>Total</b>	<b>34,418</b>

Source of Material.	Tons (Dry).
Limestone delivered at works (tons)	4,848
Silica delivered at works	5,047
Pyritic concentrate shipped from Regatta Point (tons), approximate value £A59,261	42,329
Blister copper produced, 7730 tons, containing:	
Copper (tons) 7,668	Approximate value £A1,001,054
Silver (oz.) 28,291	
Gold (oz.) 5,401	
Average number of men employed—	
Mining Department—At the Company's	
North Lyell Mine	3
Ditto, Lyell Comstock Mine	2
Ditto, Crown Lyell Mine	—
Ditto, Royal Tharsis Mine	101
Ditto, West Lyell Mines	430
Miscellaneous	197
	<b>733</b>
Reduction Works Department (including Lake Margaret)	632
Railway Department—Mount Lyell Railway	95
<b>Total</b>	<b>1,460</b>

Copper produced from the inception of the Company to the 31st December, 1947, 420,618 tons.  
Silver produced from the inception of the Company to the 31st December, 1947, 15,453,463 oz. (fine).  
Gold produced from the inception of the Company to the 31st December, 1947, 504,835 oz. (fine).  
Dividends paid during the year, 77,500.  
Dividends paid from the inception of the Company to the 31st December, 1947, £6,743,444.

**CADMIUM.**

The quantity recovered was 34·53 tons, valued at £15,470, compared with 33·74 tons valued at £15,116 for 1946.

*RETURN showing the Quantity and Value of Cadmium recovered for the Years 1936 to 1947.*

Year.	Quantity.	Value.
1924-1936	Tons. 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
<b>Total</b>	<b>572·4357</b>	<b>£222,209</b>

**CEMENT, CARBIDE, AND LIMESTONE.**

The combined value of output from these three industries amounted to £360,845, as compared with £342,163 for 1946.

**GOLD.**

The quantity won was 15,051·185 oz. fine, valued at £129,619, as compared with 15,361·987 oz. valued at £132,296 for 1946.

RETURN showing the Quantity and Value of Gold won to 31st December, 1947.

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 .....	44,777·866	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	139,986
1945 .....	13,049·804	111,452
1946 .....	15,361·987	132,296
1947 .....	15,051·185	129,619
Total .....	2,292,728·677	10,105,504

**GRANITE (RED).**

RETURN showing the Quantity and Value of Red Granite produced during the Years 1935 to 1947 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
Total.....	3070·5	21,189

**IRON PYRITES.**

RETURN showing the Quantity and Value of Iron Pyrites produced during the Years 1915 to 1947 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
Total.....	581,837·973	£718,791

**KAOLIN.**

RETURN showing the Quantity and Value of Kaolin produced during the Years 1940 to 1947 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
Total.....	24,036·25	43,214

**LIMESTONE.**

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

Year.	Quantity.	Value.
	Tons.	£
1919-1922 inclusive .....	200,154	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 7719·299 tons, valued at £660,861, as compared with 6890·58 tons, valued at £340,509 for 1946.

*RETURN showing the Quantity and Value of Lead included in Silver Lead during the Years 1919 to 1947 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
Total.....	175,235·764	£4,734,977

**NICKEL.**

*RETURN showing the Quantity and Value of Nickel produced from 1927 to 1947 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
1939-47.....	—	—
Total.....	222·55	£38,850

**OCHRE.**

*RETURN showing the Quantity and Value of Ochre produced during the Years 1918 to 1947 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.....	174·5	233
1945.....	766	191
1946.....	255	437
1947.....	395	405
Total.....	1367	£3384

**OSMIRIDIUM.**

The quantity of metal won during the year was 98·766 oz., valued at £2700, as compared with 94·522 oz., valued at £2581 for 1946.

*RETURN showing the Quantity and Value of Osmiridium produced during the Years 1910 to 1947 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
Total.....	30,592·704	£662,136

**SHALE.**

RETURN showing the Quantity and Value of Shale produced during the Years 1910 to 1947 inclusive.

Year.	Quantity.		Value.
	Tons.	£	
1910.....	364	214	
1911.....	500	250	
1912.....	—	—	
1913.....	130	130	
1914.....	75	75	
1915.....	—	—	
1916.....	1286	1286	
1917.....	—	—	
1918.....	—	—	
1919.....	600	900	
1920.....	140	172	
1921.....	868	1506	
1922.....	40	100	
1923.....	1101	1094	
1924.....	1576	1526	
1925.....	820	559	
1926.....	2127	1475	
1927.....	3150	2050	
1928.....	9052	7754	
1929.....	4299	2982	
1930.....	5428	4356	
1931.....	1402	600	
1932.....	1907	1074	
1933.....	3401	1483	
1934.....	3276	1630	
1935.....	30	15	
1936-1947 .....	—	—	
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
1935-47 .....	Tasmanite Shale Oil Company Ltd.....	—
	Total .....	357,115

**SCHEELITE.**

RETURN showing the Quantity and Value of Scheelite produced during the Years 1917 to 1947 inclusive.

Year.	Quantity.		Value.
	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	
Total.....	3545·691	£958,248	

**SILVER.**

The output was 918,791·094 oz. (fine), valued at £169,068, as compared with 896,292·76 oz., valued at £187,428 for 1946.

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 1947 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	...	...	...	...	...	...	525,349·27	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	81,996	816,157·38	102,101
1946	134,450·5	*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
Total	15,496,184·11	1,803,768	3,069,915·9	408,516	232	25	44	4	4,799,786·17	651,866	23,366,162·18	2,864,179

**TALC.**

RETURN showing Quantity and Value of Talc produced during the Years 1928 to 1947 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.....	—	—
Total.....	311·35	1055

**TIN.**

The output was 830·176 tons, valued at £353,045, as compared with 700·886 tons, valued at £240,548 for 1946.

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 1947 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.....	1800·899	259,300
1915.....	1819·463	292,306
1916.....	1998·245	350,852
1917.....	1846·135	427,917
1918.....	1579·342	488,798
1919.....	1580·23	395,794
1920.....	1310·411	369,362
1921.....	790·395	130,257
1922.....	679·440	112,407
1923.....	1160·390	236,955
1924.....	1108·450	275,014
1925.....	1129·662	297,515
1926.....	1096·16	322,526
1927.....	1105·74	317,593
1928.....	1140·14	258,676
1929.....	640·36	130,014
1930.....	511·77	69,592
1931.....	588·83	70,634
1932.....	793·92	109,767
1933.....	957	190,041
1934.....	952·49	219,246
1935.....	1131	258,919
1936.....	1004·06	206,656
1937.....	1089·839	260,673
1938.....	1278·617	244,037
1939.....	1249·877	282,798
1940.....	1430·198	367,127
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
Total.....	134,374·753	£21,360,856

**WOLFRAM.**

RETURN showing the Quantity and Value of Wolfram produced during the Years 1899 to 1947 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
Total.....	5514·076	£1,036,779

**ZINC.**

RETURN showing the Quantity and Value of Zinc produced during the Years 1919 to 1947 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
Total.....	291,755·483	£8,117,634

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

## ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED.

## RETURN FOR THE YEAR 1947.

EXTRACTIONS FROM ORES AND CONCENTRATES:  
RISDON.

<i>From other than Tasmanian Ores—</i>	
Zinc .....	52,241 tons
Cadmium .....	152,816 tons
Cobalt oxide .....	11,933 tons

<i>From Tasmanian Ores—</i>	
Zinc .....	17,180 tons
Cadmium .....	38.3 tons
Cobalt oxide .....	.18 tons
Lead .....	460 tons
Silver .....	80,442 tons

*Men Employed—*  
The average number of men employed was 1704.

## WEST COAST DIVISION.

<i>Ore Mined—</i>	
From Hercules Mine .....	40,034 Tons.
From Rosebery Mine .....	81,554
Total .....	121,588

*Concentrates Produced—*

	Tons.
Zinc concentrates .....	38,365
Lead concentrates .....	9,122
Copper concentrates .....	3,370
	50,857

*Recoverable Quantity in Ores Mined—*

Zinc .....	18,478.13 tons
Lead .....	6,433.71 tons
Copper .....	286.31 tons
Cadmium .....	34.53 tons
Silver .....	744,123.63 oz.
Gold .....	8,896.42 oz. f.

*Average Number of Men Employed—*

Hercules Mine .....	57
Rosebery Mine .....	338
Zeehan Smelters .....	30
Total .....	425

## QUANTITY AND VALUE OF METALS AND MINERALS RAISED.

*RETURN showing Quantity and Value of Metals and Minerals Raised in Tasmania as at 31st December, 1947.*

Mineral or Metal.	Quantity.	Value.
		£
Asbestos .....	3,979.85	17,142
Barytes .....	2,196.2	8,138
Bismuth .....	83.554	28,338
Cadmium .....	572.4357	222,209
Carbide, Cement, and Limestone .....	2,852,388.1	4,468,204
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 .....	5,032,724	3,965,599
Cobalt Oxide .....	5.51	2,530
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) .....	264,612.979	16,084,643
Dolomite .....	10	25
Gold .....	2,292,718.677	10,105,504
Granite (Red) .....	3,070.5	21,189
Graphite .....	17	26
Ilmenite .....	550	1,256
Iron Ore .....	46,181.5	31,776
Iron Pyrites .....	581,837.973	718,791
Kaolin .....	24,036.25	43,214
Lead (from 1919) .....	175,235.764	4,734,977
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 .....	1,367	3,384
Osmiridium .....	30,592.704	662,136
Rutile .....	.5	18
Scheelite .....	3,545.691	958,248
Silica .....	80,974	37,244
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) .....	23,366,162.184	2,864,179
Talc .....	311.35	1,055
Tin .....	134,374.753	21,360,856
Wolfram .....	5,514.076	1,036,779
Zinc .....	291,755.143	8,117,634
Total .....	....	£101,150,988

## STATISTICS OF PRODUCTION.

RETURN showing the Annual Published Value of Mineral Products for the State of Tasmania from 1880 to 1947 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	Value of pro- duction 1867- 1945, pre- viously un- recorded .....	2,067,650
1913 .....	1,415,700		
1914 .....	1,007,038		
1915 .....	1,225,575		
		Total.....	£101,150,988

## 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 .....	...
Gold .....	...
Tin .....	46,430 0 0
Silver .....	...
Coal.....	3112 10 0
Scheelite.....	...
Zinc .....	* 525,000 0 0
Total .....	£574,542 10 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, 1947.

Number of Companies.	Capital.
One	£25,000

In addition to the above, 4 agents for foreign companies under the Mining Companies (Foreign) Act, 1884, were registered. No syndicates under Part V. of the Mining Companies Act, 1884, were registered.

RETURN showing the Total Number of Leases and Licences in Force on 31st December, 1947.

Mineral.	Number.	Number of Sluiceways.	Area
			Acres.
Asbestos .....	...	...	...
Barytes .....	1	...	10
Bismuth .....	...	...	...
Coal.....	29	...	5386
Clay .....	6	...	185
Copper .....	1	...	33
Galena .....	1	...	64
Gravel .....	1	...	31
Granite .....	4	...	30
Gold .....	53	...	952½
Iron.....	5	...	298
Limestone .....	6	...	493
Lead-Zinc .....	4	...	320
Molybdenum .....	...	...	...
Minerals .....	35	...	5242
Marble .....	...	...	...
Nickel .....	5	...	249
Osmiridium .....	1	...	10
Ochre .....	2	...	24
Pyrites .....	1	...	80
Quartzite .....	...	...	...
Scheelite .....	3	...	281
Shale .....	3	...	117
Silica .....	2	...	25
Silver Lead .....	18	...	616
Stone .....	11	...	921
Sand .....	2	...	15
Serpentine, &c. ....	3	...	240
Tin .....	273	...	7228
Wolfram.....	1	...	20
Mining Easements and Machinery Sites.....	85	...	830½
Licences to Search.....	...	...	...
Water Licences.....	256	1221	1999¼
Total.....	812	1221	25,700¼

RETURN showing the Total Amount of Rents, Fees, &c., received by the Mines Department during the Year ending 31st December, 1947.

Head of Revenue.	Amount.
	£ s. d.
Rent of Auriferous and Mineral Lands.....	6340 6 3
Fees, Auriferous and Mineral Lands .....	534 15 4
Survey Fees .....	1801 18 3
Fees under the Explosives and Inflammable Liquids Act .....	2694 11 2
Total .....	£11,371 11 0

RETURN showing the Total Area of Land and Number of Sluiceways of Water Applied for during the Year ending 31st December, 1947.

Mineral.	Number.	Area.	Sluiceways.
		Acres.	
Asbestos .....	...	...	...
Bismuth .....	...	...	...
Barytes .....	...	...	...
Clay .....	5	160	...
Coal .....	...	...	...
Dolomite .....	1	10	...
Gold .....	16	272	...
Galena .....	35	2720	...
Iron .....	...	...	...
Lead—Zinc, Silver .....	6	440	...
Lead—Antimony .....	2	120	...
Manganese .....	...	...	...
Minerals .....	9	768	...
Silver Lead .....	10	260	...
Silica .....	1	10	...
Stone .....	2	10	...
Sand .....	1	1	...
Talc .....	...	...	...
Tin .....	49	814½	...
Zinc .....	...	...	...
Machinery Sites and Mining Easements ...	1	2	...
Water-rights and Dam Sites .....	18	11	41
Licences to search for Coal .....	...	...	...
<b>Total.....</b>	<b>156</b>	<b>5598½</b>	<b>41</b>

RETURN showing Total Number and Area of Leases and Licences Issued during the Year ending 31st December, 1947.

Mineral.	Leases.	Area.	Sluiceways.
		Acres.	
Asbestos .....	...	...	...
Barytes .....	...	...	...
Clay .....	3	60	...
Copper .....	...	...	...
Copper-Nickel .....	...	...	...
Coal .....	...	...	...
Galena .....	1	64	...
Gold .....	4	72	...
Lead Zinc .....	3	240	...
Limestone .....	1	20	...
Minerals .....	1	247	...
Manganese .....	...	...	...
Nickel, &c. ....	5	249	...
Ochre .....	...	...	...
Quartzite .....	...	...	...
Silver .....	...	...	...
Silica .....	1	15	...
Silver-Lead .....	7	239	...
Stone .....	4	520	...
Tin .....	21	907	...
Wolfram .....	...	...	...
Water-rights and Dam Sites .....	14	18	49
Licences to Search for Coal and Oil .....	...	...	...
Mining Easements and Machinery Sites .....	7	91	...
<b>Total.....</b>	<b>72</b>	<b>2742</b>	<b>49</b>

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 1947 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.....	20,208	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

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, 1932 to 1947 inclusive.

Nature of Lease.	In force on 31st Dec., 1933.		In force on 31st Dec., 1934.		In force on 31st Dec., 1935.		In force on 31st Dec., 1936.		In force on 31st Dec., 1937.		In force on 31st Dec., 1938.		In force on 31st Dec., 1939.		In force on 31st Dec., 1940.		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.	
	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.
		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.
For Minerals, Silver, Tin, &c.	326	16,734	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
For Coal, Stone, Shale, &c.	39	7495	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
For Gold Mining	128	3879	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
Easements	79	475	94	578	107	629	112	534	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
Machinery Sites	17	119			2	3670	2	4200	5	10,900	6	10,600	2	1180	2	1180	—	—	—	—	—	—	1	900	2	1800	—	—	—	—
Licences to search for Coal or Oil	2	790	2	3670	2	4200	5	10,900	6	10,600	2	1180	2	1180	—	—	—	—	—	—	1	900	2	1800	—	—	—	—	—	—
Water-rights, Mineral and Gold	400	1905 & 1650 sluice-heads	403	2015 & 1760 sluice-heads	447	2092 & 1835 sluice-heads	466	1963 & 2034 sluice-heads	467	2243 & 2049 sluice-heads	448	1834 & 2191 sluice-heads	388	2172.75 & 1574 sluice-heads	395	2183 & 1478 sluice-heads	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 & 1181 sluice-heads	256	1999.1 & 1221 sluice-heads

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

	Average for 1934.	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.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
Copper—Standard, spot: per ton .....	30 6 4	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	62 0 0	75 10 0	131 0 0
Lead—Soft Foreign: per ton .....	11 1 0	14 5 8	16 7 9	Electrolytic. 23 6 1	Electrolytic. 15 6 5	Electrolytic. 15 13 7	Electrolytic. 25 0 0	Electrolytic. 25 0 0	Electrolytic. 25 0 0	Electrolytic. 25 0 0	Electrolytic. 25 0 0	Electrolytic. 25 0 0	Electrolytic. 25 0 0	Electrolytic. 48 17 6	85 7 6
Spelter: per ton .....	13 15 6	14 0 0	14 6 11	22 6 8	14 1 7	14 14 0	25 15 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
Tin—Standard, spot: per ton .....	230 7 5	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	259 10 0	289 17 6	300 0 0	342 15 0	422 17 6
Silver—Standard, spot: per oz. ....	s. d. 1 9·208	s. d. 1 9·951	s. d. 1 9·647	s. d. 1 9·65	s. d. 1 9·066	s. d. 1 8·461	s. d. 2 1·048	s. d. 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	
Osmiridium per oz. ...	£ s. d. 9 11 2	£ 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. 24 10 6	£ s. d. 27 17 7	£ s. d. 27 18 0
Wolfram: per ton .....	94 0 0	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	
				W.O. <sub>3</sub>	W.O. <sub>3</sub>	W.O. <sub>3</sub>	W.O. <sub>3</sub>	W.O. <sub>3</sub>	W.O. <sub>3</sub>	W.O. <sub>3</sub>	W.O. <sub>3</sub>	W.O. <sub>3</sub>	W.O. <sub>3</sub>	W.O. <sub>3</sub>	W.O. <sub>3</sub>
Gold: per f. oz. ....	6 17 8	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 8 0	8 10 10	8 12 3	8 12 3



## 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, 1947.

RECEIPTS.			PAYMENTS.		
	£	s. d.		£	s. d.
Balance brought forward, 31st December, 1946	2,000	0 0	Advances		
Repayments			Excess receipts over payments	2,000	0 0
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	300	4 9	387	14 9		
1936	10,462	3 7	2,807	12 10	13,269	16 5	1,286	12 5	1,078	5 11		
1937	3,902	17 7	1,983	9 6	5,886	7 1	1,244	15 5	2,246	13 9		
1938	3,337	2 7	1,937	1 0	5,274	3 7	3,796	4 7	422	15 3		
1939	658	13 10	2,721	11 1	3,380	4 11	716	19 2	390	4 0		
1940	866	3 5	4,188	5 4	4,984	8 9	599	6 2	944	3 9		
1941	2	17 3	1,019	15 3	1,022	12 6	240	7 11	684	3 8		
1942			1,433	3 3	1,433	3 3	357	7 10	262	11 4		
1943			634	12 6	634	12 6	1,091	5 8	1,486	1 0		
1944			813	9 7	813	9 7	233	3 2	653	16 0		
1945	14	7 1	2,687	9 8	2,701	16 9	1,368	10 5	3,176	11 2		
1946			408	9 4	408	9 4	201	17 0	1,810	0 9		
1947			478	15 4	478	15 4	137	2 5	520	14 4		
Totals	£27,642	16 8	£23,342	9 4	£50,985	6 0	£11,573	16 11	£13,763	10 11	£25,337	7 10

## DRILLING.

Departmental drilling plants were in constant operation, partly on hire to the holders of mining tenements and partly in drilling areas reserved against occupation under the provisions of the Mining Act. Expenditure on all fields was £2229 0s. 11d., of which £1469 0s. 3d. was repaid under drilling agreements.

A small air-operated diamond-drilling plant continued to be engaged in testing deposits of limestone at Ida Bay.

A second diamond-drilling unit was usefully employed in exploring a silver-lead series at Tullah.

A new light-weight diamond-drilling plant was purchased and commissioned in testing deposits of tin-pyrite ore at Renison Bell.

A percussion unit was engaged in boring for underground water for farming requirements. In order to provide a more efficient and lower cost service in the search for supplies of underground water a modern percussion plant was purchased and placed in commission with beneficial results.

## DETAILS OF EXPENDITURE ON DRILLING DURING THE YEAR ENDED 31st DECEMBER, 1947.

Plant.	Location.	Amount.
		£ s. d.
Junior Straightline Diamond Drill	Tullah	681 18 0
Mitchell Diamond Drill	Ida Bay	213 3 3
Goldfields No. 10 Diamond Drill	Renison Bell	476 16 10
Surge Drill	Smithton	681 8 0
G33 Percussion Drill	Smithton	175 14 10
		£2,229 0 11

**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 continued to be experienced in the delivery of laboratory units and have been a retarding factor in providing the planned assemblage of equipment for metallurgical research, but installed units and facilities again demonstrated the high value of service rendered in a solution of problems affecting the metallurgy of complex ores.

**STAFF.**

Mr. Peter Davies resigned from the position of Laboratory Assistant as from the 12th February, 1947.

Mr. Q. J. Henderson resigned from the position of Geologist as from the 21st April, 1947.

Mr. I. E. Corby was promoted to the position of Chief Clerk and Accountant as from the 22nd May, 1947.

Mr. E. G. Butler was appointed Warden of Mines for the North and North-Eastern Mining Districts as from the 1st June, 1947.

Mr. P. W. Edwards was appointed to a position as Field Assistant as from the 8th July, 1947.

Mr. K. Kendall was appointed to a position as Junior Mapping and Engineering Draughtsman as from the 19th June, 1947.

Messrs. P. Farquhar and P. L. James were appointed to positions of Laboratory Assistants as from the 26th June, 1947.

Mr. C. A. Shirley was appointed to a position of Junior Clerk as from the 24th July, 1947.

Mr. H. G. W. Keid, M.Sc., was promoted to the position of Chief Geologist as from the 31st July, 1947.

Mr. F. Blake was transferred from the position as Geologist to the position of Mapping and Engineering Draughtsman as from the 2nd October, 1947.

Mr. T. D. Hughes, B.Sc., was promoted to the position of Geologist as from the 6th of November, 1947.

Mr. D. R. Dickinson, B.Sc., was appointed to the position of Technical and Administrative Assistant as from the 1st December, 1947.

**MINES DRAFTING BRANCH.**

The number of working plans in use and which are kept up to date is 225.

Instructions issued to surveyors .....	131
Diagrams received from surveyors ....	48
Diagrams drawn on leases .....	126
Consolidated and other diagrams drawn .....	36
Lithographs entered to date .....	90
Various tracings prepared .....	60
Tracings for Launceston office .....	72
Manuscripts entered to date .....	14
Launceston working plans examined and brought up to date .....	Nil
Underground surveys examined .....	12

**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.

## APPENDIX I.

## REPORT OF THE CHIEF GEOLOGIST.

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

*Staff.*

The geological staff comprised the Chief Geologist, H. G. W. Keid, M.Sc., and Geologists Q. J. Henderson, jun., F. Blake, A.I.M.M., and T. D. Hughes, B.Sc.

Mr. Henderson, who was on long-service leave at the end of 1946, returned to duty on 4th April, and resigned from the service on 21st April.

*Field Investigations.*

The following investigations were carried out during the year:—

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

Assisted by Mr. Hughes and a party of workmen, nine days were spent in January on behalf of the Public Works Department in testing a sand deposit at Randall's Bay. The hand-boring plant of the Mines Department was used and the deposit was tested for quantity and quality.

In February an investigation was commenced into the monozite resources of the State. Most of the known occurrences of monozite were visited and areas were selected for testing by hand-boring. After re-opening 16 miles of the old Parsons Hood track, from the Waratah-Whyte River road, boring was commenced in November to test the alluvial flats on the Yellow Band River. This work was incomplete at the end of the year but the little done had proved reasonable reserves. In April the Smithton district was visited to inspect and sample some peat and coal deposits. These deposits proved to be of an inferior grade.

Some time was spent in June in sampling the Sunrise Mine on Narraua Creek in the Moina district. Under several names this mine had previously been examined and sampled. The present examination confirmed previous conclusions as to grade and quality of ore available.

To determine the tin potentialities of that portion of Gladstone tin field lying to the west and north-west of the township, an examination of the area was made in July. The examination showed the necessity for boring to estimate quantities available.

The Mount Bischoff Mine was sampled in August. The sampling was in progress when the mine was closed down.

Geologist F. Blake, A.I.M.M.:

In February Mr. Blake examined the limestone deposits of the Surprise River Valley. The analyses of samples proved the limestone to be low in grade.

In March, accompanied by Geologist T. D. Hughes, B.Sc., an examination of the Dan Rivulet goldfield was commenced. Mr. Blake returned to Hobart on April 3rd, and, except for two days later in the month, has not since been connected with the Field Staff. He was appointed Mapping and Engineering Draughtsman in October.

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

Mr. Hughes was occupied chiefly in the examination of the Dan Rivulet goldfield. From 6th March to 3rd April Mr. Hughes was associated with Mr. Blake in this investigation, but from April to July was in sole charge of the work. A comprehensive report accompanied by plans was presented from which the following conclusions are quoted:—

"Because of their mode of origin, and from the field evidence described, it can be seen that the auriferous reefs of this field can not be expected to persist for any great distance, either horizontally or vertically. On the other hand, the expectation of rich ore shoots and parallel reefs is quite favourable. The history of the field has shown that the whole approach to mining has been unfortunate. That is, with a reef system such as this, it is vitally necessary that development should be kept ahead of mining, cross-cutting should be frequent, and exploration at depth should be vigorously prosecuted. The work done has shown that favourable prospects exist in several localities such as the Strickland, Harelock, O'Brien, Carnegie, and Hinemoa. Of these, the most interesting is the line of reef on the Starlight and Carnegie sections and the possible intersection of these with the O'Brien Company's reef system. A boring campaign in this area should prove beneficial and of the Carnegie reefs junction . . . then valuable ore shoots may be expected at these intersections.

So much attention has been focused on the reef formations in this field that the possibility of working the alluvial flats for gold seems to have been overlooked. A glance at the general map will show the immense area of alluvial ground . . . The depth of this is not known and . . . It would not be wise to suggest any approach to the treatment of the alluvium until some preliminary boring was done."

*General.*

During the year members of the Geological Staff have made many mineral determinations and tests of specimens brought to the Department by members of the general public.

## APPENDIX II.

## REPORT OF THE CHIEF CHEMIST AND METALLURGIST.

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

## DETERMINATIONS AND ANALYSES.

Determinations were made of gold, silver, tin, lead, aluminium, arsenic, antimony, cerium, beryllium, barium, bismuth, boron, calcium, chlorine, chromium, osmiridium, phosphorus, thorium, tungsten, titanium, zinc, and zirconium.

Analyses were made of ores, minerals, clays, rocks, coal, shale, bauxite, water, &c.

The number of determinations approximated 4000. In addition, some 1100 samples were assayed at Waratah and represent approximately 2000 determinations.

Metallurgical activities during the year were largely confined to planning and supervision of installation of mill units at the Mt. Bischoff Mill, Waratah, and later supervision of initial milling operations. This work was undertaken to expedite the completion of mill construction and operation at the request of the Board of Management of the Mount Bischoff project. For this purpose up to four members of the staff were constantly engaged at Waratah from February to June.

## MT. BISCHOFF MILL, 1947—TREATMENT OF GREISEN ORE.

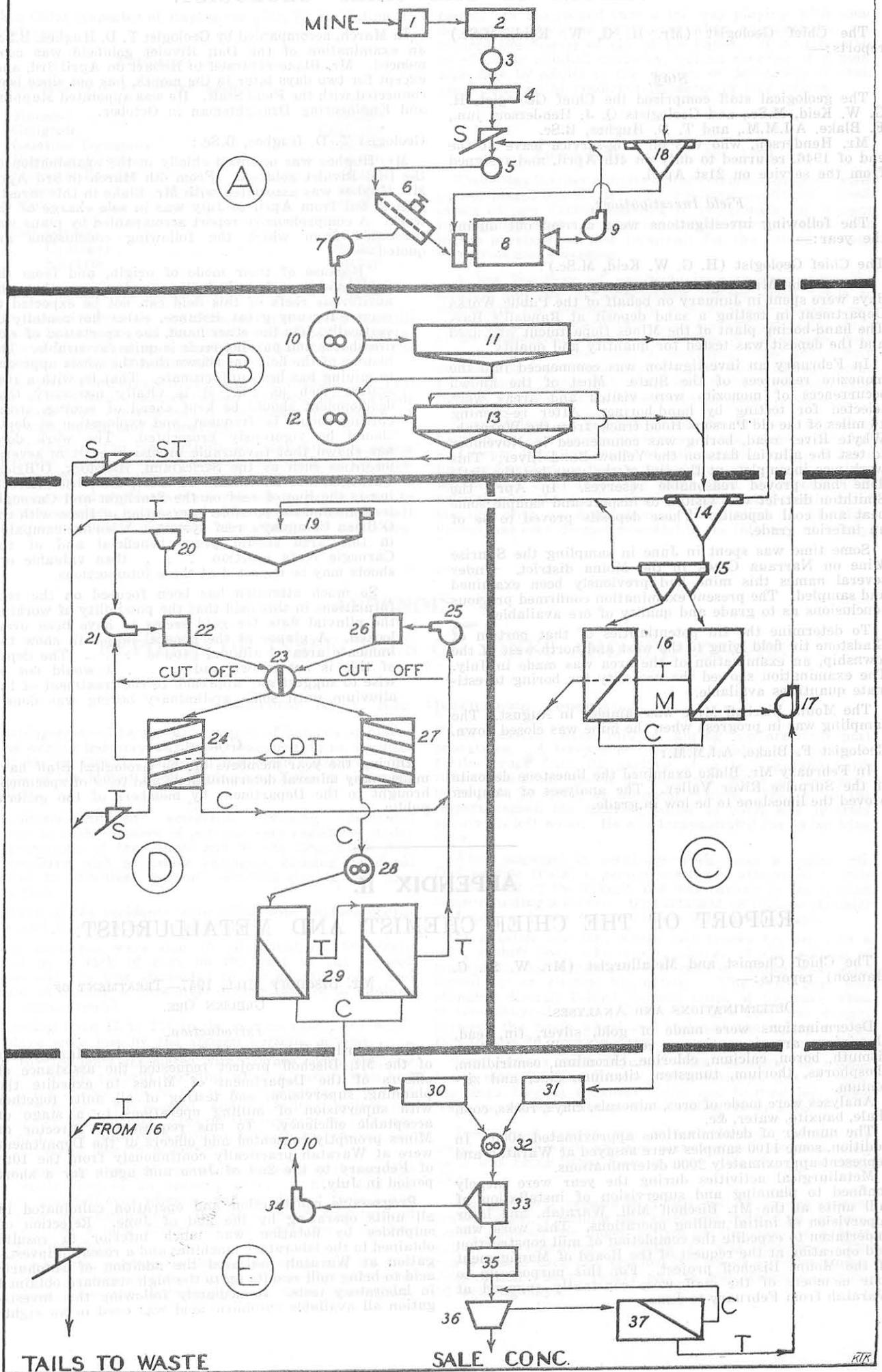
*Introduction.*

On the 3rd of February, 1947, the Board of Management of the Mt. Bischoff project requested the assistance of officers of the Department of Mines to expedite the planning, supervision, and testing of all units together with supervision of milling operations to a stage of acceptable efficiency. To this request the Director of Mines promptly consented and officers of the Department were at Waratah practically continuously from the 10th of February to the 2nd of June and again for a short period in July.

Progressive construction and operation culminated in all units operating by the 2nd of June. Rejection of sulphides by flotation was much inferior to results obtained in the laboratory machines and a research investigation at Waratah indicated the addition of sulphuric acid to bring mill results up to the high standard obtained in laboratory tests. Immediately following this investigation all available sulphuric acid was used in an eight-

# MT BISCHOFF MILL 1947

FLWSHEET 8.6 tons per hour



hour mill test which resulted in acceptable elimination of sulphides and much improved mill recovery. The approximate derived recovery based on mill samples during the test amounted to 60 per cent.

Further supplies of sulphuric acid were obtained from Melbourne about 14 days prior to a decision by the Federal Government to close down the mine. The period of satisfactory mill operation after the mill test on the 16.7.1947 was too short to yield reliable concentrate production figures and evaluation of mill results was of necessity derived from assay values of mill products.

From the 16.7.1947 to 5.8.1947 the mean grade of ore milled was 0.36 per cent tin. This value was approximately half the estimated grade of ore and treatment of this low grade ore did not provide products of sufficient tenor for satisfactory assessment of the capabilities of the tilting decks and tables.

#### Research Investigations.

The Greisen ore consists essentially of pyrrhotite, talc, and dolomite, the former reaching as high as 60 per cent. Tin is present as cassiterite, the majority of which is fine grained. Research investigations indicated the method of treatment as follows:—Ball mill reduction and wet screening to minus 72 mesh B.S. size, rougher and cleaner flotation rejection of gangue sulphides and gravity concentration of the cassiterite.

The flotation of sulphides with normal reagents resulted in high loss of cassiterite caused by talc coated cassiterite and talc-cassiterite composites. This problem was overcome by cleaner flotation with lime to a pH value of 11 which resulted in partial depression of the talc and depression of the cassiterite associated with talc whilst retaining good elimination of the pyrrhotite. Reagents used for rougher flotation were copper sulphate, xanthates, and eucalyptus at natural pH of approximately 6. Recoveries ranged from between 65 and 72 per cent and it was estimated that mill recoveries would be of the order of 60 per cent. The sample of ore used for this investigation was supplied by the Department of Supply and Shipping from underground workings and contained 0.88 per cent tin and 55 per cent of pyrrhotite.

#### Mill Treatment.

The mill treatment was designed on the results of research investigations and consists of: Reduction by jaw crusher to minus 3-inch, battery crushing to minus ½-inch, and ball mill grinding to minus 72 mesh British Standard screen size. The grate discharge ball mill operates in closed circuit with 3-4 ft. x 5 ft. type 38 Hummer screens fitted with stainless steel No. 2475 Ton-cap longitudinal mesh screens.

The ground ore is then submitted to rougher and cleaner flotation in 2-6 cell No. 21 Denver flotation machines to reject as a sulphide tailing the majority of sulphides prior to concentration of the cassiterite. Reagents used in rougher flotation were sulphuric acid which lowered the natural pH value from 6.5 to 5, copper sulphate, ethyl-xanthate, T43, and eucalyptus, and for cleaner flotation the rougher float was conditioned with lime to a pH value of 11.

The tin bearing sink products from the rougher and cleaner flotation machines were deslimed in a 6 ft. cone and the spigot product therefrom was classified in two 2-compartment hydraulic classifiers and the classifier spigot products were fed *via* distributors to eight Wilfley tables. The middlings from these tables were returned *via* a dewatering cone to the ball mill.

The overflow from the 6 ft. cone and hydraulic classifiers were fed to a 20-ft. thickener and the underflow from the thickener formed the new feed to the Denver-Buckman tilting decks. Rougher concentrate from the first bank of five decks was reconcentrated on cleaner decks and tailings from the cleaner decks were returned to the rougher decks. Cleaner deck concentrate was treated on two Wilfley tables in series to produce a concentrate containing 20 to 40 per cent of tin. Mill concentrates flowed to settling pits and were separately treated to produce sale concentrates by batch flotation and Kieving. Flotation products from the dressing shed were returned to the mill for retreatment and Kieve skimmings were tabled to recover most of the cassiterite and table tailings were then returned to the mill for further treatment.

The complete mill treatment is shown in the following flowsheet and details of treatment units are shown in the flowsheet legend.

#### FLOWSHEET SECTIONS.

- A. Reduction run-of-mine ore to minus 72 mesh B.S.
- B. Flotation to eliminate gangue sulphides.
- C. Sand concentration to low grade concentrate.
- D. Slime concentration to low grade concentrate.
- E. Dressing low grade concentrates to sale grade. Grade of concentrates to "E" section are variable ranging with coarser table concentrates from 10 to 30 per cent and slimes concentrates from 20 to 40 per cent tin.

#### FLOWSHEET LEGEND.

1. Jaw crusher 20" x 16", to minus 3".
2. Mill bins.
3. Challenge feeders.
4. Stamps, 15 at 1200 lb. ½ inch aperture screens.
5. Three-way motor driven distributor.
6. Three 4' x 5' type 38 Hummer screens, S.S. Ton-cap 2475 aper. 0.009 inch.
7. Wilfley pump 3 inch.
8. Ball mill, 5' dia. x 6' long, grate discharge.
9. Wilfley pump 2 inch, in duplicate.
10. Denver conditioner 6' dia., 6' deep.
11. Denver No. 21 Sub-A flotation machine, 6 cells (rougher).
12. Denver conditioner 10' dia., 6' deep.
13. Denver No. 21 Sub-A flotation machine, 6 cells (cleaner).
14. Desliming cone 6' dia.
15. Two 2-spigot hydraulic classifiers.
16. Wilfley No. 11 tables, 4 coarse, 4 fine sand.
17. Wilfley pump, 2-inch, middlings returns.
18. Dewatering cone 6' dia. with Richards type hydraulic Vortex fitting.
19. Thickener 20' dia., 7' deep.
20. Dorcco No. 4 simplex diaphragm pump.
21. Wilfley pump 2 inch.
22. Surge tank for rougher tilting decks.
23. Feed-wash cycle timer and distributor for unit 24, 27.
24. Denver-Buckman tilting decks, rougher unit, 5 decks 6' x 6'.
25. Warman pump 1½ inch.
26. Surge tank for cleaner tilting deck.
27. Denver-Buckman tilting decks, cleaner unit, 5 decks 6' x 6'.
28. Agitator, 6' dia., 6' deep.
29. Wilfley No. 11 tables, 2, in series.
30. Settling boxes for mill slime concentrate.
31. Settling boxes for mill sand concentrate.
32. Agitator 3' 6" dia., 4' 6" deep conditioning mill sand or slime conc.
33. Two M.S. flotation cells, 28" x 28" x 4' 6" deep, in parallel.
34. Wilfley pump 2 inch returning froth from 33 to 10.
35. Settling box for cleaned concentrate.
36. Two mechanically tapped kieves 2' 10" dia.
37. Wilfley No. 6 tables, 2, for dressing kieve skimmings.
- S. Automatic samplers.
- C. Concentrate.
- M. Middlings.
- T. Tailing.
- ST. Sulphide tailing.
- CDT. Cleaner deck tailing.

## GENERAL OPERATING PROBLEMS AND RESULTS.

*Stamps.*

The mill was designed to run on a nominal 2-inch jaw crusher product and crush 8.6 tons per hour through the 15-head of stamps (10 at 1000 lbs. and 5 at 1200 lbs.) when fitted with  $\frac{1}{4}$ -inch square aperture screens with 30 per cent solids in the battery discharge. Throughput on starting up was a maximum of 5 tons only per hour. Experimentation failed to materially improve this rate and not until the  $\frac{1}{4}$ -inch screens had been replaced by  $\frac{3}{8}$ -inch screens and the weight of the 1000-lb. stamp increased to 1200 lbs. was the designed throughput of 8.6 tons per hour attained. Battery discharge was automatically sampled to give the daily head sample.

*Ball Mill—Hammer Screens.*

The battery box discharge was distributed mechanically over three hammer screens giving a minus 72 B.S. mesh undersize in a pulp averaging 25.7 per cent of solids. Screen undersize formed the feed to the flotation unit. The Hummers were fitted with stainless steel Ton-cap No. 2475 screens with the smaller aperture (0.009 inch) across the flow of pulp. These screens were supported by four mesh backing cloths with  $\frac{1}{4}$ -inch diameter rubber cords interwoven on 4-inch squares. Screen life was not finalised but it was estimated that 2000 tons of new feed per screen cloth was the approximate life. Screening efficiency was about 95 per cent. Screen oversize was fed to a grate-discharge ball mill and the mill discharge was returned to the Hammer screens. Screen cloths cost about £35 each or equivalent to 4.2 pence per ton of ore. The decision to use Hammer screens instead of a mechanical classifier for sizing was based on the comparison of sizing analyses from mill results at Renison Bell with Greisen ore using a mechanical classifier and results of laboratory ore dressing investigations incorporating wet screening. Wet screening showed less sliming of the cassiterite than classification. Overgrinding of the cassiterite results in lower recovery by gravity-concentration and increased loss by mechanical entrainment in the flotation sulphide tailing.

*Flotation.*

The object of the rougher and cleaner flotation units was to remove sulphides, mainly pyrrhotite, with minimum loss of cassiterite prior to gravity-concentration of the cassiterite on tilting decks and tables. The difficulties of establishment of good flotation are detailed under "Introduction" and flotation requirements are shown under "Research Investigations." The association of cassiterite with talc as composites and extremely thin coatings of talc represents a novel ore dressing problem and with normal reagents for flotation of sulphides high loss of cassiterite results owing to the high flotability of talc. Lime to produce a high pH value of 11 satisfactorily solved the problem.

*Concentration.*

Mill operations showed the necessity for high rejection of sulphides prior to concentration on tables and Denver tilting decks.

Examination of mill tailings and table middlings prove that at 72 mesh reduction some cassiterite is still not freed from gangue and accordingly is not recovered.

Examination of the mill tailings shows composite cassiterite in decreasing amounts to 200 mesh size and percentages of composite cassiterite are shown in the following example:—

No. 339 Mill Tailing 21-24.5.47.

B.S. Screen Fraction.	Per Cent.		Per Cent Tin Present as Composites.
	Weight.	Tin.	
+ 60	4.2	0.28	89.32
+ 85	10.7	0.26	76.91
+100	3.5	0.29	62.26
+150	8.8	0.26	53.89
+200	11.7	0.28	46.49
Composite	38.9	0.27	

The composite plus 200 mesh fractions contain 0.27 per cent of tin of which 0.17 per cent is present as composite grains. Examination of the grain sizes of the cassiterite shows the majority are recoverable by gravity concentration and it is probable that 50 per cent of the cassiterite present in the mill tailings as composite grains would be recovered in mill operations by a secondary plant consist-

ing of a classifier to reject to waste minus 200 mesh table tailings and ball mill grinding classification to 200 mesh size of all plus 200 mesh fractions followed by concentration of the freed cassiterite on tilting decks and tables.

Eight Wilfley tables were utilised for concentration of the two coarsest sizings from hydraulic classifier spigots and distribution to the eight tables was arranged by splitting pulp in launders and stationary distributors. Both methods of dividing the feed could be improved by mechanically operated distributors. The installed distributors frequently did not evenly divide the pulp with resultant overloading of some of the tables and avoidable loss of cassiterite.

*Tilting Decks.*

Feed to the Denver-Buckman tilting decks was the finest or slime material and was produced from the overflows from the 6-ft. cone (14) and hydraulic classifiers (15) which were pumped to the rougher tilting decks after thickening and desliming in a 20-ft. thickener (19). Overflow to waste from thickener ranged from 0.5 to 1 ton per hour of solids in pulp containing 1 to 3 per cent solids. An example (No. 720—10.7.47) of the overflow shows 98 per cent of the 0.41 per cent tin was finer than infrasizer fraction No. 3 and 85 per cent from fraction No. 4 and finer which means that practically all the tin in the thickener overflow was not recoverable by gravity concentration.

This feature is reflected in the assay values: Whereas the total tin was 0.41 per cent the recovered tin by vaning assay amounted to only 0.03 per cent.

These tilting decks are the first of their kind to operate in Australasia and were imported from U.S.A. for use at Waratah. Use of these decks at the Sullivan Concentrator, Consolidated Mining and Smelting Co., Chapman Camp, British Columbia, Canada, created world interest as a classical example of ore dressing. Zinc tailings amounting to 6200 tons are hydrosized, 3500 tons of pyrrhotite are removed by flotation, and the flotation sink product amounting to 2100 tons per day and containing 0.2 per cent tin is the feed to the tin concentration section. Fourteen rougher banks of decks, five decks to each bank, produce a concentrate containing 2 per cent tin and two cleaner banks concentrate the 2 per cent feed to 10 per cent tin. Eight Diester Plat-O type tables are utilised in the production of sale grade concentrate and flotation of sulphides was incorporated between rougher and cleaner deck concentrations. Reports of Sullivan experience indicate high recoveries of free cassiterite down to 500 mesh size (30 microns).

One bank each of roughers and cleaners were used at Waratah and two decks only of the cleaner bank were used. Feed rate to the roughers was at a maximum of 72 tons per day or half the equivalent Canadian practice. Examination of samples showed variable recoveries during the short period of operation but generally high recoveries of +500 mesh cassiterite was experienced. Major loss of tin occurred in the rougher deck tailings. Essential operating variables are slope, volume of pulp, and tonnage of feed. Installation at Waratah did not include sulphide flotation between rougher and cleaner decks and accumulation of sulphides in the cleaner deck concentrate was a definite disability. A flotation unit was installed for this purpose but was only just completed at the conclusion of milling operations. The operating cycle was: Feed to decks 6.4 minutes; feed off, tilting of decks, removal of concentrate, decks back to concentration position and feed on—1 minute. Total 7.4 minutes. Tin production from the tilting decks ranged from 14 to 25 per cent of the total mill production.

*Dressing Shed.*

Mill concentrates ranged in grade from 10 to 40 per cent tin and these were treated in the dressing shed by batch flotation and Kieving to produce sale grade concentrates. Considerable trouble was experienced in flotation of the coarser sulphides and two alternative treatments were investigated—(1) Use of creosote to produce a tough froth; and (2) Screen out coarsest fractions and flotation, &c., of screen undersize. Screen oversize tabled to remove majority of cassiterite and return of coarse sulphides to the mill for regrinding and return to mill flowsheet. Both methods were troublesome but the latter was finally incorporated in the flowsheet. Froth from the batch flotation and the Kieve toppings were returned to the mill for retreatment as shown in the flowsheet.

ORE DRESSING INVESTIGATIONS.

*Aberfóyle Tin Mine.*

A sample of slime table tailings 453/47 was submitted for sizing analysis and tests to indicate possible additional recovery of tin. The sample assayed 1.3 per cent of tin and 2 per cent of sulphur. Plus 200 mesh fractions amounted to 27 per cent of the sample but were relatively barren and contained only 2 per cent of the total tin. Tests indicated that up to 38 per cent of the tin could be recovered by gravity concentration and attention was directed to better classification and flotation of sulphides to assist in higher recovery.

*Coarse Tailings Dump.*

The company stated that the dump contains 160,000 tons of coarse jig tailings. A 5-ton sample was carefully reduced for assay purposes with the following result:—

Tin ..... 0.13 per cent tin.  
Tin, Vanning Assay ..... 0.10 per cent tin.

Sizing analysis showed evenly distributed tin values. Fifty-one per cent of the sample was plus 6 mesh screen and 44 per cent — 6 + 22 mesh size. The sample contained 58.7 per cent of wall rock or mullock. The sample was submitted to heavy solution separation to indicate possible concentration by heavy media methods with the following result:—

Fraction.	Mean Sp.G.	Per Cent.		Per Cent Tin Distribution.
		Weight.	Tin.	
Float at 2.66 .. .. .	2.66	46.75	0.03	10.4
Sink at 2.66 float at 2.95 .. .. .	2.78	49.70	0.10	37.0
Sink at 2.95 .. .. .	3.13	3.55	1.99	52.6
Composite .. .. .	.....	100.00	0.13	100.0

Cassiterite is present in the sink product, at 2.95, as composites and the nominal value of the tin in this fraction amounts to 6s. per ton of tailings.

*Current Jig Tailings (567-9/47).*

Samples were submitted to ascertain the nature of variation in tin values of samples. Coarse jig tailings normally contain from 0.04 to 0.06 per cent tin but periodically values rise to 0.25 per cent.

Heavy solution tests showed that the majority of the cassiterite in all samples existed as composites ranging from 1 to 3 per cent and having specific gravities of 3.28 to 3.39 and tin values from 1.2 to 5.5 per cent. The quantity and tin content of the ore composites are responsible for the marked fluctuations of assay values of the tailings.

*Coarse Mill Jig Feeds (686-9/47).*

Heavy liquid separation tests were conducted on coarse jig feeds for comparison with tests undertaken on jig tailings (567-9). These tests demonstrate the possible application of heavy media concentration as a preliminary concentration ahead of jig concentration or retreatment of jig tailings.

Recoveries shown in the tabulation below amount to 95.98 per cent in products containing 8.8 to 10.4 per cent tin.

*3-inch Feed. 686-687.*

Fraction.	Per Cent.		Per Cent Tin Distribution.
	Weight.	Tin.	
Float at Sp.G. 2.66 .. .. .	38.1	0.01	0.4
Float at Sp.G. 2.696 .. .. .	17.7	0.04	0.7
Float at Sp.G. 2.95 .. .. .	34.8	0.09	3.6
Sink at Sp.G. 2.95 .. .. .	9.4	8.77	95.3
Composite .. .. .	100.0	0.87	100.0

The total tailings (fractions floated) amount to 90.6 per cent by weight and contains 0.045 per cent tin.

*4-inch Feed. 688-689.*

Fraction.	Per Cent.		Per Cent Tin Distribution.
	Weight.	Tin.	
Float at Sp.G. 2.66 .. .. .	47.4	0.01	0.3
Float at Sp.G. 2.696 .. .. .	13.1	0.03	0.2
Float at Sp.G. 2.95 .. .. .	25.0	0.08	1.4
Sink at Sp.G. 2.95 .. .. .	14.5	10.38	98.1
Composite .. .. .	100.0	1.54	100.0

The total tailings (fractions floated) amount to 85.5 per cent by weight and contains 0.035 per cent tin.

The cassiterite in the sink products is present as free mineral, as composites with quartz and also with sulphides.

*Tin Ores from Exe River (629-630/47).*

Two bulk samples were submitted by Zeehan Explorations Ltd. for concentration tests for recovery of the cassiterite.

No. 629-1.—This gossanous sample contained 1.33 per cent tin and exploratory tests indicated a combination of jig and table concentration. Recoveries with various treatments ranged from 50 to 82 per cent and the maximum recovery was obtained by the following treatment:— Roll reduction to minus 14 mesh B.S., jig concentration, ball mill grinding of jig tailings to minus 72 mesh size, classification and table concentration followed by a regrind of the table tailings to minus 150 mesh and re-concentration. Recovery by jig amounted to 32 per cent.

No. 630-2.—This sample contained 10 per cent of sulphides and 0.63 per cent of tin. Preliminary tests indicated the preferred treatment which resulted in a recovery of 65 per cent of the tin.

Treatment consisted of ball mill reduction to minus 72 mesh rejection of sulphides by rougher and cleaner flotation prior to classification and table concentration.

Sizing analyses of test tailings from both Nos. 629 and 630 showed low tin loss to I.S. fraction 3, equivalent to 500-700 mesh range for cassiterite.

In conclusion, I desire to record my appreciation of the services rendered by the laboratory staff during the year.

## APPENDIX III.

## REPORT OF THE CHIEF INSPECTOR OF MINES.

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

*Mines and Works Regulation Act.*

The average number of persons employed in mining, quarrying, and metallurgical operations was 5316, as compared with 5255 for the previous year.

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

*Accidents.*

The total number of accidents, registered under the provisions of Section 23 of the Act, was 74, as compared with 63 for the previous year.

The appended tables relate to—

- (1) Fatalities and non-fatal casualties at mines, quarries, and works, which 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.

There was a slight increase in the number of accidents in each mineral division, but no registered accident was attended with fatal injuries, which reflects creditably upon the general conduct of operations often described as being hazardous.

An electrical engineer was electrocuted as the result of making contact with a live circuit at an underground pumping station, but the accident was not registered under the provisions of Section 23 as electrical equipment was not regarded as falling within the compass of controls exercised under the provisions of the Act.

Of the 74 accidents resulting in non-fatal injuries to a like number of persons, 47 were allied with surface operations and 27 occurred in underground workings. Two persons were injured by small falls of ground and a miner sustained injuries to the eyes when he bored into an unexploded remnant of a charge of explosives. The remaining accidents were of a miscellaneous nature. The injuries were due mainly to accidental causes, although it was afterwards apparent that an exercise of care by the injured persons would have averted the results recorded in several instances.

The rate of non-fatal accidents per 1000 persons employed was 13·92, as compared with 11·798 for the previous year.

*Health and Sanitation.*

Constant regard was given to matters pertaining to health and sanitation, close surveillance being directed to the suppression of atmospheric dust. Material advances were made in measures implemented for allaying dust arising from the mechanical cutting and handling of coal, a condition which had caused some concern in the early stages of mechanisation at coal mines.

*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 1947.

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 .....	2083	12	...	12	12	5·760	...	5·760
North-Eastern .....	219	6	...	6	6	27·397	...	27·397
Eastern .....	535	12	...	12	12	22·429	...	22·429
North-Western .....	441	4	...	4	4	9·070	...	9·070
Western .....	2088	40	...	40	40	19·627	...	19·627
Total .....	5316	74	...	74	74	13·920	...	13·920

## 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 .....	1460	16	...	16	16	10·958	...	10·958
Zeehan, &c. ....	578	24	...	24	24	41·522	...	41·522
Total .....	2038	40	...	40	40	19·627	...	19·627

COMPARATIVE Table of Statistics of Accidents in and about the Mines of Tasmania from 1st July, 1892, to 31st December, 1947.

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 1894	3405	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

\* 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 .....	56,350
Gelignite .....	1,017,150
Gelatine Dynamite .....	119,150
Blasting Powder .....	8,950
Sporting Powder .....	4,200
Ligdyn .....	16,650
Ajax .....	45,000
Detonators:	Number.
Ordinary .....	960,000
Electric .....	50,900
	Feet.
Detonating Fuse-Cordtex .....	95,500

Customary attention was directed to ensuring that all compounds were in good condition at the date of importation, and that there was no deterioration to render the explosives inert at the time of use.

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

More care in the maintenance of exploding equipment and in the laying of shots reduced the incidence of misfires in electrical shot-firing at coal mines.

Two recorded accidents were related to explosives. In one case a miner bored into an explosive remnant left from the incomplete explosion of a charge of nitro-com-

pound. In the second case a lad was playing with some detonators which he had found when one exploded and injured the fingers of one of his hands. It is impossible to eliminate childish curiosity, but an exercise of reasonable care by adults in the storage of detonators in their possession would eradicate incidents of this nature.

*Inflammable Liquids Act, 1929.*

There was further activity in the commissioning of petrol pumps placed out of use under war-time conditions, 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.

A low incidence of accidents in connection with the storage and use of inflammable liquids often tends to depreciate the potential fire and explosion hazard and only when an untoward incident arises, from an indiscretion or an unconceived source of ignition, is the danger duly recognised. In one case a workshop was extensively damaged by fire when a spark from a non-flameproof power point ignited fumes and liquid during the servicing of the tank of a motor vehicle from a nearby petrol container.

General lack of recognition of the fire and explosion hazards is causing indiscretions in the keeping of full and empty 44-gallon drums of inflammable liquid. Serious fires and explosions have resulted from these indiscretions within and exterior to the State, and an extension of activities in the application of regularising methods of storage, with an expansion of distribution in 44-gallon drums, has been deemed essential in the interests of safety.

## APPENDIX V.

## REPORTS OF INSPECTORS OF MINES AND EXPLOSIVES.

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

*Employment.*—The average number of persons employed in the mining industry was 1460, representing an increase of 23 in the number employed last year. All were employees of the Mount Lyell Mining and Railway Company Limited.

*Accidents.*—Sixteen accidents, causing non-fatal injuries to a like number of persons were registered under the provisions of the Mines and Works Regulation Act, as compared with seventeen accidents, causing non-fatal injuries to seventeen persons recorded during the previous year.

Eleven of the accidents were allied with surface operations and five occurred underground.

Ten accidents were due to misadventure, five were caused by a lack of care on the part of the injured person and one was attributed to the adoption of a bad method of cutting a wire rope during repairs to haulage ropes underground.

Ranging from 15 to 214 in the various cases, 869 working days were lost by the sixteen persons injured.

Of the accidents associated with surface operations, one occurred at an open-cut working when a miner, who had been using a rock drill on top of a large stone, attempted to climb down. He slipped, and in falling, pulled the air hose of the machine, causing the machine to fall onto his hand. He suffered a broken bone in his thumb and was caused to lose 74 working days.

Two persons were injured while working in the garage and repair shop of an open-cut mine. A fitter lost his balance and fell over when a spanner slipped from a nut which he was tightening. His right hand was injured and required a long process of bone grafting. He lost 214 working days.

A blacksmith, working in this repair shop, had his foot injured by a piece of iron rolling off a trolley which he was using. He lost 19 working days from this injury.

Three persons were injured during surface transport operations. A lorry driver, whilst backing a large semi-trailer truck from its parking place in a garage yard, caused the front wheels of the truck, while on the maximum lock, to strike an adjacent vehicle. The jar of the impact caused the steering wheel to twist and severely sprain his left wrist. He was incapacitated for 59 working days.

When engaged in servicing work from a mobile oil-fuel service truck, a person carelessly attempted to ride on the back of the vehicle and was thrown to the ground when rounding a corner. He sustained an injured shoulder and arm and was caused to lose 33 working days.

At a crude ore bin, where rail trucks tip ore into a mill, a shift boss, who was in charge of this section of transport, was injured when a rake of trucks was being moved by an electric locomotive. The shift boss was standing directly behind the end truck of the rake when it was shunted back a few feet. His foot was caught between the truck wheel and rail and the injury caused him to lose 28 working days.

Two persons were injured when assisting to unload heavy material from lorries. One workman lost 26 working days from a sprained ankle and bruised leg which were caused by a heavy drum rolling from a lorry.

The second person was injured through having his wrist crushed when an iron plate slipped out of a sling as it was being lifted from a lorry. He lost 44 working days.

Engaged with repairs to a ball mill at an ore concentrating plant, a leading mill hand was injured by inadvertently allowing his finger to rest on the track of a hoist crawl, the operation of which he was directing. The crawl kicked back and crushed the top of an index finger. Amputation was necessary and he was incapacitated for 16 working days.

A tradesman's helper was assisting in the preparation of wooden poles for a transmission line when a bone of his hand was fractured through being jammed between two logs. He lost 21 working days.

A junior labourer was working in a copper precipitation plant when he slipped and fell into a vat containing metal scrap. He sustained lacerated toes and lost 15 working days.

Of the accidents occurring underground, two were from stoping operations, two from routine repair work, and one from shaft transport.

Whilst working as a contract miner, a man jarred his hand when using a spalling hammer and the injury caused him to lose 31 working days.

Another contract miner was attempting to reverse a machine, rigged on a bar on the top of a timber baulk. The machine slipped from his grip and fell on his foot causing bruising and a fractured toe. He was incapacitated for 21 working days.

A fitter, about to commence work on the repair of the iron plates lining a main ore pass, attempted to use a ladder before it had been properly fixed. The ladder twisted and he fell 94 feet down an iron floor inclined at 60 degrees. This man did not consider that he had been injured and continued to work for over seven hours until the end of the shift. The following day he reported to a doctor who found that his back-bone had been fractured. He was absent for 136 days.

A person, engaged in repairing a wire rope used at an underground railway shunting place, was holding a cold set tool to cut the rope which had been placed across an iron rail. His mate struck the tool with a spalling hammer when a piece of wire flew, penetrated his eye and caused an injury which has partially affected his sight. He lost 85 working days.

A platman was lifting mine timber from a cage, when a cap-piece slipped and fell on his leg, causing a deep seated bruise. He lost 47 working days.

#### Safety.

Inspection duties have been regularly directed to the production and maintenance of safe working conditions. Representations in regard to safety were made as occasion demanded and good co-operation has been afforded.

In all mining operations strict attention has been given to the removal of unsafe ground before persons are allowed to work beneath it. In both surface and underground mines conditions have been found, on one or two occasions, where such precautions had not been taken. In these cases work necessary to rectify the bad conditions was done under my supervision and the persons responsible were reprimanded.

Due to an unusual development along structural weakness in an ore-body above a wide flat back "cut and fill" stope, a fall of ground occurred over several stope sections. The occurrence demonstrated that the adopted method of sectional mining and filling with the provision of timber support was not adequate for safe working of the wide stopes and it has been necessary to provide additional support by developing rock pillars.

Resulting from investigation of an accident wherein a miner received a severe eye injury whilst cutting a wire rope, representations were made and equipment designed which should provide adequate protection and prevent a recurrence of this type of accident.

Ladderways, shaft equipment, lighting conditions, ore-pass coverings, angles of batter in open-cut workings, explosives in use, landing, and transit, surface and underground transport, and many other details of mining practices have been regularly examined. In the crushing, milling, and smelter sections of works and in various extensive workshops allied with mining operations, similar care and inspection have been exercised. In general, reasonably safe conditions have been maintained.

#### Ventilation.

The adequate ventilation of underground workings and surface installations has received close attention.

The plans of a large primary ore breaking installation, at an open-cut working, have been examined and suggestions have been made to provide for sufficient ventilation to cope with dust conditions arising from its operation.

Unsatisfactory ventilating conditions developed at an ore pass control-station which is situated below ground and is served by a long adit. The trouble was found to be due to a deterioration of the suction pipes and fan. A larger suction fan of 11,000 c.f.m. capacity was installed and the metal pipes replaced with a wood duct of larger sectional area.

The overall result of representations in regard to adequate ventilation has been satisfactory and deficient conditions, capable of being remedied, have not been allowed to prevail.

#### Health and Sanitation.

Regular supervision was maintained in connection with conditions affecting the health of employees in the mines and works. Crib-places, changing and bathing accommodation and latrines have been kept in reasonably good order. Supervision has been exercised in the control of atmospheric dust arising from mining operations, and, to assist in this, many komimeter dust samples have been taken in underground workings and surface buildings.

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

#### Explosives.

No accidents or mishaps have occurred in the handling and use of explosives. Detonating fuse, made with a plastic outer cover, is used in large quantities and has proved to be very reliable. No faults have been observed with this type of fuse.

Polar ammonium nitrate gelignite and gelatine dynamite were used with satisfactory result in underground and surface blasting.

At the magazines, some of these explosives were held for over a six months' period, but no deterioration was observed.

Safety fuse, fuse igniters, ordinary and electric detonators have given satisfactory results.

#### Machinery.

The maintenance and protection of machinery and appliances received the attention demanded by the provisions of the Mines and Works Regulation Act.

One accident occurred when an apprenticed fitter and turner inadvertently had his little finger injured by being caught in a cam gear whilst he was engaged in dismantling a motor engine. His finger was broken at the top joint and the injury caused him to be absent from work for 41 days.

The record books, containing the results of the various tests and examinations which are required to be made by the registered managers of mines and works, as to the condition of the machinery under their charge, were examined and found satisfactory.

Enquiries and inspections have been made in company with the Inspector of Machinery.

#### Prosecutions.

Legal proceedings, charging two persons with unseemly behaviour, were instituted under the provisions of the Mines and Works Regulation Act. Evidence showed that these persons were under the influence of liquor when they presented themselves at a smelter plant to commence work. The foreman, observing their condition, directed them to return to their homes and shortly afterwards they commenced to fight.

A conviction with a fine of £3 and 11s. costs was imposed in each case.

#### Explosives Act.

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

	lb.
Polar A.N. Gelatine Dynamite, "75", $\frac{7}{8}$ " x 7"	56,250
Polar A.N. Gelignite, "50", $1\frac{1}{4}$ " x 13"	433,950
Polar A.N. Gelignite, "50", $1\frac{1}{4}$ " x 7"	105,250
Polar A.N. Gelignite, "50", $1\frac{1}{8}$ " x 7"	22,500
Polar A.N. Gelignite, "50", 5" x 24"	10,300
<b>Total</b>	<b>628,250</b>

	Number.
Detonators, No. 6 L/A	365,000
Detonators, No. 6 Electric	1,600
Fuse Igniters	41,090
	Feet.
Plastic Cordtex Detonating Fuse	95,000
	Cases.
Blue Sump Safety Fuse (7200 ft. per case)	236

A few damaged wood cases, and other cases with nails projecting or badly driven, were found in the shipments on arrival at Regatta Point. These matters were reported to the Chief Inspector of Explosives.

All safety fuse gave satisfactory tests for burning rate and quality.

Magazines licensed for the storage of explosives were maintained in a satisfactory condition.

*Inflammable Liquids Act.*

Inspections were made of premises licensed under the provisions of the Inflammable Liquids Act. Reasonable conditions have been maintained. One new premises was licensed to store 500 gallons of mineral spirit.

*The Workers' (Occupational Diseases) Relief Fund Act.*

Certificates, indicating that 208 new employees were free from disease, were received and registered.

Applications were made by 25 persons for examination for industrial disease. Seven applicants were found to be affected by silicosis. Two of this number had been certified in previous years, but were re-examined by direction of the Workers' (Occupational Diseases) Relief Board.

One of these, who was re-examined, had been certified in 1940 and 1944 as suffering from silicosis 50 per cent, and was found to have the same disability when examined this year.

This person continued underground work for several years after his examination in 1940. He has been engaged in mining for 33 years and is 49 years of age.

In the second case the sufferer had been certified as 30 per cent silicosis incapacity in 1945 and had left the industry. On this occasion he applied to the Board for permission to resume mining work. The result of a re-examination showed that he was affected as before and the Board refused his application. He is 47 years of age and has been employed for 14 years in underground mining.

A miner, aged 43, and who has worked 8½ years underground, was certified as clear, but on appeal, was certified by the Medical Referee at Hobart as having 40 per cent incapacity from silicosis.

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

	1946.	1947.
Incapacitated (affected by silicosis 100 per cent) .....	Nil	Nil
Partial incapacity (over 50 per cent affection) .....	Nil	1
Partial incapacity (50 per cent affection) .....	1	Nil
Partial incapacity (under 50 per cent affection) .....	1	4
Totals .....	2	5

The tabulation below illustrates the age and length of service in mining operations of the five persons found to be affected from silicosis:—

Certified incapacity due to silicosis.	Age of person affected.	Length of Service in Mining Operations.
Per Cent. 70	Years. 58	32 years underground in metal-liferous mines.
40	43	8½ years underground in metal-liferous mines.
20	39	19 years underground in metal-liferous mines.
20	47	13 years underground in metal-liferous mines.
20	46	10 years underground in metal-liferous mines. 10 years surface as mine fitter.

*General.*

Industrial relations have continued on a reasonable basis under a new industrial award. A shortage of manpower still retards mining activities.

The rain recorded at the West Lyell group of mines was 13,550 points. Rain fell on 260 days of the year and adversely affected surface operations.

*Aid to Mining.*

The major prospecting work in this district has been that done by the Zeehan Explorations Company and Dr. Loftus Hills.

Under special prospecting licence, large areas have been taken up for examination.

Otherwise, prospecting has been confined to occasional work done in the spare time of persons engaged in other occupations.

An examination was made of a prospect near the Newell Creek, but geological features and assay results were not sufficiently favourable to encourage further exploration.

Assistance, by the way of advice and sampling, has been afforded to two men who have applied for a mining lease in the town area of Queenstown. Encouraging prospects of lead and silver, in a limestone zone, have been developed by shafting.

Based on an overall price, money was granted to a prospector to re-condition several miles of a pack track between Lynchford and Harris' Reward. Portion of this work was done.

**MINING OPERATIONS AND PRODUCTION.**

*Copper.*

*The Mount Lyell Mining and Railway Company Limited.*—The output from all mines was 1,434,358 tons of ore mined and 196 tons of copper precipitates were recovered from mine waters. The ore mined represents a decrease of 51,253 tons, compared with that of the previous year.

Surface mining at the West Lyell group of mines, which includes the West Lyell, Prince Lyell, and Royal Tharsis sections, produced 1,342,571 tons of ore, representing a decrease of 56,580 tons, as compared with the previous year. In addition, 24 tons of copper precipitates were gained from mine drainage.

This decrease in tonnage of ore mined is explained by the fact that much plant and labour have been occupied in the removal of overburden, 584,373 tons being mined and transported to dumps, thus making a record total of 1,926,144 tons of material removed by surface mining.

Underground production showed an increase of 8023 tons of ore from the Royal Tharsis mine and decreased by 2696 tons from the North Lyell mine. In addition to the ore mined, 134 tons of copper precipitates were obtained from the North Lyell mine.

The Lyell Comstock mine produced 38 tons of copper precipitates only.

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

	Ore Mined. tons.	Copper Precipitates. tons.
West Lyell Opencut Mines	1,342,572	24
Royal Tharsis Mine	89,916	Nil
North Lyell Mine	1,870	134
Lyell Comstock Mine	Nil	38

Underground operations were confined to ore breaking and an extension of main galleries on intermediate levels. Preparations are in progress for exploring a possible high grade ore body at the North Lyell mine by diamond drilling.

After a long delay, a large 84 by 60 inch jaw crusher was received from the makers in the United States of America in September. At the close of the year good progress had been made with installation work and it is anticipated that the crusher will be in commission before the middle of next year.

The exploration of the West Lyell ore deposit by diamond drilling was completed and confirmed the results of previous surveys of ore reserves and indicated the limitations of the ore body. Churn drilling is in progress to test an ore body on the Crown Lyell section.

At the Reduction Works the concentration plant operated for 354 days and treated the bulk of the mined ore for a recovery of 32,329 tons of copper-bearing concentrates and 55,951 tons of pyritic concentrates. The copper concentrates were delivered to the smelter plant for treatment and 42,329 tons of pyritic concentrates were shipped from Regatta Point to be used in the manufacture of acid.

The smelting plant, operating for 226 days, treated the copper concentrates together with 1880 tons of high grade ore and 196 tons of copper precipitates and produced 7730 tons of blister copper in the form of electrolytic cell anodes.

The electrolytic refinery, under normal running conditions, treated blister copper and produced 7666.733 tons of cathode copper. The cell residue was shipped for treatment and contained 27,891.9 oz. silver and 5401 oz. gold.

In addition, a parcel of 13 tons of ore, assaying 9.75 per cent copper and 30.7 oz. silver, was purchased from the Aberfoyle Tin Mine N.L., and treated directly by the smelter plant.

The gross value, including the purchased ore, of the receipts received by the Company for copper, silver, and gold produced, was approximately £1,001,054 in Australian currency, as compared with £972,828 for the production of the previous year.

Assessed on an average world market price in sterling for copper, gold, and silver and a local Australian currency price for pyritic concentrate, limestone, and silica, production of the Mount Lyell Company is shown in the following tabulation:—

		Sterling.
		£
Copper (Electrolytic) (tons)	7,666.733	10,19,924.421
Silver (oz. fine)	27,891.900	5,037.968
Gold (oz. fine)	5,401.000	46,516.111
<b>Total Value</b>		<b>£S1,071,478.500</b>

	Tons.	Australian.
		£
Pyritic Concentrate	42,329	59,260.800
Silica (quarried)	5,047	1,645.753
Limestone (quarried)	4,848	2,554.066
<b>Total Value</b>		<b>£A63,460.619</b>

#### Gold.

Two men, working intermittently in various creeks, obtained alluvial gold containing 1.430 oz. fine gold, valued at £12.315 sterling.

This combined with the production of the Mount Lyell Mining and Railway Company, gives a total yield of 5,402.430 ounces of fine gold, valued at £46,528.426 sterling.

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

**Employment.**—The average number of men employed in the mining industry in the Burnie Division was 830, as compared with 823 for the previous year. The average number of employees would have been larger but for an abandonment of the Commonwealth-State project at the Mount Bischoff Tin Mine which resulted in approximately 100 men being lost to the industry during the last quarter of the year.

Communities as far south as Zeehan and as far north as King Island have depended for their existence on mining and bears logic in the recent Department Services Instruction that the accrued value to the State of minerals and mineral products is better appreciated on a population and commercial assessment of the communities supported, the persons directly and indirectly employed and on the general trade and commerce affected by the ramifications of the mining industry than on a cursory observation of the actual number of men directly employed.

The loss to the industry of employees at the Mount Bischoff Tin Mine is a cause for some misgiving, but the possibility that certain of the larger operating companies will undertake major prospecting activities during the coming year may bring back to the industry many who have, at the moment, left it.

**Accidents.**—The total number of accidents registered under the provisions of the Mines and Works Regulation Act was 27, of which 15 occurred underground and 12 were associated with surface operations. Non-fatal injuries were inflicted on 27 men. Of the surface accidents 9 occurred in the normal performance of repairs and adjustments to plant, routine mill work, and surface cleaning. Lifting accidents caused strained backs in two instances, while a jammed finger resulted from the inexperienced use of a crowbar on a pile of sulphide ore in an open-cut.

Of the underground accidents, probably the most serious was one that caused injuries to the eyes of a miner when he bored into portion of an unexploded plug of gelignite left in a hole which had been fired previously.

In another instance a dislodged stone fell down a travelling way, struck a miner on the forearm and broke the radius and ulna bones. Two men received injuries to feet and toes when using the scaling bar. The men, in both instances, had insecure footholds and slipped, thereby being struck by the dislodged "scats" of ground.

Accidents with trucks occurred on six occasions causing hand and finger injuries in four cases and a fractured toe and a lacerated knee in the other two incidents. Of the truck accidents, the one involving the greatest loss of time was caused when a shift boss, in pulling a truck up a chute per air hoist, dislodged a piece of ore which fell on to his right foot. He sustained a fracture of the small toe.

The lacerated knee resulted when an underground electric locomotive driver forgot that the points had been changed and backed his loco into the charging station. His knee was jammed against a beam,

Crushed fingers occurred in two truck-filling operations. In one case the pass was hung up and a dislodged stone struck the operator's finger.

A crushed right hand, later resulting in the loss of the first joint of the index finger, happened when the accident victim was loading a truck of timber. The timber over-balanced crushing his hand.

The use of rubber boots may have contributed to an accident involving a lacerated small finger and abrasions to the hips. The sufferer slipped between the trucks and the wall while pulling the former towards him.

Dislodged stones caused a fractured left tibia in one case and a fracture of a small bone in the left foot in a second case. In the former instance a stone rolled down the rill of a slope and struck the sufferer on the left ankle, while in the latter case the accident victim was boring "uppers" with a telescope machine when a piece of rock fell from inside the gallery timber and struck him on the foot.

A miner received a lacerated left wrist when operating a machine drill. The steel snapped and the machine fell forward jamming his wrist against the face of the working place.

An employee struck himself with a tightening hammer while securing the clamp on the column of diamond drilling unit. The remaining accident occurred when an employee was timbering a pass. A 10-inch by 10-inch log of timber rolled on to his right foot.

**Safety.**—As in the past, efforts have been directed to the maintenance of safe working conditions at all mines and works.

The primary object of mine inspection work has been the achievement of safe working conditions and in the pursuit of these conditions the principles of sound mining practices have been observed.

Guided always by the provisions of the Mines and Works Regulation Act, 1915, the pursuit of safe working conditions has embraced all phases of underground mining, open-cut mining, quarrying, milling, and metallurgical practices.

An increase in the accident rate at one large mine caused some concern and a conference was called in order to rectify conditions. A Safety First campaign was then implemented and a resulting decrease in the accident rate more than justified the steps taken for accident prevention.

Underground it was found that chief features requiring rectification, from time to time, were the development of steep working rills, high "backs" in horizontal cut and fill stopes, loose rock on "backs" and walls, and distressed ground requiring support.

In the handling and use of explosives constant care and attention has been exercised to maintain maximum safety, and the provisions of the Mines and Works Regulation Act, 1915, relating thereto have been strictly enforced.

In the endeavour to achieve maximum safety in all opencut projects within the ambit of the Mines and Works Regulation Act, 1915, a close watch has been kept for overhanging rock, frayed or rotted lifelines, unsafe blasting practice, and irregular firing warnings.

Closer attention to the clearing down of loose rock from the faces was required from time to time.

In all opencut mines and works explosives were used in accordance with the provisions of the Act and blasting was performed in a safe manner.

The development of steep batters in a stone quarry in the Burnie Municipality have been a cause for some concern and efforts have been directed to ensure more effective control of benches.

**Machinery.**—Inspections have been continued of mining and metallurgical plants as required by those provisions of the Mines and Works Regulation Act, 1915, relating to machinery. As in past years, this phase of inspection work was performed in collaboration with the Inspector of Machinery. His co-operation has assisted materially in the attainment of safe and accident-free conditions.

**Health and Sanitation.**—Continued care was exercised in the control of hygienic conditions both underground and on the surface. One unhealthy feature of underground work is the development of wet and sloppy levels and efforts were directed to the amelioration of these undesirable conditions. To this end companies employed gangs, often over week-ends, to clean levels, free blocked drains, and do such other work as was deemed essential to cleanliness.

In the previous report, reference was made to a serious dust problem at a large ore dressing plant. Certain proposals then outlined were put into operation and vastly improved conditions resulted.

One pleasing feature was the improvement of dust control in a Medium Crushing Section.

Generally, both companies and employees were alive to the necessity for maintaining clean and hygienic conditions underground and on the surface.

**Ventilation.**—Little cause for complaint was found with existing ventilation systems. Occasionally, unsatisfactory conditions developed in rill stopes, where recent blasting had blocked the airways. Such circumstances, whenever they have developed, have been of a transitory nature and have automatically rectified themselves as work in the stope progressed.

**Explosives Act, 1916.**—In the administration of the Explosives Act, 1916, the usual supervision was exercised over the importation, transport, and handling of three cargoes of explosives at the port of Burnie.

At King Island effective control, in conformity with the provisions of the Explosives Act, 1916, was exercised on my behalf by the Harbourmaster, and appreciation is expressed at his helpful co-operation.

Details of explosives and total quantities imported were as follows:—

**King Island (Port of Currie):—**

Polar A.N. 50 Gelignite	8,000 lbs.
Polar A.N. Gel. Dynamite	7,500 lbs.
Cordtex (Detonating fuse)	1 case

**Tasmania (Port of Burnie):**

Blasting Powder	1,500 lbs.
Polar A.N. Gel. Dynamite, 75 1½"	1,750 lbs.
Polar A.N. 60 Gelignite, 1½"	50,000 lbs.
Polar S.N. 50 Gelignite, 1½"	53,000 lbs.
Polar S.N. 50 Gelignite, ¾"	5,500 lbs.
Polar A.N. 50 Gelignite, 1½"	1,500 lbs.
Polar Quarry Monobel	6,000 lbs.
Detonators No. 6	175,000
Electric Detonators	8 cases
Plastic Cordtex	1 case

**Inflammable Liquids Act, 1929.**—An easing of petrol rationing and an increase in the number of new motor vehicles caused many petrol vendors to bring back into commission outfits temporarily closed down during the war years.

Again, the greater consumption of power kerosene, particularly by primary producers, has necessitated a closer supervision of storage arrangements generally. Unfortunately, many primary producers, mainly through ignorance of the requirements of the Act, have been guilty of irregular storage arrangements for their power kerosene. Where these irregularities have been noted, immediate steps have been taken to remedy same. In no instance has it been necessary to resort to the institution of legal proceedings.

**The Workers' (Occupational Diseases) Relief Fund Act, 1928.**

Two applications for compensation were received, and medical examinations and X-rays were arranged in connection therewith. Details of examinations are given hereunder:—

Applicant.	Occupation.	Age.	No. of years in industry.	Type of Work.	Per cent incapacity.	Result of Examination.
1	Mill hand	46	2½	Sweeping and cleaning floors	Nil	N.A.D.
2	Miner	39	15	Underground mining	Nil	N.A.D.

NOTE:—N.A.D. means Nothing Abnormal Detected.

Complete records of new employees with details of medical examinations were kept for all mines and, as in past years, similar control was exercised in accordance with the provisions of the Act.

**Aid to Mining and Mineral Resources.**—Two applications for financial assistance under the Aid to Mining Act, 1927, were dealt with during the year and reports embodying recommendations were prepared. In one instance the owner of a gold-silver-copper proposition on the North-West Coast applied for aid for the purpose of further prospecting his show. A grant of £100 to be expended in a specified manner was recommended to be made available on a £ for £ basis. This arrangement was not put into effect by the applicant and advantage was not taken of the assistance offered.

Another application for assistance to sink a small prospect shaft on a gold-silver-copper proposition on the far West Coast was investigated. A small grant was recommended subject to the applicant securing the services of a competent miner as a mate. In this instance, isolation proved the bar and the applicant was unable to secure the services of a miner. Once again, advantage was not taken of the assistance offered.

Every opportunity was taken to investigate finds reported by prospectors and others, and wherever possible reports were prepared with the intention of adding further facts to the Departmental store of information built up over the years.

**MINING OPERATIONS AND PRODUCTION.**

**Cadmium.**—The entire production for the State amounting to 34.53 tons of cadmium, valued at £(S)15,470, was derived from ores produced by the Electrolytic Zinc Company of Australasia Limited at the West Coast mines.

**Copper.**—The Electrolytic Zinc Company of Australasia Limited was responsible for the production of 286.31 tons of copper valued at £37,725 sterling from the Hercules Mine and Rosebery Mines. The copper occurs as a sulphide in the complex zinc-lead ore. This sulphide is recovered in the flotation treatment of the zinc-lead ore, and is subsequently smelted and electrolytically refined elsewhere.

Desultory prospecting was pursued in the Natone area, but there was no new discovery and no production resulted.

**Gold.**—Production of gold amounted to 8,896.42 oz., valued at £S576.616 and resulted from operations by the Electrolytic Zinc Company at the Rosebery and Hercules mines.

**Osmiridium.**—Two men were engaged in fossicking at the Nineteen Mile Creek on the Waratah-Corinna Road, but no production was recorded.

**Ochre.**—Production of yellow ochre was confined to the Deep Creek area, Smithton, the output being five tons. The value of two tons marketed was £A12.

At Penguin, a limonite deposit was worked for an output of 393 tons, valued at £A393.

No red ochre was mined from the Spalford pit and there was no production of hematite.

**Limesand.**—The Associated Pulp and Paper Mills produced 1656 tons of limesand, valued at £A337, from deposits in the Smithton area.

*Scheelite*.—Production of scheelite was confined to operations by King Island Scheelite (1947) Ltd., King Island, where an average of 155 men was employed.

The following production statistics indicate the magnitude and importance of operations by this Company:—

	1947. tons.	1946. tons.
Crude ore mined and milled .....	139,883	130,545
Scheelite concentrate produced .....	630.92	627.8
Tungstic trioxide content .....	398.27	412.365
	£	£
Sterling value .....	240,006	165,264

The Managing Director reports as follows:—

“Development and Ore Reserves.—Valueless overburden removed to waste from quarry benches amounted to 113,441 tons.

“Eleven diamond-drill holes (Nos. 69-79) were put down ahead of the main quarry workings, the aggregate depth drilled being 1931 feet.

“As a result of all developmental work, a substantial addition was made to ore reserves, shown as follows:—

Proved ore reserves as at 31st October, 1946,	1,763,692 tons.
Proved ore reserves as re-assessed at 25th July, 1947,	3,132,000 tons.
Ore extracted from 25th July to 31st October, 1947,	40,972 tons.
Proved and payable ore as at 31st October, 1947,	2,091,028 tons.

“The principal construction works comprised:—

Coarse Ore Bin: Re-arrangement of bin and replacement of Ross Feeder with Apron feeder as fabricated at the mine.

Secondary Crushing Plant: Installation of Classifier to operate with Washing Plant.

Main Mill: Installation of new 24-cell Flotation Plant with necessary re-arrangement of existing plant and building alterations. Part re-arrangement of Concentrate Cleaning Section. Removal of No. 2 Classifier to new position.

Power House: Installation of Nos. 4 and 5 generating sets (Worthington). Completion of building extensions.

Fuel Tanks and Distribution: Conversion of 80-ft. diameter Reclaim Water Tank to 1500-ton Fuel Oil Tank. Construction and launching of 6-inch under water oil pipelines, moorings, &c.

Township: Five new houses were completed and two others were started.

The shipping service for transport of supplies to the mine was again inadequate. Representations were continued to the Tasmanian Government for the construction of a wharf at Grassy.”

*Silver-Lead-Zinc*.—Exclusive of silver-lead concentrate recovered by the Electrolytic Zinc Company from the zinc-lead ores of Rosebery and Williamsford, the Farrell Mining Company, Tullah, continued as the principal producer of straight silver-lead ore.

*Farrell Mining Company Limited*.—Production and mining operations are summarised in the following report, furnished by the General Manager:—

Crude ore mined and milled: 9584 tons.

Marketable ore produced: 1735 tons of Lead Concentrates containing 1222 tons of metallic lead and 140,585 oz. fine silver.

Average number of men employed: Surface 33; Underground 34.

Power: The Hydro-Electric power gave excellent service and no major interruptions were experienced.

Treatment Plant: The Crushing and Flotation Plants were worked on one shift daily and gave efficient results.

#### MINING OPERATIONS.

*Development. No. 8 Level, South Drive, Main Lode*.—This drive was advanced 47 feet, total from Auxiliary Shaft 257 feet, the lode proving payable except over the last few feet.

*North Quartz Footwall Lode*.—The eastern crosscut was continued and cut the Quartz Lode which lies 40 feet to the east of the Main Lode. The Quartz Lode carried highly payable values and was opened up over a length of 76 feet north of the crosscut and a leading stope was commenced. The ore has not yet been opened up above this level and prospects of locating further values above are good.

*No. 6 Level, Quartz Lode North*.—The drive was advanced 18 feet, total from Main X-Cut 267 feet, and further driving is necessary to locate ore worked in the upper levels.

*No. 5 Level, Quartz Drive North*.—In order to test ore located with the diamond drill a drive was commenced from the eastern crosscut at No. 5 level and advanced to 80 feet. The lode channel at this point carried 12 inches of fair grade milling ore, but further work is required to open up the ore body which should prove highly payable.

*No. 5 Level, South Drive*.—The south drive on the main lode was advanced 134 feet, total from crosscut 573 feet. It will be necessary to extend this drive a further 120 feet to come under the ore being worked at No. 4 Level.

*No. 4 Level, Main Drive South*.—A winze was sunk to test the downward extension of the payable ore opened up at this level and went down 36 feet on 2 feet 6 inches of payable ore, at which point the ore pitched out of the winze. This ore body has a steep pitch to the south and has not yet been opened up at No. 5 Level.

*No. 4 Level, South, Intermediate Drive*.—Considerable work was carried out in this drive, where payable values have now been opened up.

*No. 1 Level, North Drive*.—Crosscuts to the east and west failed to disclose payable values, but the lode channels were distinct and mineralized.

*Diamond Drilling, Surface*.—A further 527 feet of drilling from the surface with the Mines Department Diamond Drill tapped the lode up to our northern boundary, but payable values were not located.

*Underground*.—During the year the Company purchased an air driven diamond drill with a capacity of 500 feet and this drill has been in constant operation since its arrival on the job. Payable ore was located at No. 5 North and No. 6 North Levels, but the lodes have not yet been opened up.

*Main Shaft*.—Plans are in hand for sinking the Main Shaft a further 200 feet, but the scarcity of experienced miners and winding drivers makes the date of commencement indefinite. It is essential that this work be carried out during the summer months as during the winter the men would be working under very wet conditions owing to water seepage through the country.

*Stoping*.—The following tonnages were broken from the various stopes:—

	Tons.
No. 8 Level, South Stope .....	1054
No. 8 Level, North Stope .....	559
No. 7 Level, South Stope .....	462
No. 6 Level, South Stope .....	110
No. 5 Level, North Stope .....	1681
No. 4 Level, Branch Stope .....	1690
No. 4 Level, South Stope .....	733
No. 3 Level, North Stope .....	360
No. 2 Level, North Stope .....	1164
No. 4 Level, North Stope .....	127
No. 4 Level, Sth. Inst. Stope .....	88
Total .....	8028

From Development Work .....

1556 tons

*Dutton and Party, Tullah*.—This party drove an adit 200 feet to investigate an anticipated southern extension of the Farrell lode series.

*Zeehan Field*.—There was a marked increase in activities, related to exploration and production, in the Zeehan district. Amongst the principal operators may be mentioned the following:—

*Gold Boring and Prospecting N.L.*—Operating on the “Lead Blocks” section, north of the Copper-Nickel workings, at the Five Mile, this Company produced 6.85 tons of silver-lead ore, containing 369.9 oz. of silver and 4.384 tons of lead.

*Swansea Mine*.—Owned and worked by J. J. Hill and sons, mining was pursued at shallow levels for an output of 20.3005 tons of silver-lead-zinc ore, containing 625.6 oz. of silver, valued at £S112.96; 9.055 tons of lead, valued at £S814.95; and 4.833 tons of zinc, valued at £S338.31.

*Comstock Mine*.—Five men were engaged in the production of 110 tons of silver-lead-zinc ore, containing 770 oz. of silver, valued at £S141.14; 9.9 tons of lead, valued at £S891; and 29.7 tons of zinc, valued at £S2079.

*Ledger and Party*.—Small-scale operations resulted in an output of 6.425 tons of silver-lead ore, containing 384.556 oz. of silver, valued at £S66.493, and 4.068 tons of lead, valued at £S366.14.

*Montana Western.*—Interest in the dumps at the Montana Western was revived when Thomas Brampton treated portion thereof for a recovery of 4.4236 tons of concentrate, containing 442.3 oz. of silver, valued at £S81.073, and 2.94 tons of lead, valued at £S264.6.

*Miscellaneous.*—Miscellaneous parties were encouraged, by improving markets, to become engaged in small-scale productive operations and accounted for an output of 24.096 tons of silver-lead ore, containing 1219.35 oz. of silver, valued at £S218.1, and 14.02 tons of lead, valued at £S1262.22.

*Zeehan Explorations.*—North Broken Hill Limited and Broken Hill South continued with investigational work at Zeehan. Diamond drilling progressed under difficult conditions, some bores having failed to reach the planned objective. Geological and survey work was carried out and old mine workings were cleaned out for inspection purposes. Other work included costeaning and preparation of roads and tracks. Preparations were made for shaft sinking on the Oceana section. Machinery installed comprised diesel engines, compressors, and pumps.

*Concentrate Calcining.*—The Electrolytic Zinc Company continued with the calcining of zinc concentrates extracted by flotation from the Zinc-lead ores of Rosebery and Williamsford. An average of 30 men was employed in calcining operations.

*Copper-Nickel.*—Copper-Nickel Mine, Five Mile, Zeehan: Preparations were made for unwatering the old workings for the purpose of mining a pillar of copper-nickel ore left by the previous operators.

*Tin.*—Probably the most serious blow received in tin mining, for many years, occurred when the Commonwealth Government withdrew its support from the Mount Bischoff Tin Mine. The mine ceased operations in August and approximately 100 men were dismissed from the industry. A number found immediate employment at other mines, but many remained in the district having secured engagement in cutting pulpwood for paper manufacture at Burnie. Operations at the mine were suspended at the eve of success in the application of flotation and gravity concentration to replace gravity concentration and calcination in the treatment of tin-pyrite ores due, it was stated, to the average grade of ore being less than expected from averages calculated from boring and sampling and too low to provide an economic balance with the then current price of tin, but sympathetic consideration was denied a State proposal for a further trial-period on a selective mining basis. During the operating period, 21.788 tons of ore was mined and milled for a recovery of 53.385 tons of tin concentrate, containing 31.547 tons of metallic tin.

*Renison Associated Tin Mines.*—The General Manager furnished the following report upon operations:—

Production: A total of 13,946 tons of crude ore was mined at the Battery and Kapall Workings and milling recoveries amounted to 97.3 tons of tin concentrate, containing 67.133 tons of metallic tin.

Battery Workings: The North Drive, at No. 1 Level, was advanced 35 feet. No. 1 Intermediate Drive was extended 9 feet, making the total length 69 feet. An output of 2417 tons of crude ore resulted from operations in No. 1 Stope. No. 2 Opencut provided 9655 tons of ore. No. 2 Level, No. 1 Tunnel, was advanced 32 feet, and is being continued to investigate ore located by diamond drilling. No. 3 workings were relatively idle, only 95 tons of ore being produced. Ore breaking was continued in No. 4 Opencut and 1284 tons of crude ore was produced. Forty-six feet of crosscutting was done at No. 5 workings.

Kapall Workings: A North Drive was advanced 10 feet, the South Drive was extended 64 feet and an Intermediate Drive was extended 40 feet. Ore produced from these workings amounted to 497 tons.

Amenities: Two houses and a Recreation Hall were erected as part of the planned Welfare Scheme.

General: Mine development and other improvements were restricted by a shortage of suitable labour.

The recorded throughput of ore was 13,409 tons, resulting in a recovery of 87.395 tons of tin concentrate, containing 60.442 tons of metallic tin, valued at £S26,014.24.

*Nineteen Mile Creek.*—Three men were intermittently engaged in fossicking for alluvial tin and produced 0.1949 ton of oxide, containing 0.1 ton of metallic tin, valued at £S45.

*Eve River.*—James Copping produced 0.0433 ton of concentrate, containing 0.023 ton of metallic tin, valued at £S10.

*Eve River.*—Restricted operations by W. J. Lynch, at the Olympia Mine, resulted in an output of 0.2768 ton of tin oxide, containing 0.17 ton of metallic tin, valued at £S74.64.

*Eve Gorge.*—Desultory prospecting was pursued by A. J. Salmon, but no production resulted.

*Zeehan.*—Miscellaneous operators in the Zeehan district produced 0.085 ton of tin oxide, containing 0.0595 ton of metallic tin, valued at £S23.286.

*W. Coleman and Party, South Heemskirk.*—This party persisted commendably with operations on the granite series at South Heemskirk and recovered 0.6759 ton of concentrate, containing 0.4131 ton of metallic tin, valued at £S157.189.

*South Heemskirk.*—Intermittent operations, by miscellaneous parties, at South Heemskirk, resulted in an output of 0.0744 ton of tin oxide, containing 0.0315 ton of metallic tin, valued at £S13.7655.

*Eureka Tin Mine, North Heemskirk.*—From alluvial operations at North Heemskirk, H. G. Watson recovered 0.5125 ton of tin concentrate, containing 0.2795 ton of metallic tin, valued at £S112.22.

There was little activity by miscellaneous parties on tin alluvials at North Heemskirk, the recorded output being not more than 0.2 ton tin oxide, containing 0.1502 ton of metallic tin, valued at £S65.637.

*King Island.*—Gatenby and Patterson were occupied on constructional work, to provide for further recoveries of cassiterite from the deposit of mineral sands at Frazer River Beach.

*Zinc-Lead-Copper.*—In the mining and treatment of the zinc-lead-copper ores of the Read-Rosebery series, the Electrolytic Zinc Company of Australasia Limited continued to demonstrate its importance to industrial activities. Details of production are as follows:—

	Tons.
Crude ore mined and milled, <i>ex</i> Hercules	40,034
Crude ore mined and milled, <i>ex</i> Rosebery	81,554
Total	121,588

Concentrates produced:—	Tons.
Zinc	38,365
Lead	9,122
Copper	3,370

Recoverable quantities and value of metals contained therein:—

Metal.	Tons.	Value (Gross) Sterling.
Lead	6,433.71	551,012
Zinc	18,478.13	1,293,468
Copper	286.31	37,725
	Fine Oz.	
Silver	744,123.63	137,061
Gold	8,896.42	76,616
Cadmium	34.53 tons valued at	£A15,470

Employment: The average number of men employed was as follows:—

	Surface.	Underground.
Hercules Mine	12	46
Rosebery Mine	217	121
Zeehan Smelters	30	...
Totals	259	167

Diamond drilling was continued in exploration of lode occurrences. One deep hole of 1225 feet was drilled from the surface to test the ore body below the present workings at the Rosebery Mine. The hole intersected the ore channel at approximately No. 14-level horizon.

At the Rosebery Mine, stripping of the main shaft to full dimensions was completed between Nos. 9 and 10 levels and the shaft was timbered to the latter level where the plat was partly timbered and the loading station and bin were partly excavated.

Ore production and development were again below normal owing to a shortage of manpower.

Experimental work on blast-hole mining was continued. A further considerable yardage of overburden was removed by bulldozers to allow of future opencutting of ore.

Sand deposits in the Black P.A. were tested for future use in filling stopes.

Preliminary work was commenced in the campaign of extensively planned prospecting in the surrounding districts.

The milling rate was approximately 15 per tons per hour. No major alterations were made to the plant.

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

**Employment.**—Mining and allied industries throughout the inspectorate, other than coal mining, gave employment to 714 men. This was a decrease of 21, as compared with the previous year, and was occasioned by the general shortage of labour. The majority of the larger mines worked short handed throughout the year.

**Accidents.**—Under the provisions of the Mines and Works Regulation Act eleven accidents were registered. In addition, four machinery accidents occurred at mines and works which have been gazetted to come under the Mines and Works Regulation Act. Of the mining accidents, none was fatal. Only two accidents occurred underground. The most serious of the accidents occurred when a miner was backing a compressed air driven mine car loader from the working face and became jammed between a chute front and the loader. His chest was crushed and his spine and ribs were injured, necessitating a recovery period of over six months.

The other underground accident was the result of a miner lifting a piece of ore weighing about one cwt. He strained the muscles of his back.

Of the surface accidents, the first occurred when two men were rolling a large stone up a plank. One slipped and the other man strained his back due to the additional weight thrown on him. The second accident happened when two men were loading limestone at a quarry into a truck. A piece of limestone broke and dropped on one man's toe, fracturing the bone.

In another instance an employee, at a quarry, was inspecting the automatic tipping device on a truck when it moved and caused abrasions to his hand which became septic. Lacerations to the arm were caused, at a quarry, when a man slipped and fell over the sharp edge of a stone.

Whilst replacing the handle in a spalling hammer an employee, at a quarry, allowed the hammer head to fall off the bench and on to his foot. He sustained a fractured toe.

During the erection of a sluice box, at an alluvial mine, a man slipped on the wet timber and the axe he was using was deflected to his foot resulting in a severe cut.

Whilst stacking timber, at a mine, an employee bumped his elbow on a piece of timber and later in the year he again bumped the same elbow, both accidents resulting in fluid on the elbow.

A man was assisting in the erection of trestling, at an alluvial mine, when his foot slipped and caused displacement of the knee-cap.

Of the four machinery accidents, one resulted in a fatality. The victim was the mechanical and electrical engineer at a mine. He was electrocuted whilst attending to the underground pump station equipment. The usual inquest was held and a finding of accidental death was recorded. An attendant, at the crushing plant of a quarry, had his coat caught in some gears and his shoulder was drawn into the gears causing severe lacerations. In another case, the employee had the glove he was wearing caught in machinery which pulled his hand in between two rollers. It was necessary to amputate the hand at the wrist with the exception of the thumb. Whilst realigning ropes on a winch the winchman had his foot caught between winch frame and drum and the tops of his largest toes were amputated.

There was one accident in connection with explosives. A small boy was playing with some detonators he had found when one exploded and amputated the top of his thumb and three fingers.

No accidents concerning inflammable liquids, causing injuries to persons, came under notice.

**Safety.**—Regular inspection work was carried out, particularly at the larger mines and works, with the view of maintaining safe and satisfactory working conditions. The co-operation afforded by the management of mines and works was greatly appreciated.

No large movements of ground occurred in underground mines and in the alluvial mines the maintenance of the working faces at a reasonable angle of repose was ensured.

Shaft equipment, ladderways, surface equipment, handling of explosives, and the numerous other details of mining practice were continuously kept in mind throughout the inspections and any unsatisfactory matters were rectified without undue delay.

**Prosecutions.**—Proceedings were taken against two men for breaches of Rule 74 of the Mines and Works Regulation Act in that one was guilty of fighting and the other of using obscene language. Both parties pleaded guilty

and a conviction with 6s. 6d. costs was recorded in the first case and £1 fine with 32s. 6d. costs was imposed in the second case.

**Health and Sanitation.**—Regular attention was given to the satisfactory maintenance of change houses and crib houses and latrines for the betterment of the health of those concerned at various mines and works. The canteen, installed at one of the larger works during 1946 continued to serve cheap wholesome meals to employees and was reasonably well patronised. Housing schemes continued to operate at larger mines and works and as building material became available residences were erected. At the more isolated mines single men's quarters with a central mess house were maintained at a reasonably good standard.

Dust control was reasonably good throughout the year, the underground mines being sufficiently well ventilated by natural means, but where necessary in dead ends, &c., auxiliary ventilation fans, with vent tube attachments, were installed.

Assistance was rendered to the Chairman of the Workers' (Occupational Diseases) Relief Fund Board in arranging the necessary medical examinations of miners and in helping, when requested, in other matters.

**Explosives.**—Due to inability to obtain suitable ships the importation of explosives at Launceston was on a reduced scale and it was necessary, on occasions, to obtain quantities from Hobart, by rail, to maintain the supply. When importation took place personal supervision was exercised of the unloading and transfer to magazines. The Marine Board at Devonport kindly carried out the work of supervision at that port. A satisfactory Certificate of Analysis was forwarded in each case. The unloading of shipments proceeded without incident. With the exception of a few cases being slightly damaged all the explosives were found in good order. No reports were received of defective compounds, detonators, or safety fuse.

**Machinery.**—Very little new machinery was installed, but all existing mining machinery was regularly inspected. In the cases where accidents occurred in connection with machinery the Inspector of Machinery was advised and his co-operation was obtained.

**Inflammable Liquids.**—New applications for licences and other enquiries in connection with the Inflammable Liquids Act occupied a considerable amount of time. The combined duties of mines inspection, duties under the Explosives Act, &c., occupied the major portion of the year and the amount of time it was possible to allot to inspections of existing inflammable liquids installations was not as great as desired.

The one untoward incident which occurred during the year was a fire at a workshop in the business section of Launceston. Petrol was being transferred from the storage container to the tank of a motor car when the petrol was ignited, it is thought, by an electric spark from a power point which finally resulted in extensive fire damage to the workshop.

**Aid to Mining.**—At the same time as the ordinary duties of inspection were carried out advice was given, and suggestions made, to miners for the more efficient and safe conduct of their operations. Particularly was this so in the case of the smaller mines.

In connection with applications under the Aid to Mining Act reports were forwarded as required. Other reports on matters of a miscellaneous nature were made from time to time in connection with the mining activities of the inspectorate.

### MINING OPERATIONS AND PRODUCTION.

#### TIN.

Production for the year showed an increase of 171.14 tons metallic tin, as compared with the previous year, due mainly to expanding production by the larger companies and increased activity by the smaller mines as the result of an increase in price of the metal. The sterling tin price increased from £357 to £437 during 1947 and held that value for the greater part of the year. The year's production amounted to 735.12 tons metallic tin valued at £312,476.04 sterling.

**W.X.X. Mine, Moorina** (Estate A.W. Bird).—This mine was carried on in a small way by arrangement for the year. The ownership was under transfer and arrangements had not been completed at the close of the year.

Production amounted to 2·2772 tons metallic tin from 3·543 tons concentrates, valued at £976·33 sterling. Average number of men employed was three.

*Miscellaneous, Moorina.*—The smaller mines of this district gave employment to an average of four men, the mines producing 1·9173 tons of tin concentrate, containing 1·24 tons metallic tin, valued at £537·36 sterling.

*Weld Tin Syndicate, Weldborough* (T. H. Bryce and Sugden).—This syndicate, which employed two men during the year, carried out sluicing operations for about six months when water was available and treated 1920 cubic yards of alluvial material for a recovery of 5446 ton concentrate, containing 3712 ton metallic tin, valued at £162·21 sterling.

*Cambria Mine, Weldborough.*—This old mine was worked by R. R. Symons and partner, for the latter half of the year, when water was available. They were employed mainly in treating the old dumps and with selective sorting from 1100 cubic yards they obtained 1·8897 tons tin concentrates, containing 1·3157 tons metallic tin, valued at £574·96 sterling.

*Miscellaneous, Weldborough.*—On the small mines and prospecting around this township an average of 14 men found employment, production amounting to 3·5804 tons metallic tin, valued at £1520·65 sterling, contained in 4·9794 tons of concentrates.

*Anchor Tin Mine, Lottah.*—This mine, operated by a local syndicate, was unable to obtain sufficient labour and did not work continuously. However, 3300 tons of tin-bearing granite was quarried and the treatment of this yielded 5·4018 tons concentrates, containing 3·94 tons metallic tin, valued at £1638·16 sterling. The average number employed was four men.

*Miscellaneous, Lottah.*—Some small parcels of concentrates came forward from this district, mainly from prospecting operations. An average number of three men was employed. They produced 3817 ton of concentrates, containing 2514 ton metallic tin, valued at £107·44 sterling.

*Miscellaneous, Goshen and Goulds Country.*—Production by small producers amounted to 2941 ton concentrates, containing 2087 ton metallic tin, valued at £90·01 sterling. Employment was given to an average of two men.

*Albion Tin Syndicate, Priory.*—This syndicate carried on in a small way, but experienced engine trouble with their motive power for the gravel and pressure pumps used in connection with the hydraulic system of mining. Tin recoveries were not as large as was anticipated. Production amounted to 2·2840 tons concentrates, containing 1·4212 tons metallic tin, valued at £599·68 sterling. Employment was given to two men.

*Goshen Tin Mines, St. Helens.*—A total of 216,920 cubic yards of alluvial ground was handled and was derived from the three faces—Bog No. 2, Argonaut, and Georges Bay. Work was not continuous at each face as on occasions it was necessary to close one face down, owing to shortage of labour and water, to maintain operations at the other two faces. However, a production of 32·3653 tons of concentrates, containing 23·7989 tons metallic tin, valued at £10,192·49 sterling was obtained by 15 men employing the usual hydraulic sluicing methods.

*Bell Creek Tin Mine, St. Helens.*—Production from this mine was 5·3138 tons concentrates, containing 3·9547 tons metallic tin, valued at £1728·20 sterling, and was obtained from the sluicing and treatment of 13,000 cubic yards of alluvial ground. With the dry summer months water was not available and the above production was obtained during the latter half of the year, two men being the average number employed.

*Miscellaneous, St. Helens and Scamander.*—A production of 6870 ton of concentrates, containing 4167 ton metallic tin, valued at £182·10 was obtained from small mines operating in these districts, and, together with prospecting, employment was given to an average of four men.

*Aberfoyle Mine, Rossarden.*—This mine was the largest tin producer in the inspectorate and showed an increased production of 116·67 tons of metallic tin, as compared with the previous year. A total of 30,643 tons of ore was mined mainly from the 3, 4, 5, and 6 levels. The greater portion of the ore from the 5 and 6 levels was from development headings. During the year 1029 feet of development work was carried out, comprising 523 feet of driving, 188 feet of crosscutting, and 318 feet of rising. The new concentrating plant continued to give satisfactory service and carried on without major alteration. The installation of lighted, heated, and ventilated crib houses was commenced and also the provision of sanitary accommodation underground. Plant improvements were the extension of the crushing station to accommodate a new

roller bearing jaw crusher of modern design. The three large ore bins, commenced in the previous year, were completed and the coarse tailings stacker was constructed and now includes a special innovation in the form of an extension of local design and construction. Amenities for employees included enlarging their change house to double its capacity. When they become available, individual, electrically heated, steel lockers will be installed for each employee. The housing programme was continued. Six new fully equipped miner's cottages were completed and six new single men's huts. The community mess-room equipment was improved, the kitchen was enlarged, and a room was added.

Tin production amounted to 474·0185 tons concentrates, containing 341·3793 tons metallic tin, valued at £145,906·11 sterling. The average number employed at the mine was 127 men.

*Storey's Creek Tin Mine, Storey's Creek.*—As the amount of wolfram produced at this mine was greater than the output of tin operations are reviewed under "Wolfram." Tin production amounted to 47·5 tons of concentrates, containing 31·5 tons metallic tin, valued at £13,432·15 sterling.

*Miscellaneous, Avoca.*—Two small parcels aggregating 3902 ton of concentrate, were produced from this district. The metallic tin content was 2786 ton, valued at £115·99 sterling. Prospecting activities occupied the greater portion of the time of the two operators.

*Miscellaneous, Scottsdale.*—During the latter half of the year two men carried on mining in a small way in this area, but their production was not great, amounting to 3710 ton concentrate, containing 2137 ton of metallic tin, valued at £93·38 sterling.

*Miscellaneous, Ringarooma.*—A production of 6778 ton of concentrates, containing 4651 ton metallic tin, valued at £201·49 sterling, was obtained by an average of five men working intermittently at the smaller mines of the district.

*Arba Tin Mine, Branxholm* (Walsh & Co.).—Sluicing was continued at the Grouper Face workings where it was necessary to re-handle large quantities of previously worked ground for the recorded output of 12·5752 tons of concentrates, containing 9·3285 tons of metallic tin, valued at £3953·96 sterling. Concentrates produced during the previous year contained 3·3716 tons of metallic tin. Operations afforded employment for nine men.

*Bakers Discovery, Branxholm.*—No productive mining was carried out here during the year mainly due to a shortage of labour. One man was employed on prospecting and other work around the mine.

*Ruby Flat Mine, Branxholm* (Walsh & Co.).—The sluicing of shallow ground was continued on a small scale. Employment was given to an average of three men. They produced 2·6327 tons concentrates, containing 1·899 tons metallic tin, valued at £800·6 sterling.

*Miscellaneous, Branxholm.*—Production from small mines in this area was practically the same as in the previous year. The employment figure also remained static at an average of eight men. The 4·2246 tons of concentrates produced contained 3·0291 tons metallic tin, valued at £1312·72 sterling.

*Briseis Mine, Derby.*—Hydraulic mining was continued at this mine, but was confined to relatively shallow ground to the west of the old main workings. The end of June marked the cessation of the use of electric power by the Company and since that date water power has been used exclusively. The electrically driven gravel pumps were sold and have been sent to New South Wales. The disposal of other mining plant and equipment was proceeded with. An average of 42 men were employed, the ground worked being approximately 60 feet deep and 285,000 cubic feet of material being treated for a recovery of 104 tons concentrates, containing 74·88 tons metallic tin, valued at £31,624·20 sterling.

*Miscellaneous, Derby.*—With a curtailment of operations by the Briseis Company a few more men directed their attention to the working of the smaller mines and the number of men employed in prospecting and working the small mines increased to an average of ten for the year. Production amounted to 7·5167 tons concentrates, containing 5·0552 tons metallic tin, valued at £2154·71 sterling, which was double the output for the previous year.

*Miscellaneous, Herrick and Winnaleah.*—Production from this district was 1·4511 tons concentrates, containing 1·0489 tons metallic tin, valued at £457·97 sterling, and was the result of the efforts of an average of two men.

*Banca Tin Mine, Winnaleah.*—T. B. Dutton disposed of his interests in this mine to R. L. Rainbow who worked on his own when water was available. Production was 2·6055 tons concentrates, containing 1·8492 tons metallic tin, valued at £801·95 sterling.

*Dorset Terraces, Bradshaws Creek (Walsh & Wood).*—Two men were employed on productive operations during the third quarter of the year only and produced ·5027 ton concentrates, containing ·3594 ton metallic tin, valued at £157·06 sterling. The returns were, however, not satisfactory and, at the end of the year, the mine was idled.

*H. V. and L. Wood, Bradshaws Creek.*—This party only carried on active mining during the last quarter of the year due to a number of causes and the resultant production was not large. Two men were employed during the period of productive operations and 1750 cubic yards of alluvial ground was treated for a recovery of ·5732 ton of concentrates, containing ·415 ton of metallic tin, valued at £181·36 sterling.

*Eastern Leads Mine, Bradshaws Creek.*—Due to a broken syphon in the water supply no productive operations were carried out at this mine by W. J. Ponting and Sons. Owing to ill-health, the owner was contemplating a disposal of the mine and plant at the close of the year.

*O. J. Walsh and Hookway, Bradshaws Creek.*—Productive operations were pursued, during the latter half of the year, along the course of the Wyniford River, but large quantities of stone in the alluvial wash were a hindrance to operations. Hydraulic sluicing with hydraulic elevation to a sluicing box with a grizzly and chute at the intake end of the box to dispose of the stone was the method of mining used. An output of 1·458 tons of concentrates, containing 1·029 tons metallic tin, valued at £449·67 sterling, resulted from the treatment of 5070 cubic yards of alluvial ground.

*Miscellaneous, Bradshaws Creek and South Mt. Cameron.*—An average of eight men was employed on the small alluvial mines in these districts. Production totalled 8·4002 tons concentrates, containing 6·0017 tons metallic tin, valued at £2620·36 sterling.

*Dorset Dredge, South Mt. Cameron.*—This dredge continued operations during the period under review, and was engaged in productive dredging operations for 82 per cent of the possible operating time. Approximately 39 acres of the Dorset Flats were dredged. From the 1,680,000 cubic yards of alluvial material treated an average of ·175 lb. tin concentrates per cubic yard was obtained. Total tin production, for the period, was 109·6924 tons of concentrates, containing 80·0989 tons of metallic tin, valued at £34,695·82 sterling. Before marketing, the tin concentrate was treated for the extraction of the alluvial gold which was sold as a separate product and the amount is shown under "Gold". Employment was afforded for an average of 38 men.

*Endurance Tin Mine, South Mt. Cameron.*—Tin production for the year was obtained from the Clifton face workings where the position of the electrically driven gravel pump barge was not altered. It was, however, necessary to raise the sluice boxes to increase the holding capacity of the tailings dump. A transformer sub-station was erected and the Hydro-Electric Commission power lines were connected into the Endurance Mine's own power lines from their generating station thus enabling Hydro-Electric power to be used when there was insufficient water in the Frome Dam for operating the Endurance Power Station. This enabled productive operations to be carried on continuously throughout the period under review. From the treatment of 492,725 cubic yards of material, 138·3528 tons of tin concentrates, containing 102·6816 tons of metallic tin, valued at £42,068·80 sterling, was obtained. Fifty-one men were employed, this number including those employed on clay production at the mine.

*Mt. Cameron Water Race, Gladstone.*—This scheme continued as an important factor in mining operations at Gladstone. An average of nine men was employed in the sluicing of tin-alluvials on a royalty basis and operations accounted for an output of 9·0836 tons of tin concentrates, containing 6·2482 tons metallic tin, valued at £2665·29 sterling, and was obtained from the treatment of 33,650 cubic yards of alluvial ground.

*Star Hill Syndicate, Gladstone.*—Purchasing water on a contract basis from Mt. Cameron Water Race and then pumping it, with electrically driven pressure pumps, to the nozzles, this Syndicate was able to carry out sluicing operations at two faces continuously throughout the period under review. A total of 54,000 cubic yards of alluvial material was handled for a recovery of 19·9932 tons concentrates, containing 14·4487 tons metallic tin, valued at £6093·17 sterling. Employment was given to five men.

*Miscellaneous, Gladstone.*—Other than the mining operations already mentioned, 16 men found employment in prospecting and working small mines in this district, none of which was a development of special note, but collectively they produced 10·0443 tons of concentrates, containing 7·1532 tons metallic tin, valued at £3114·74 sterling.

*Straits Islands.*—Three men found employment during the year on prospecting ventures. Production from Cape Barren Island was ·3009 ton concentrates, containing ·1662 ton metallic tin, valued at £72·63 sterling.

*Shepherd and Murphy Mine, Moina.*—Work at this mine was spasmodic and a few parcels of mixed concentrates were produced. The metallic tin content of the concentrates was 1·4656 tons, valued at £557·66 sterling.

#### WOLFRAM.

The sterling price of wolfram rose steadily from £375 to £638 and was no doubt a contributing factor to an increase of 44·47 tons in the production of wolfram. Storey's Creek and Aberfoyle Mines were again the main producers. The total production was 201·0504 tons wolfram, valued at £82,931·94 sterling.

*Storey's Creek Mine.*—With a production of 126·5 tons wolfram, the tungstic tri-oxide content being 91·1 tons, valued at £52,750·65 sterling, this mine was the major producer. As the labour position did not improve, the development plans envisaged were not carried out. However, the southern extension of the lode series, which had faulted, was developed and added many thousands of tons to the ore reserves. This development entailed about 350 feet of driving and the block of ore extends from the No. 5 level, the lowest at present driven to the adit level which was last operated, more than 60 years ago, by an old company. Ore mined and treated for the period under review was 8695 tons and this gave employment to 78 men.

*Aberfoyle Mine.*—This mine produced 72·9317 tons wolfram, containing 52·0312 tons tungstic tri-oxide, valued at £29,684·54 sterling, this being subsidiary to the tin production under which heading operations are reviewed.

*Shepherd and Murphy Mine.*—Of the mixed concentrates produced at this mine, the tungstic tri-oxide content amounted to ·8318 ton, valued at £343·12 sterling.

*Mt. Pelion Mine.*—Messrs. Bloomfield and partner commenced productive operations at this mine during the latter quarter of the year. Prior to this, considerable time had been expended in making the road to Lorinna suitable for vehicular traffic. An output of ·4379 ton of wolfram concentrates produced was recorded and this contained ·2408 ton tungstic tri-oxide, valued at £153·63 sterling.

#### GOLD.

The price of gold remained static at £8·61 sterling per fine oz. Again, the major production was from the re-treatment of old dumps at Golden Gate Mine, Mathinna, and the Dorset Dredge at South Mt. Cameron. Total gold production amounted to 752·335 fine oz., valued at £6477·60 sterling. A number of enquiries was received regarding the old gold-fields and there appears to be a slight revival of interest following the relaxation of war-time controls on gold mining.

*Golden Gate Dumps, Mathinna.*—The retreatment of the old Golden Gate Mine dumps continued. Cyanidation of 8537 tons of tailings resulted in a recovery of bullion containing 373·734 fine oz. gold, valued at £3217·85 sterling. Six men were employed and no major alterations or improvements were made to the plant. However, towards the end of the year, owing to dwindling reserves of economically payable residues, consideration was being given as to the future activities of this syndicate.

*Dorset Dredge.*—The alluvial tin concentrate recovered by dredging was subject to treatment for an extraction of the gold content by mercury amalgamation. The recovered gold was equivalent to 304·705 fine oz., valued at £2623·50 sterling.

*Endurance Tin Mine.*—From the treatment of tin concentrates considered to be economically worth the additional effort, a recovery of bullion containing 15·976 oz. fine gold, valued at £137·55 sterling was obtained.

*Miscellaneous.*—The total production of gold from the old gold-fields of Lisle, Lefroy, Beaconsfield, and Derby districts amounted to 57·920 fine oz., valued at £498·70.

**BISMUTH.**

Although the price of this metal rose to £998.65 sterling the only output was from parcels of mixed concentrates produced at the Shepherd and Murphy mine, of which the metallic bismuth content was .3998 ton, valued at £305 sterling.

**SILVER AND COPPER.**

The Aberfoyle Tin Mine disposed of a parcel of 13 tons of concentrates which had accumulated over a long period from operations at their concentrating plant and these contained 399.1 fine oz. of silver, valued at £71.84 sterling and 1.2670 tons of copper valued at £173.58 sterling.

**LIMESTONE.**

Due to the cessation of operations by one of the large quarries the Limestone production dropped to 22,869.5 tons. At the close of the year, only limestone for agricultural purposes and the manufacture of lime was being produced.

*Broken Hill Pty. Ltd., Melrose Quarries.*—Owing to inability to obtain sufficient labour over a number of years this Company reluctantly decided to cease operations, at these quarries, about the middle of the year and for the remainder of the year employees were engaged in dismantling and packing the plant for shipment elsewhere. Employment was given to 26 men and the production amounted to 19,506 tons of limestone, valued at £A11,526.

*Melrose Agricultural Lime Works.*—These works which had been grinding the waste screenings from the Broken Hill Pty.'s Quarry for agricultural purposes had to make other arrangements following the cessation of operations by Broken Hill Proprietary and, at the close of the year, commenced their own quarry and were negotiating to take over some of the plant and quarries vacated by the Company. The production was approximately the same, but there was an increase in the number of men to enable constructional work to be proceeded with to meet the altered conditions. The output of ground limestone was 2036 tons, valued at £A2595.

*Railton Lime Works.*—Operating for the production of burnt lime the majority of the limestone, at the works, used was obtained from the Goliath Portland Cement Works. However, the two men employed quarried 680 tons of limestone, valued at £279 Australian Currency for use in the lime kilns.

*Launceston Lime Products, Flowery Gully.*—This company operated the old lime kilns of J. R. Dally throughout the year, without major alteration, employment being given to two men and 647.5 tons of limestone, valued at £A176, being produced for use in the production of burnt lime.

**CEMENT.**

*Goliath Portland Cement Company, Railton.*—Although production was hampered to some extent by the irregular supply of gypsum and difficulties with transport to dispose of their product, this Company operated almost continuously to fulfil their numerous orders. The new Asbestos Sheet Manufacturing Factory was brought into operation and by the end of the year most of the manufacturing difficulties had been overcome. Quantities of 106,274 tons of limestone and 1590 tons of iron ore were quarried for use in the production of cement.

On the welfare side, considerable progress was made with the employees' housing scheme and the canteen received reasonable patronage.

**CLAY.**

From clay pits, under the jurisdiction of this office, clay was produced for paper manufacture, brick-making, &c.

*Endurance Clay Deposit, South Mt. Cameron.*—In the early part of the year A. Pearson relinquished his interest in this deposit and operations were continued by the Endurance Tin Mining Company. This Company instituted the use of hydraulic sluicing for overburden removal, but men were still employed to hand pick and bag the clay for transport to the paper mills. A total of 3211.5 tons of clay was despatched and was valued at £8830 Australian Currency.

*Relbia Clay Pit.*—A. Pearson operated this pit for the extraction of one parcel of 40.5 tons of clay, valued at £A46, which was shipped to the mainland. Two men were employed.

*Haines Brick Works, Dulverton.*—Production continued throughout the year, bricks being in short supply with increased building being carried out. A quantity of 2430 tons of clay was quarried and used in the manufacturing process. Eight 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 2317, compared with 2249 for the previous year.

The distribution was as follows:—

Works .....	1,832
Coal mining .....	289
Quarries and brickworks .....	143
Limestone quarries .....	37
Osmiridium and tin .....	16
Total .....	2,317

**Accidents.**

Twenty accidents, resulting in non-fatal injuries to a like number of persons, were registered under the provisions of the Mines and Works Regulation Act, representing an increase of three in the number recorded for the previous year.

Fifteen accidents were associated with surface operations, and five occurred underground, representing an increase of four surface and one underground accidents compared with the previous year.

Eight persons were injured when handling material, five accidents were associated with handling trucks, two were due to falls of roof, two to falls, and one person sustained injuries when a pony trod on his foot.

Nine of the injured persons received injuries to the feet or legs, seven received hand injuries, four back injuries, one a head injury, and one received bruised ribs.

The most serious accident occurred at the surface when a workman was struck with a steel bar which he placed in the rear wheel of a motor truck in order to prevent the wheel from spinning on a soft surface. He kept hold of the bar, and shouted to the driver to go forward.

When the wheel was put into gear, the bar was jerked forward and struck the workman under the jaw which was fractured. He was thrown to one side, and his leg was also badly fractured below the knee.

Another workman received injuries to the back, when a fall of roof occurred while he was engaged in repairing an underground roadway. The accident was not considered serious, as the workman was able to walk about feeling only a bit sore, but after a fortnight's absence from his work, he asked for an X-ray, and this disclosed a fractured spine, necessitating him being placed in a plaster cast.

All the injured persons, including those mentioned above, have returned to work.

**Safety.**

Constant care was directed to the production and maintenance of safe working conditions, and every working place was inspected at each periodical visit. Pillar extraction was closely watched, and in some cases it was considered necessary to withdraw workmen from places which were considered unsafe, and, in other cases, safety precautions were ordered to be carried out to allow continuance of work.

Working places underground were regularly tested for the presence of inflammable and noxious gases, including the edges of the old "goaf" in the pillar workings, but no gas was found.

Some blackdamp was discovered in an old road in one mine, and this had to be removed prior to working places being connected thereto.

A survey was made of one area to ascertain the proximity of old workings containing water. As a result it was possible to make a connection with safety, the water from the old workings being syphoned to a point below the level of the advancing face.

Quarry faces were regularly examined, and in some cases, the workmen were withdrawn from sections which were regarded as unsafe. In some cases it was deemed necessary to order precautions to be taken to safeguard workmen.

Underground electrical equipment was regularly examined and tested to ensure safe operation. When found faulty, the use of the apparatus was ordered to be discontinued until the defect was remedied.

#### *Ventilation.*

Main air currents were regularly checked by means of the anemometer, and, in most cases, have been found satisfactory. One small mine, employing only three men underground, had to instal a small furnace in order to provide a constant flow of air into the mine while workmen were engaged underground. Improved ventilation resulted.

It was found necessary to order the installation of suitable ventilating doors and stoppings at one mine, where the working faces were not receiving a sufficient quantity. Installation of the doors and stoppings improved the conditions.

Wet and dry bulb temperatures were regularly recorded in all the underground working places, as well as main intake and return airways. Temperatures were found to be below the prescribed limits. The highest recorded temperature was 65° Fahr. on the dry bulb, with a corresponding reading of 64° Fahr. wet bulb. The lowest reading was 49° Fahr. dry bulb with 46° Fahr. wet bulb.

Although the temperatures were low, it was necessary in some cases to withdraw workmen from working places owing to sluggish ventilation, as places containing fog are not regarded as being adequately ventilated. The erection of suitable brattice would, in most cases, improve the conditions.

No inflammable gas was found in any place during the year.

Professor T. D. Jones, C.B.E., Ph.D. of the University of Birmingham, England, paid a brief visit to two coal mines in the St. Marys district, in order to carry out an investigation of atmospheric dust conditions at mechanised faces. He commented very favourably on the ventilation of the working places.

#### *Health and Sanitation.*

Matters affecting health and sanitation have been given due attention, and improvements have been effected in some cases which were considered to require improving.

After the visit by Professor Jones, a full investigation was made of atmospheric dust conditions at mechanised faces, and, as a result, it was decided that the use of water should be applied to mechanised units, in order that generated dust should be suppressed, thereby adding to the precautions already being taken to safeguard the health of workmen engaged underground.

Where places of employment were considered unhealthy, remedial measures were ordered to be carried out in order to ensure healthy conditions of employment.

Exposure of workmen to harmful dust and fumes at metallurgical and other works was closely watched, and precautionary measures were taken as and where considered necessary.

#### *Explosives.*

Due attention has been given to the proper storage and use of explosives and detonators, and, in some cases, alterations to existing practices were insisted upon. The number of miss-fired shots was reduced to a negligible quantity due to the adoption of recommended practices.

The unloading of one large shipment of explosives was supervised. Unloading was conducted with due diligence and care.

#### *Inflammable Liquids.*

Care continued to be exercised in the handling and storage of inflammable liquids, and no untoward incident was observed.

Several petrol installations were inspected during the year, and these were generally found to comply with the Inflammable Liquids Act. The chief omissions were "No Smoking Notices" on petrol pumps, and non-provision of fire extinguishers, but owners provided these when instructed.

Many applications for new installations were dealt with, and new sites were inspected.

All cases of observed breaches were rectified without recourse to legal action.

#### *Machinery.*

Inspections and tests have been regularly carried out to ensure that the machinery was maintained in a safe condition.

The insulation resistance of underground cables and equipment was occasionally found to be below standard, and steps had to be taken to immediately remedy the fault. In some cases the cables were regarded as unfit for further use, and these had to be replaced.

Earth Leakage Units, protecting portable face machinery, were regularly inspected and tested. In some cases, these were found faulty, and had to be given immediate attention. When the fault could not be remedied immediately, the machinery was classed as unsafe, and its use discontinued until full protection was restored.

In one case, it was found that the Earth Leakage Coil had broken down. A new coil was installed and the unit again functioned satisfactorily. It could not be established what had caused the breakdown, but after the fault was discovered, instructions were issued for the daily testing of the unit, by means of the test button provided, and since the adoption of this precaution, the unit has continued to operate satisfactorily. The circuit operates with a flow of only thirty milliamperes, and it is difficult to understand why the coil should break down. It is suspected that interference was the cause.

A workman reported having received an electric shock when he attempted to lift his electric boring machine which was lying on the floor of his working place in the mine. An investigation disclosed that a nearby pump motor had developed an earth fault, and the earth current apparently travelled by means of the earth wire to the frame of the electric boring machine which was connected to a common earth wire. Both pump motor and electric drill motor were protected by the same earth leakage unit at the Gate End, but apparently the earth resistance through the unit was greater than that offered by the frame of the drill which was lying on the damp ground, and the leakage current passed to earth through the drill frame, so that when the workman touched the frame, he received part of the earth leakage current. The pump motor was isolated, and the Earth Leakage Protection Unit functioned satisfactorily.

In some cases, when testing the operation of the Earth Leakage protecting coal face machinery, it is impossible to cause the unit to operate by means of leakage current unless the coal cutting machine or loader is lifted off the steel rails. Apparently the leakage path to earth, by means of the rails, is less than that offered by means of the normal earth leakage circuit, with the result that the leakage current by-passes the leakage coil, and the Earth Leakage Unit thus becomes ineffective.

All the above incidents point out the weakness of the method of earth leakage protection which is controlled by means of a resistance in the earth circuit. Core Balance Protection would have opened the circuit no matter which path the leakage current flowed, and, in my opinion, is the only safe method of protecting workmen who are called upon to handle portable face machinery and who rely so much upon foolproof equipment for their safety.

The efficient earthing of frames and enclosures was constantly checked, and where earthing was found to be unsatisfactory, efficient earthing was immediately provided.

#### *General.*

Some further prospecting was carried out at Bonnys Plains, but the results were not encouraging.

Investigations were carried out in connection with applications for the purchase of Crown lands.

#### *Operations and Production.*

The total production of coal was 167,140 tons, valued at £154,725 at the mine bins. An average of 289 persons was directly employed, 217 being employed underground and 72 at the surface. The corresponding figures for the previous year were 158,751 tons, valued at £137,736 and 276 persons, 209 being employed underground and 68 at the surface.

The output was the highest yet recorded, and this could have been further increased, as several days' work was lost at all mines during the year. The average output per employee was 578.3 tons compared with 575.2 tons for the previous year. The output per underground employee was 792 tons.

The largest increase in production was from the Mount Nicholas coal mine which showed an increase of about 3800 tons. The Cornwall coal mine increased production by 3100 tons, and the Stanhope coal mine showed an increase of about 1800 tons.

The largest reduction occurred at the Langloh coal mine where nearly 3000 tons less was produced. The Jubilee coal mine produced 700 tons less, and the York Plains coal mine closed down during the year.

The Electrolytic Zinc Company showed a reduced output of all products, and Carbide production was also less than the previous year, the reduced outputs being due to shortage of materials.

Limestone production increased by 4700 tons. About 12,000 tons was delivered to the Carbide Works for use in the production of Calcium Carbide, about 5000 tons was delivered to the Electrolytic Zinc Company's Works at Risdon, and about 2300 tons was used for building purposes and agriculture.

The production of Granite from Coles Bay increased to 2922 cubic yards. Osmiridium production increased slightly and the production of Kaolin increased by fifty tons. Other products showed slight reductions.

#### *Fingal-Mount Nicholas-Dalmayne Coalfields.*

Slightly more than 83 per cent of the State's coal production was obtained from these coalfield, 139,465 tons being produced compared with 130,617 tons for the previous year.

*The Cornwall coal mine* was the chief coal producer, accounted for 83,329 tons, valued at £73,236, and employed an average of 119 person. The corresponding figures for the previous year were 80,257 tons, valued at £64,204, and 121 persons.

The Arc-wall coal cutting machine continued to operate in the Main Heading Section, under the same conditions as in the previous year. Water sprays were installed on the machine, in order to allay generated dust. These sprays continued to operate successfully after installation.

Pillar extraction commenced in an old section of the workings on the West side of the Main Heading, and extraction was much easier than in previous sections, there being less floor lift.

The new developing heading, to the West was continued during the year, and many new workings were developed in a seam of good average thickness. A new "Main and Tail" haulage was installed, and additional parties of miners were transferred from more congested sections in the mine. The supply of skips to the miners was much relieved, as the length of haulage to this new section is much shorter than the haulage inside the main tunnel.

A small output resulted from the Blue Seam workings, which operated on a narrow strip of coal left when the old workings were abandoned. A connection was made to the main tunnel, and, as a result, air conditions, at the face, were much improved.

*The Mount Nicholas coal mine* produced 25,640 tons, valued at £22,618, and employed an average of 41 persons, compared with 21,875 tons valued at £17,509 and 32 persons for the previous year.

Most of the output was produced by mechanical means, and, in all cases, electric boring machines were used to bore shot-holes.

Water sprays were installed for use in connection with the coal-cutting and loading machines, and these operated satisfactorily.

A new Cable-reel was introduced into the mine, in order to assist in the gathering of coal from the face. Some difficulties were experienced and adjustments were effected, but it was not found satisfactory for operation inside the mine.

The developing heading was advanced into the 6-foot seam and roof conditions improved as the heading advanced into the hill.

*The Jubilee coal mine* produced 16,911 tons, valued at £16,725, and employed an average of 38 persons. The corresponding figures for the previous year were 17,639 tons, valued at £14,713, and 37 persons.

Very difficult conditions continued in the new machine section, where the middle stone was thicker, while some faulting also occurred. It was decided to abandon this section and install the machine in the Main Heading. This section had been standing for some years, and, as a result, was flooded. The water caused bad roof conditions and reduced the height of the roadways. The work of reconditioning this section caused a reduction in output. The main haulage road was repaired and reconditioned in parts, while roadways into the pillar section of the mine also had to be given attention, owing to low conditions caused by pillar extraction.

The air shaft collapsed and a new outlet had to be put in to accommodate the main ventilating fan, which also had to be reinstalled.

*The Dalmayne coal mine* produced 2793 tons, valued at £1761. An average of 4 persons was employed. The corresponding figures for the previous year were 2171 tons, valued at £1461, and the same number of persons.

No new developmental work was carried out, and pillar extraction was commenced towards the end of the year.

*The Fingal coal mine* produced 6852 tons, valued at £6434, and employed an average of 10 persons, compared with 5455 tons, valued at £5033, and 7 persons for the previous year.

The main tunnel was reconditioned and re-timbered. Preparations were made for the installation of a new ventilating fan of the propeller type, to replace the existing fan which is too small. The new fan will be driven by an electric motor. The erection of transmission poles was commenced towards the end of the year, and electricity should be available at the mine early in the new year.

*The Duncan coal mine* produced 3391 tons, valued at £2948, and an average of 6 persons was employed. The corresponding figures for the previous year were 3220 tons, valued at 2576, and 4 persons.

This mine is only in the development stage, and the heading is being advanced towards the main leases which lie to the North-East of the Fingal coal mine leases.

*Avoca coalfield.* The Stanhope Coal Mine produced 11,642 tons, valued at £11,415, and employed an average of 24 persons, compared with 9781 tons, valued at £10,850, and 22 persons for the previous year.

The Main Heading was reconditioned and work was commenced during the early part of the year to develop this section which had been standing since 1944. The coal seam was of good quality and thickness, and most of the output was obtained from this section.

The maintenance of suitable airways, past the old long-wall section, caused difficulties, and re-conditioning and re-timbering will be necessary if these are to be kept open for air circulation.

Damp conditions inside the mine caused a deterioration in the insulation resistance of the electric cables, and efforts are to be made to restore the insulation to a suitable standard.

*The Mount Christie coal mine* produced 841 tons, valued at £928, and 2 men were engaged.

Disturbed conditions caused great difficulty, and a new ventilation shaft was constructed, but the mine ceased producing during the last quarter of the year owing to faulting.

*The Merrywood coal mine* produced 3940 tons, valued at £3425, and employed an average of 6 persons. The previous year's figures were 3724 tons, valued at £2938, and 8 persons.

The transport of coal continued to be the chief obstacle to greater output.

The new bins were erected at the site of the second outlet, but these bins could not be regarded as satisfactory, and caused delays in loading. An attempt was made to remove the overburden and test the possibilities of open cut operations, but after operating for only a short while, the bulldozer broke down and had to be removed for repairs. It is intended to further test the possibility of working by open-cut method as the amount of cover is not large.

#### *Upper Derwent Coalfield.*

*The Langloh coal mine* produced 8166 tons, valued at £9711, and employed an average of 26 persons, compared with 11,094 tons, valued at £11,094, and the same number of persons.

The ventilation of this mine was increased by the installation of a larger and faster electric motor to drive the fan.

Roof conditions deteriorated as a result of excessive weighting due to water penetrating from the surface. The wet conditions also caused trouble in the maintenance of installation resistance in the electric cables and equipment.

A large fall occurred in the main return airway, which caused a break in the main supply cables, and buried the main underground switchboard. This fall also caused a restriction in the air circulation.

#### *York Plains Coalfield.*

*York Plains coal mine* produced 341 tons, valued at £511, and employed 2 men for three quarters. Owing to the difficulty in obtaining suitable labour to work the mine, the owner decided to close down the mine at the end of the third quarter.

*Sandfly-Cygnets Coalfield.*

Sandfly coal mine produced 649 tons, valued at £1183, and employed an average of 3 persons, compared with an output of 568 tons, valued at £872, and 2 men for the previous year.

The output from this mine was obtained from the new tunnel which was put in towards the end of the previous year. The workings were advanced towards the old workings to the West, and a connection was made after the water had been drained from the old roads.

*The Mersey Coalfield.*

The output from this field was 2645 tons, valued at £3830, and an average of 9 persons was employed. The corresponding figures for the previous year were 2991 tons, valued at £4263, and 10 persons. The output was obtained from the same two mines as in the previous year, from a seam which measured between twenty and twenty-four inches thick. All the coal was used at the Ovaltine Factory.

*Ore Treatment.*

The Electrolytic Zinc Company treated 141,945 tons of imported and Tasmanian calcines, compared with 154,780 tons for the previous year. Shipping difficulties were the chief cause of the reduction, but staff shortages also caused some difficulties.

Zinc recovery amounted to 69,421 tons which was nearly 7000 tons less than the previous year's production. In addition, 192 tons of Cadmium and approximately 12 tons of Cobalt Oxide were recovered; these figures also being lower than those of last year. The production of Die-Cast Alloy ceased towards the end of the year, but the production of Zinc Dust, Zinc Sulphate, and Superphosphate continued.

A breakdown in the thickening machine disrupted the ventilating system to part of the plant, but alterations were made to the unit, and should greatly minimise the recurrence.

Alterations were carried out to the structure of the Cell-room in order to improve the ventilation of this large building, during the hot weather, when unpleasant conditions sometimes existed, due to excessive cell temperature. Alterations were responsible for improved working conditions during these uncomfortable periods.

A new auxiliary ventilating system was brought into operation during the year, in order to deal with the ventilation of the plant during the time when the main system is closed down for weekly overhaul. Improved working conditions were secured during the "shut-down" period after the installation.

Preparations are now being made for the introduction of a counter-current method of gas circulation through the Cotterell plant, and when completed it is expected that the flue gases will be more efficiently treated.

An average of 1704 persons was employed at the works.

*Carbide, Limestone, and Silica.*

The Australian Commonwealth Carbide Company produced 5401 tons of Calcium Carbide valued at £138,554, and employed an average of 128 persons. The corresponding figures for the previous year were 5866 tons of carbide, valued at £145,902, and 136 persons.

The reduced output was due to shortage of essential materials from the mainland, and it was only possible to operate one furnace during the greater part of the year.

The production of Carbon-black continued without interruption with highly satisfactory results.

No Ferro-silicon was produced during the year.

Installation of the new electric furnace was held up by shortage of men and materials, and it cannot be forecast when this work will be completed.

Limestone was produced at Ida Bay, and Granton. The total production was 18,262 tons, valued at £21,909, and an average of 37 persons was employed. The corresponding figures for the previous year were 14,345 tons, valued at £16,510, and the same number of persons.

Approximately 11,900 tons was delivered to the Carbide Works at Electrona, and 4800 tons to the Zinc Works at Risdon. The remainder was used for building and agriculture.

Granton Limeworks produced 2375 tons, valued at £1221, and employed an average of 7 persons.

Granite production from the quarry at Coles Bay amounted to 209 tons valued at £2211 and an average of 8 persons was employed.

*Osmiridium.*

The production of Osmiridium from Adamsfield was 98.77 ounces, valued at £2700, the previous figures were 93.3125 ounces, valued at £2545.

*Tin.*

The output of metallic tin from Cox Bight was 1.83 tons valued at £780, compared with an output of 3.427 tons, valued at £1058, for the previous year.

*Kaolin.*

The output of Kaolin from Surges Bay was 285 tons, valued at £1282 and an average of 2 persons was employed. The corresponding figures for the previous year were 228 tons, valued at £1114, and the same number of persons.

*Quarries.*

An average of 143 persons was employed at the quarries operating under the provisions of the Mines and Works Regulation Act, compared with an average of 123 persons for the previous year. Although the number of employees is higher than the previous year, quarries are still understaffed to meet the demands for building materials.

The statistics for the year are as follows—

Average number of claims supplied per week	4
Greatest number supplied in any one week	8
Total number of claims supplied	695
Value of cash sale	1838
Receipts of credit sale	1838
Total receipts	3676
Under fixed lease	10
Under royalty lease	32
Average number of men employed per week—11	11

...the stability of the Gladstone community. The decrease of 7.52% was in the output of the carbide under existing conditions which affected the revenue and this coupled with revenue deficits and high capital expenditure necessary for replacement and maintenance has induced consideration of the desirability of reviewing the charge to be levied for the supply of water at the fixed rate to provide increased revenue and reduce the incidence of the disabilities illustrated.

An approximate amount of maintenance and construction work was carried out at a cost of £200 in 1947 in connection with various parts of the system and this has served to progressively improve conditions of distribution and to progressively develop over a period of years in the main service area, but does not represent all essential work necessary to restore deteriorated units in the entire system.

Works—The main race was rammed and cleared from the intake to No. 2 siphon and from the intake to the intake to the Gladstone Road.

Supply—The new 15" diameter flexible concrete siphon has satisfied all requirements and continues to deliver a larger volume of water than the 30" 27" metal siphon which has been abandoned. A 15" metal siphon was installed to replace the old siphon across the Clyde Creek and replaced a source of constant trouble. The siphon across the Robertson River is approaching a stage of collapse owing to advanced deterioration. Replacement would involve considerable expenditure and as the system has been necessary only for certain domestic purposes it is recommended that the replacement should be recommended unless and until a method productive potential has been

APPENDIX VI.

REPORT OF THE MOUNT CAMERON WATER-RACE BOARD FOR THE YEAR ENDED 31ST DECEMBER, 1947.

SIR,

We have the honour to submit the report of the Mount Cameron Water-Race Board for the year ended 31st December, 1947.

Production of tin-oxide from all activities, serviced by the race, was 29-078 tons, as compared with 27-891 tons for the previous year. The output under the fixed scale of payment for water was 19-993 tons, and that under the royalty scale was 9-085 tons, representing an increase of 8-7145 tons in the former and a decrease of 7-5275 tons in the latter productions.

Revenue was £818 13s. 9d., as compared with £925 6s. 10d. for last year. Expenditure amounted to £1026 14s. 9d., as against £1107 18s. 9d. for the previous year. The decrease of £81 4s. in expenditure was off-set by a decline of £107 12s. 3d. in revenue. A net loss of £208 1s. resulted in the working of the race system.

There was an expenditure of £999 6s. 9d., from a special appropriation, on the construction of intake and outlet boxes at the new concrete syphon, conditioning of the intake weir and training wall of the main intake on the Mussel Roe River, replacement of the Cybele Syphon, and on conditioning of the main race, making an aggregate deficit of £1207 7s. 9d. for the year.

There was no improvement in the number of claims supplied and, despite the increased output of tin-oxide and a substantial appreciation in the price of tin, the system continues to be a financial burden for the employment of 11 men.

Disparities arise from charges made for the supply of water under royalty and fixed scales. On a unit basis of 100 sluichead-weeks the output was 2-87 tons of tin-oxide under the fixed scale, but not more than 0-50 ton under the royalty scale, whereas revenue was £14-06 per ton of tin-oxide under the fixed scale, as compared with £56-9 per ton under the royalty scale. In the previous year, the relative figures were 1-5 tons of tin-oxide and £26-826 per ton under the fixed scale, as against 1-22 tons and £36-732 per ton under the royalty scale.

Appreciated tin prices have materially benefited the unit revenue under the royalty scale of charges, but revenue under the fixed scale of charges has depreciated, despite improved tin prices and a substantial increase in production. Members of the Board have been conscious of deterioration in the condition and economics of the system, but agreed that the incurrence of a reasonable deficit has been merited because the system has preserved employment for a small number of men, has maintained an essential unit for tin-mining in the district, and has contributed to the stability of the Gladstone community. The decrease of 7-5275 tons in the output of tin-oxide, under royalty conditions, adversely affected the revenue and this, coupled with recurring deficits and high capital expenditure necessary for replacements and maintenance has induced consideration of the desirability of revising the charge to be levied for the supply of water at the fixed rate, to provide increased revenue and reduce the incidence of the disparities illustrated.

An appreciable amount of maintenance and constructional work was carried out, at a cost of £999 6s. 9d., in connection with various units of the system and this has served to progressively recover conditions of deterioration cumulatively developing over a period of years in the main servicing section, but does not represent all capital works necessary to restore deteriorated units in the entire system.

Races.—The main race was scrubbed and cleared from the intake to No. 2 syphon and from the Garfield workings to Eddystone Road.

Syphons.—The new 27" diameter flexible concrete syphon has satisfied all requirements and continues to deliver a larger volume of water than the 30"-27" metal one which has been abandoned. A 15" metal syphon was installed to replace the old syphon across the Cybele Creek and remedied a source of constant trouble. The syphon across the Ringarooma River is approaching a stage of collapse owing to advanced deterioration. Replacement would involve considerable expenditure and as the syphon has been necessary only for servicing domestic requirements at Gladstone its replacement cannot be recommended unless and until a merited productive potential has been

established in mining possibilities. Pending any mining development, every endeavour is being made to hold the syphon in condition for meeting domestic requirements. The intake and outlet boxes at the Edina Syphon are not in good condition and many collars of this concrete pipeline are weeping. It is proposed to duplicate the syphon when repairs to the existing one will be undertaken.

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

Dams.—Dams were held in serviceable condition. The old wood-concrete weir across the Mussel Roe River was completely moulded in concrete, the wall was elevated six inches and the training wall was compensated from the intake to the sluice gate.

Culverts.—Three culverts were renewed and all other crossings, necessary for servicing the system, were held in condition.

Buildings.—There was a small expenditure on urgent repairs to cottages and when finance and availability of materials permit further improvements will be made in living amenities.

General.—The average rainfall was six inches less than for the previous year, but flooding conditions were more pronounced and may have contributed to the reduced output of tin-oxide under the royalty scale of charges for the supply of water. No innovations occurred in the use of electric power and only one party continued to take advantage of the opportunity provided by the Hydro-Electric Commission for the supply of 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, 1947.

Rainfall.

The registered rainfall for the year was as follows:—
Great Mussel Roe ... 49 inches 17 points.
Little Mussel Roe ... 48 inches 81 points.

Revenue.

Revenue from the sale of water for mining and domestic purposes was £818 3s. 9d., representing a decrease of £107 3s. 1d., compared with that of the previous year. Total revenue, from all sources, amounted to £818 13s. 9d.

Disbursements.

Expenditure amounted to £1026 14s. 9d., representing a decrease of £81 4s., compared with that of the previous year.

Statistics.

The statistics for the year are as follows:—

Table with 4 columns: Item, tons, cwt, qrs, lb. Rows include Average number of claims supplied per week (5), Greatest number supplied in any one week (8), Total number of heads supplied (Fixed or cash scale 695, Royalty or credit scale 1536), Tin ore raised (Under fixed scale 19 tons, 19 cwt, 3 qrs, 13 lb; Under royalty scale 9 tons, 1 cwt, 2 qrs, 22 lb; Total 29 tons, 1 cwt, 2 qrs, 7 lb).

Average number of men employed per week—11.

*Statement of Receipts and Payments of the Mount  
Cameron Water-Race Suspense Account for the Year  
Ended 31st December, 1947.*

RECEIPTS.

	£	s.	d.
Water sold under fixed scale .....	281	4	0
Water sold under royalty scale .....	516	19	9
Water sold for domestic purposes .....	20	0	0
Transfer fee on water contract .....	0	10	0
Total receipts .....	818	13	9
Balance—Excess payments over receipts .....	208	1	0
	£1,026	14	9

PAYMENTS.

	£	s.	d.
Salaries and wages .....	957	8	0
Pay-roll tax .....	23	19	4
Repairs to Ringarooma Syphon—			
Wages .....	£4	10	5
Pay-roll tax .....	0	2	3
	4	12	8
Repairs, &c., channel keepers' cottages .....	3	11	4
Tools for use on race .....	7	9	2
Rubber boots .....	4	8	8
Freights .....	0	6	6
Petrol .....	8	7	0
Insurance .....	11	15	1
Printing .....	4	17	0
	£1,026	14	9