AR1931

(No. 1.)

TASMANIA

REPORT

OF THE

SECRETARY FOR MINES

FOR

YEAR ENDING DECEMBER 31

1931

WITH REPORTS OF THE STATE MINING ENGINEER, GOVERNMENT GEOLOGIST, CHEMIST AND ASSAYER, CHIEF INSPECTOR OF MINES, CHIEF INSPECTOR OF EXPLOSIVES, INSPECTORS OF MINES, AND THE MOUNT CAMERON WATER-RACE BOARD APPENDED.

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

TASMANIA:
WALTER E. SHIMMINS, GOVERNMENT PRINTER, HOBART

1932

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REPORT OF SECRETARY FOR MINES.

Mines Department,
Hobart, 25th May, 1932.

SIR,

I have the honour to submit my Report on the Mines Department and the Mining Industry for the year ended 31st December, 1931, which will probably be the last Annual Report of the Department I will be called upon to prepare.

I will attain the age of 70 years on the 19th April, 1933, and, under the provisions of the Public Service Act, 1923, will automatically retire on that date, after a continuous term of 54 years' service, before the time for the compilation of the report for the current year falls due. I therefore take this opportunity of expressing to you my appreciation of the courtesy and assistance you have at all times extended to me during your term of office as Minister for Mines.

APPENDICES.

Appended will be found:

- Report of the State Mining Engineer.
- Report of the Government Geologist.
- Report of the Chemist and Assayer.
- Report of the Chief Inspector of Mines.
- Report of the Chief Inspector of Explosives.
- Reports of the Inspectors of Mines.
- Annual Report of the Mount Cameron Waterrace Board.

AID TO MINING AND BORING OPERATIONS.

The assistance to prospectors, miners, &c., under the Act was far in excess of that granted in any previous year. Full details of operations, as also particulars of boring operations, will be found in the report of the State Mining Engineer in Appendix II.

The expenditure and receipts under the Aid to Mining Act, 1927, were as follows:—

Expenditure.

(Part III. of the Aid to Mining Act, 1927.)

	£	s.	d.
Drilling and boring carried out at Dundas, Spray Section, Zeehan, Branxholm, and Piper's River Districts:—			
Salaries and wages	£1,682 12 9		
Other expenses	536 14 1		
	2,219	6	10

(Part II. of the Aid to Mining Act, 1927.)

	£	s.	d.
*Sustenance allowance to prospectors from funds provided under the Aid to Mining Act, 1927	4,177	19	4
Miscellaneous expenditure (insurance, cartage, advertising, &c.)	57	17	5
Grants under Part III. of the Aid to Mining Act, 1927	864	11	2
Grants under Part IV. of the Aid to Mining Act, 1927	391	3	5
	£7,710	18	2

* Sustenance allowance. A further sum of £1767 was expended under the provisions of the Unemployment Relief Act.

Receipts.

	£	s.	d.
Repayment of advance	5	0	0
Royalty paid by tributers	63	13	8
Sale of plant	56	5	0
Boring at Herrick	15	0	0
Refunds:—			
Rail fares £7 19 4			
Insurance premium 1 13 9			
	9	13	1
Rent of oil engine	1	4	0
Interest on loan	1	16	10
	£152	12	7

Ore Sales.

	£	s.	d.
The amount received from ore sales was	698	13	7
Which was distributed as follows:—			
Paid to tributers £634 19 11			
Royalty paid to State 63 13 8			
	698	13	7

GEOLOGICAL SURVEY.

The systematic survey which was undertaken at Smithton and Rosebery was completed during the year. In addition to the elucidation of the geological structures and the preparation of reliable topographical and geological maps, valuable results were obtained.

At Smithton enormously thick beds of dolomite were discovered, and some of the beds are of very pure quality, so that the conditions are exceptionally favourable for the establishment of industries to manufacture magnesium salt, &c.

At Rosebery the structure of the district and the ore-bodies in particular was determined.

Full particulars will be found in the Report of the Government Geologist in Appendix III.

GENERAL REMARKS.

The total value of the minerals and mineral products won in Tasmania for 1931 was £894,986, compared with £1,270,114 for 1930, which represents a decrease of £375,128. This decrease was

caused largely by the low prices ruling for mineral products, particularly those of the base metals. Reduced production was also partly responsible for the decrease.

The principal decreases were copper (£204,269), coal (£12,249), lead (£48,566), limestone (£45,487), silver (£30,314), zinc (£19,332), cement (£19,180), and wolfram (£12,200).

Small increases occurred in the case of carbide (£15,861), gold (£3142), osmiridium (£1793), and tin (£1042).

As regards production, increases in quantities are showing in carbide (606 tons), gold (293 oz.), osmiridium (327 oz.), pyrites (506 tons), and tin (77 tons). Decreases show in quantities of copper (107 tons), coal (14,888 tons), cement (9906 tons), lead (2048 tons), limestone (44,983 tons), nickel (117 tons), oil shale (4026 tons), wolfram (112 tons), and zinc (943 tons).

RETURN showing the Quantity and Value of Minerals produced in the State of Tasmania during the Year 1931.

Mineral.	Quantity.	Value.
		£
Bismuth ..... tons	1·75	1015
Carbide .... „	3903	67,298
Copper ... . „	9833·1	416,309
Coal .... „	123,828	98,004
Cement ..... „	27,506	96,340
Gold ..... ozs. f.	4759·59	22,118
Lead ... . tons	2189·47	29,024
Limestone ..... „	55,268	49,490
Nickel ..... „	0·2	45
Osmiridium ..... ozs.	1279·54	18,028
Pyrites .... tons	506·7	253
Shale ..... „	1402	600
Silver ..... ozs. f.	391,732	25,754
Talc ..... tons	15	58
Tin..... ..... „	588·83	70,634
Wolfram ..... „	0·29	16
Total	...	£894,986

The Electrolytic Zinc Company of Australasia Limited recovered 53,832 tons of Zinc, valued at £897,212, and 198·7314 tons of Cadmium, valued at £45,514, from other than Tasmanian ores, and employed an average of 748 men.

METAL PRICES.

The low metal prices continued from 1930 and caused the further decline in the value of production. The largest falls occurred in the cases of copper, lead, zinc, silver, and tin.

The fall in the price of copper did not affect the production of the Mount Lyell Company, but considerably reduced the value thereof. The continued low price of zinc prevented the re-starting of operations at Rosebery.

ASBESTOS.

No asbestos was produced during the year.

RETURN showing the Quantity and Value of Asbestos produced from 1899 *to* 1931 *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
1920–1931	—	—
Total.....	3565·5	£7105

BARYTES.

No barytes was won during the year.

RETURN showing the Quantity and Value of Barytes produced during the Years 1916 *to* 1931.

Year.	Quantity.	Value.
	Tons.	£
1916.....	83	359
1917.....	52	234
1918.....	217	977
1919.....	399	1160
1920.....	1048	4163
1921–1924	—	—
1925.....	3·5	16
1926–1928	—	—
1929.....	9·5	24
1930.....	—	—
1931.....	—	—
Total.....	1812	£6933

BISMUTH.

The output for the year was 1·75 tons, valued at £1015.

RETURN showing the Quantity and Value of Bismuth produced from 1904 *to* 1931 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1904	·3	15
1905	3·5	800
1906	·3	24
1907	·175	27
1908	3·75	462
1909	2·9	980
1910	10·70	4249
1911	14·395	5758
1912	7·59	2646
1913	5·08	1627
1914	5·619	1666
1915	5·5	1203
1916	3·51	1059
1917	4·212	895
1918	4·608	1038
1919	1·77	573
1920	·10	9
1921	·05	21
1922	—	—
1923	—	—
1924	—	—
1925	—	—
1926	—	—
1927	—	—
1928	—	—
1929	—	—
1930	·97	475
1931	1·75	1015
Total.....	76·779	£24,542

CADMIUM.

No cadmium was produced from Tasmanian ores during the year.

RETURN showing the Quantity and Value of Cadmium produced during the Years 1924 *to* 1931.

Year.	Quantity.	Value.
	Tons.	£
1924.....	5·247	1175
1925.....	5·2454	1178
1926.....	10·4014	1827
1927.....	19·2712	3233
1928.....	19·7266	4329
1929.....	17·498	7839
1930.....	3·3052	1333
1931.....	—	—
Total.....	80·6858	£20,914

CARBIDE.

The Australian Commonwealth Carbide Company Limited continued its operations and produced 3903 tons valued at £67,298.

RETURN showing the Quantity and Value of Carbide produced during the Years 1922 *to* 1931.

Year.	Quantity.	Value.
	Tons.	£
1922	4512	135,509
1923	3236	64,720
1924	3305	65,660
1925	2934	60,047
1926	3420	68,400
1927	2072	34,896
1928	3829	68,877
1929	3434	53,841
1930	3297	51,437
1931	3903	67,298
Total	33,942	£670,685

CEMENT.

The production of cement showed a considerable decrease compared with that produced during the year 1930, the marketing being affected by lack of building operations. The Goliath Portland Cement Company at Railton was the sole producer, the total production being 27,506 tons, valued at £96,340.

The Manager (Mr. S. S. B. Purves) reports as follows:—

Owing to the depressed condition of building and constructional trades, the total consumption of cement in Australia fell off drastically during the year under review, and our despatches were limited to 25,322 tons, which, at £3 10s. per ton, represents a return of £88,627 on the cement produced.

Manufacturing was carried on intermittently, employing approximately 86 all told when on production and an average of about 65 while not manufacturing. Developmental work in our quarry was continued without interruption throughout the year and various improvements effected to the plant as found desirable, mainly in the form of improved transport facilities, where concrete roadways were constructed to carry the heavy traffic between our quarry and works.

During the year we commenced using coal mined by working parties from the local seams between Dulverton and Spreyton, and a considerable tonnage of this coal was worked in with East Coast coal for firing our rotary kiln.

RETURN showing the Quantity and Value of Cement produced during the Years 1924, 1925, 1926, 1927, 1928, 1929, 1930, *and* 1931.

Year.	Quantity.	Value.
	Tons.	£
1924	21,026	105,130
1925	32,574	162,870
1926	33,611	166,447
1927	38,690	176,779
1928	44,799	189,380
1929	41,798	175,613
1930	37,412	115,520
1931	27,508	96,340
Total	277,418	£1,188,079

COPPER.

The production for the year was 9833·1 tons, valued at £416,309.

RETURN showing the Quantity and Value of Copper in Blister Copper and Copper Ore during the Years 1919 *to* 1931 *inclusive.*

Year	In Blister Copper.		In Copper Ore.		Total.	
	Q'ty.	Value.	Q'ty.	Value.	Q'ty	Value.
	Tons.	£	Tons.	£	Tons.	£
1919...	5014	503,977	13	984	5027	504,961
1920...	4791	528,177	·75	60	4791·75	528,237
1921...	6171	462,876	9·843	287	6180·843	463,163
1922...	5616	391,535	—	—	5616	391,535
1923...	6063	435,282	1·7	131	6064·7	435,413
1924...	6698	457,386	—	—	6698	457,386
1925...	6539	436,661	—	—	6539	436,661
1926...	6915	454,854	—	—	6915	454,854
1927...	5811	362,988	—	—	5811	362,988
1928...	6421	444,802	—	—	6421	444,802
1929...	8689	740,985	—	—	8689	740,985
1930...	9940	620,578	—	—	9940	620,578
1931...	9833·1	416,309	—	—	9833	416,309
Total	88,501·1	6,276,410	25·293	1462	88,526·393	6,257,872

The Mount Lyell Mining and Railway Company Limited: Return for the Calendar Year, 1931.

	Tons (dry).
Ore and metal-bearing material smelted:—	
Ore:—From the Company's North Lyell Mine	9,087
Concentrates:—From the Company's North Lyell Mine, Lyell Comstock Mine, Royal Tharsis Mine, and Crown Lyell Mine	
Ore	43,150
Purchased ore	8
Total	52,245

Blister copper produced—9913 tons, containing:—Copper, 9833 tons; silver, 148,782 oz.; gold, 3796 oz.; approximate value, £443,404.

Average number of men employed:—

Mining Department—At the Company's Mount Lyell Mine	nil	
Ditto, North Lyell Mine	452	
Ditto, Lyell Comstock Mine	213	
Ditto, Royal Tharsis Mine	19	
Ditto, Crown Lyell Mine	10	
Miscellaneous	90	
		784
Reduction Works Department (including Lake Margaret)		570
Railway Department—Mount Lyell Railway		87
Total		1,441

Dividends paid during year, £77,500: 1s. per share.

Dividends paid from the inception of the Company to the 31st December, 1931, £5,212,819.

Copper produced from the inception of the Company to the 31st December, 1931, 247,084 tons (fine).

Silver produced from the inception of the Company to the 31st December, 1931, 14,309,269 oz. (fine).

Gold produced from the inception of the Company to the 31st December, 1931, 401,680 oz. (fine).

THE MOUNT LYELL MINING AND RAILWAY COMPANY LIMITED.

Report by the Manager (Mr. R. M. Murray) on work done during the year ended 31st December, 1931:—

"*Mining*

"Mining operations were carried on continuously during the year. The North Mount Lyell, Lyell Comstock, Crown Lyell, and Royal Tharsis Mines were regular ore suppliers, but the greater portion of the ore produced came from the two first-mentioned properties, the aggregate being appreciably in excess of the figures for recent years. Development and exploratory operations were also undertaken in all mines.

"*North Mount Lyell Mine.*—The customary mining operations, comprising exploratory and development work and ore-breaking, were undertaken during the year under review, the ore production totalling 184,702 tons, and, in addition, 106 tons of copper precipitates were recovered from the mine waters. The large quantity of stope-filling required was again obtained from the Crown Lyell quarry.

"*Crown Lyell Mine.*—The ore occurrence in this mine was opened up during the year at the 300-feet, 400-feet, and 500-feet levels, and produced 16,510 tons (mainly the result of development work) of low-grade ore, this being delivered to the concentrating mill, *via* the North Lyell tunnel.

"*Lyell Comstock Mine.* — This mine was brought into full production during the year, all levels being drawn upon for ore supply, the total extraction being 100,444 tons, all of which was delivered at the concentrating mill. Exploratory and developmental operations were also undertaken as required.

"*Royal Tharsis Mine.*—The work of equipping this mine for ore-production was carried out during the year, and is still proceeding. Ore-extraction by development and stoping methods totalled 7114 tons, all of which was despatched to the treatment plant.

"*Reduction Works.*

"All operations in connection with treatment of ore were carried on without intermission during the year.

"The concentrating mill treated 299,864 tons of ore from the various mines, the resulting concentrates totalling 44,473 tons, the ratio of concentration again being greater than in any previous year. The metal-bearing material smelted aggregated 52,246 tons, comprising 9087 tons of high-grade ore from the North Mount Lyell mine, 43,151 tons of concentrates, and 8 tons of purchased ore. The blister copper produced during the year totalled 9913 tons, as compared with 10,018 tons for the preceding year.

"The electrolytic copper refinery again operated efficiently during the period, the full blister copper production being dealt with and the resulting cathode copper shipped to Kembla, New South Wales, for casting into wire bars.

"The maintenance of the ore-reduction plant at the customary standard of efficiency received the usual attention. The coarse-crushing section referred to in the last report was completed, and put into commission towards the close of the year, and is operating smoothly and efficiently. This plant comprises three crushing units in series: a 16-inch Telsmith primary crusher, a 5-feet 6-inch Symons cone crusher and a 4-feet Symons disc crusher, the first and last items having been transferred from the original plant. This section provides for the transference of the ore from unit to unit by gravitation, and it is finally delivered to a 300-feet conveyor for transport to the fine ore storage bins serving the ball mills. This plant reduces the run of mine ore to ½-inch product, and has a capacity of 1000 tons per 8-hour shift. The installation of the plant for pumping the concentrates from mill to smelter was also completed during the term, and is operating satisfactorily. The other additions to the fine grinding and flotation sections previously referred to were also completed and placed in commission. A second bowl classifier has been installed, with satisfactory results on mill recovery, and two new concrete bins, having a total capacity of 3000 tons, for storage of crushed ore, are in course of construction. Other minor improvements in the general treatment plant were made during the year.

"*Hydro-Electric Plant.*

"The Lake Margaret hydro-electric plant operated continuously throughout the year, supplying the whole of the Company's requirements, as well as those of the Zeehan and Rosebery districts, and local communities. The installation of the supplementary power-station on the Yolande River, referred to in last report, was completed during the year, and is operating satisfactorily. The power output from this and the main station adequately meet the increased consumption on the Company's work and in the local districts."

COAL.

The output amounted to 123,828 tons valued at £98,004.

The Cornwall, Mount Nicholas, and Jubilee collieries were the principal producers. Numerous small collieries in the Latrobe district produced small quantities, most of which was used by the Goliath Portland Cement Company.

RETURN showing the Quantity and Value of Coal raised from 1880 *to* 1931.

Year.	Quantity.	Value.
	Tons.	£
1880 to 1903 inclusive	767,261·5	659,010
1904	61,109	51,942
1905	51,993	44,194
1906	52,895·75	44,962
1907	58,891	50,057
1908	61,067·75	51,907
1909	66,161·75	56,237
1910	82,445	48,609
1911	57,067	26,214
1912	53,560	24,568
1913	55,043	25,367
1914	60,794	27,853
1915	64,536·25	30,418
1916	55,575	27,736
1917	63,412	38,673
1918	60,163	37,676
1919	66,253	47,004
1920	75,429	64,005
1921	66,476	63,446
1922	69,238	61,016
1923	80,718	70,797
1924	75,988	66,555
1925	81,698	70,424
1926	102,358	90,401
1927	112,056	99,802
1928	128,500	106,558
1929	130,291	105,877
1930	138,716	110,253
1931	123,828	98,004
Total	2,923,524	£2,299,565

The Mount Nicholas Coal Company Proprietary Limited.—The Mine Manager (Mr. J. L. Pemberton) reports as follows:—

The output was 29,187 tons, valued at £23,545.

The number of men employed was 94.

Owing to slackness of trade, the number of days worked producing coal was 184 out of a possible 270 working days.

The main winning headings have only advanced six chains during the period, the major portion of the coal being won from the western side. The quality of the coal has been maintained.

At the end of the year an electrically driven main and tail haulage was installed. This plant is driven by a 50 horse-power Crompton Parkinson motor, the power being supplied by the Hydro-Electric Commission, which has completed extending its power line to this district. A 35 horse-power motor was also installed for driving a Sirocco fan. This fan had previously been driven by a 30 horse-power direct-current motor, the current being generated at the mine. Now the hydro-electric power is here, this direct-current generating plant is scrapped. Twenty lights have also been installed in the mine, the majority being on the haulage road. A hot-water system has been installed at the bath and change house, the water being heated by electricity. The Company's houses have also had the light installed.

The Cornwall Coal Company No Liability.—The Mine Manager (Mr. C. S. F. Hood) reports as follows:—

Quantity of coal drawn—69,792 tons.
Value—£52,343.
Number of men employed—130.

The system of working is board and pillar, and the workings have advanced to 1½ miles underground All coal has been produced from No. 2 seam.

Haulage is done on both surface and underground by means of the endless rope system (skips over the rope and speed 2 miles per hour).

Ventilation is produced by means of a Sirocco fan, 91 inches in diameter, which is driven by a 60 horse-power electric-motor, the electricity being generated on the mine.

The coal is separated into 3 grades, viz., large, nuts, and slack, in one operation by means of shaker screens. It is then delivered on to a travelling belt and cleaned of all stone and inferior coal by hand and delivered into the trucks.

The screens are also operated electrically by a 20 horse-power motor.

GOLD.

The quantity won was 4759·59 oz. fine, valued at £22,118, as compared with 4466·61 oz., valued at £18,976, for 1930.

RETURN showing the Quantity and Value of Gold won from 1880 *to* 1931.

Year.	Quantity.	Value.
	Ozs.	£
1880 to 1903 inclusive	1,265,836·95	4,905,706
1904	65,921	280,015
1905	73,540·5	312,380
1906	60,023·4	254,963
1907	65,354·25	277,607
1908	57,085·1	242,482
1909	44,777·366	190,201
1910	37,048·053	157,370
1911	31,100·873	132,108
1912	37,973·252	161,300
1913	33,400·457	141,876
1914	26,243·453	111,475
1915	18,547·338	78,784
1916	15,790·096	67,072
1917	14,496·464	61,577
1918	10,528·930	44,724
1919	7,686·470	32,650
1920	6,246·192	29,796
1921	5,340·094	28,395
1922	3,431·486	15,998
1923	3,684·124	16,639
1924	4,625·600	21,563
1925	3,523·870	15,041
1926	4,222·748	17,936
1927	4860·7	20,646
1928	3603·43	15,306
1929	5596·88	23,772
1930	4466·61	18,976
1931	4759·59	22,118
Total	1,919,710·276	£7,698,476

Old Golden Gate Mine, Mathinna. — The Manager (Mr. John Watson) reports:—

Two hundred and sixty-six tons of ore were mined and milled for a return of 158 oz. 6 dwt. of bullion. Further mining and prospecting has been carried out near the Catholic Church, where Mr. Holdenson (the owner of the Golden Gate property) has sunk a shaft—now to a depth of 200 feet. So far no results have been obtained from this prospecting, and it is our intention to do some cross-cutting, where we are in hopes of picking up the lode. Six men are employed in this work, and four are prospecting on the Old Gate Leases.

Old Boys' Mine, Mathinna.—The Manager (Mr. R. Stone) reports:—

Since the beginning of January, 1931, at the 375-feet level, the S.W. channel drive has been extended to 477 feet. At 447 feet a winze was sunk 49 feet, with very poor results; a rise was also put up to connect with No. 3 level. During the year a 5-head battery was erected, and two trial crushings put through, the first being 200 tons of quartz for 31½ oz. 2 dwt. of smelted gold and the second 215 tons of quartz for 87½ oz. gold.

West Coast.—The Holdfast Gold Company is carrying out an important programme of works in the Whyte River district on the West Coast, the main objective being to divert the Whyte River through a tunnel to connect the two ends of a big loop in the river. On completion of the works the river bed will be laid bare for about one mile. It is proposed to extract alluvial gold from the river bed by hydraulic methods.

The manager reports that work done on the mine included building of huts, surveys made, hydraulic elevator installed, the large diversion tunnel (13 feet at the base and 13 feet 3 inches vertical) had been driven 204 feet, to the 31st December, and 112 chains of power-race constructed.

IRON.

No iron ore was produced during the year.

RETURN showing the Quantity and Value of Iron Ore produced from 1897 *to* 1931.

Year.	Quantity.	Value.
	Tons.	£
1897 to 1903 inclusive	20,442	16,276
1904	6840	2975
1905	6300	2600
1906	2600	1100
1907	3000	1150
1908	3600	1600
1909-1931	—	—
Total	42,762	£25,701

IRON PYRITES.

The quantity won was 506·7 tons, valued at £253, the first production since 1923.

RETURN showing the Quantity and Value of Iron Pyrites produced during the Years 1915 *to* 1931.

Year.	Quantity.	Value.
	Tons.	£
1915	12,835·59	8945
1916	14,005·084	13,597
1917	7,685·549	7137
1918	5,105·600	4667
1919	3,456·95	4288
1920	4,440	7346
1921	606·5	2579
1922	8,276	18,620
1923	11,882	26,737
1924	—	—
1925	—	—
1926	—	—
1927	—	—
1928	—	—
1929	—	—
1930	—	—
1931	506·7	253
Total	68,799·973	£94,169

LEAD.

The output was 2189·47 tons, valued at £29,024, as compared with 4737·84 tons, valued at £77,590, for 1930.

RETURN showing the Quantity and Value of Lead included in Silver Lead during the Years 1919 *to* 1931.

Year.	Quantity.	Value.
	Tons.	£
1919	2357·142	64,403
1920	3855·639	142,268
1921	1434·794	32,241
1922	4925·880	118,257
1923	4784·057	127,542
1924	4559·110	154,881
1925	5525·99	197,452
1926	5892·58	183,167
1927	5583·12	135,403
1928	4786·78	101,616
1929	5983	138,793
1930	4237·84	77,590
1931	2189·47	29,024
Total	56,115·402	£1,502,637

The North Mount Farrell Mine (Estate of late Frank Bond, Proprietor).—The General Manager (Mr. J. J. Andrew) reports:—

At the close of 1930 the new main shaft was completed to the No. 10 level, 838 feet from surface, and a plat cut. During the period under review a crosscut has been driven east 284 feet, intersecting the main lode, which has been driven on north and south.

No. 10 Level, South Drive.—This drive was advanced 311 feet, the lode being patchy and varying in width from 3 to 7 feet. At a point 60 feet above No. 10 level an intermediate drive was driven south. The lode at this level proved more regular and produced good milling ore, from which a little clean ore was picked out. Stoping above the No. 10 level and above the intermediate level produced average grade milling ore, with occasional bunches of clean ore.

No. 10 Level, North Drive.—The drive north was driven on the hanging-wall portion of the lode and extended 204 feet. The lode proved to be irregular and not payable. No stoping was done north of the crosscut at this level.

No. 9 Level.—Stoping was carried out at this level south of the main crosscut, and all payable ore on this lode stoped out. A winze was sunk 25 feet on a shoot of ore north of main crosscut. The lode here was not payable and the work was abandoned, the machines being transferred to No. 10 level.

Production.—During the period 2784 tons of marketable ore was produced, containing 171,569 oz. of silver and 1655 tons of lead, the value being £16,428.

Number of Men Employed.—During the year the average number of men employed was 128.

The Magnet Silver Mining Company, No Liability.—The General Manager (Mr. R. G. Hales) reports:—

Ore raised, 1390 tons; metal obtained, 253·6 tons; silver, 15,720 oz.; lead, 106·6 tons; gross value, £2404·9; net value, £1207·2; number of men employed, 55.

Owing to the low prices of silver and lead, the mine closed down on 14th January, reopening on 5th November, 1931. From the latter date to end of period under review, the mine was operated by a tribute party, no development work being carried out.

Stoping was carried out over the undermentioned levels:—

Lode West of Dolomite.—

No. 13 Level.—North Drive.—Part of the sixth floor of this stope has been taken out, from which seconds of fair grade have been won.

No. 15 Level.—South Drive.—The seventh floor has been taken out, and produced fair grade seconds and firsts. The north drive stopes, known as central stope, have produced metal of good grade, but have been taken out up to No. 14 level.

No. 16 Level.—North Drive.—No work has been done over this level.

Main Lode.—

No. 16 Level.—North and South Drives.—The bulk of the metal has been won from the stopes over this level, but, owing to the low prices of silver and lead, not one of the stopes has been payable.

LIMESTONE.

The quantity won for the year was 55,268 tons, valued at £49,490.

RETURN showing the Quantity and Value of Limestone produced during the Years 1923 *to* 1931.

Year.	Quantity.	Value.
	Tons.	£
1923	100,113	122,428
1924	146,140	146,140
1925	124,670	124,670
1926	153,707	153,219
1927	169,522	167,373
1928	98,654	79,050
1929	68,176	66,597
1930	100,251	94,977
1931	55,268	49,490
Total	1,016,501	£1,003,944

Limestone exports to Newcastle for the Broken Hill Proprietary Company's iron and steel works were considerably below those of the previous year. Considerable quantities were quarried at Queenstown for fluxing purposes by the Mount Lyell Company; at Ida Bay for the Carbide Company and the Electrolytic Zinc Company; at Railton for cement manufacture; and at numerous localities for burning for lime.

NICKEL.

The output was ·2 ton, valued at £45.

RETURN showing the Quantity and Value of Nickel produced from 1927 *to* 1931 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1927	86·2	14,656
1928	10	1697
1929	85·44	14,765
1930	117·6	1999
1931	0·2	45
Total	299·44	£33,162

OCHRE.

No ochre was won during the year.

RETURN showing the Quantity and Value of Ochre produced during the Years 1918 *to* 1931.

Year.	Quantity.	Value.
	Tons.	£
1918	100	200
1919	—	—
1920	—	—
1921	14	56
1922	—	—
1923	—	—
1924	20	50
1925	—	—
1926	38	69
1927	—	—
1928	—	—
1929	—	—
1930	—	—
Total	172	£375

OSMIRIDIUM.

The quantity of this metal won during the year was 1279·54 oz., valued at £18,028, as compared with 952·7 oz., valued at £16,235, for 1930.

RETURN showing the Quantity and Value of Osmiridium produced during the Years 1910 *to* 1931 *inclusive.*

Year.	Quantity.	Value.
	Ozs.	£
1910	120	530
1911	271·88	1888
1912	778·77	5742
1913	1261·65	12,016
1914	1018·83	10,076
1915	247·048	1581
1916	222·150	1899
1917	332·079	4898
1918	1606·743	44,833
1919	1669·715	39,614
1920	2009·196	77,114
1921	1750·655	42,935
1922	1173·924	35,512
1923	673·423	19,642
1924	364·805	10,617
1925	3365·543	103,570
1926	3172·5	61,908
1927	632·687	7456
1928	1627·186	42,458
1929	1360	30,624
1930	952·7	16,235
1931	1279·54	18,028
Total	25,891·024	£589,176

Adamsfield continues to be the principal producing field. The lode there has been worked to a depth of 50 feet, and has yielded a considerable quantity of metal. The north-western fields are still producing small quantities.

The following table gives particulars of osmiridium won from Adamsfield since its discovery up to 31st December, 1931:—

Period.	Quantity.			Value.		
Quarter ending—	Oz.	dwt.	gr.	£	s.	d
30th June, 1925	9	1	12	281	8	11
30th September, 1925	625	19	9	20,144	10	11
31st December, 1925	2238	5	9	68,757	1	4
31st March, 1926	992	13	7	23,339	0	1
30th June, 1926	633	12	20	12,202	18	4
30th September, 1926	862	18	16	8475	8	11
31st December, 1926	555	6	6	5539	1	3
31st March, 1927	203	9	11½	1909	5	7
30th June, 1927	142	3	9	1706	0	6
30th September, 1927	93	16	6	1132	1	6
31st December, 1927	113	10	8	1362	0	0
31st March, 1928	442	8	9	10,509	18	2
30th June, 1928	261	19	7	6529	9	1
30th September, 1928	551	16	2	15,350	18	0
31st December, 1928	293	5	0	7840	11	4
31st March, 1929	168	9	8	4147	6	4
30th June, 1929	262	7	16	5683	4	7
30th September, 1929	292	2	23	7905	14	9
31st December, 1929	313	2	17	6208	3	0
31st March, 1930	186	9	17	3278	17	0
30th June, 1930	67	6	11	1300	12	1
30th September, 1930	126	16	9½	1898	4	10
31st December, 1930	347	12	17	4302	11	5
31st March, 1931	240	19	14	4008	2	4
30th June, 1931	251	9	6	3104	14	9
30th September, 1931	251	10	15	3428	14	6
31st December, 1931	354	12	3	4741	11	10
Total	10,883	5	0	£235,087	11	4

SHALE.

The output was 1402 tons, valued at £600.

RETURN showing the Quantity and Value of Shale produced during the Years 1910 *to* 1931.

Year.	Quantity.	Value.
	Tons.	£
1910	364	214
1911	500	250
1912	—	—
1913	130	130
1914	75	75
1915	—	—
1916	1286	1286
1917	—	—
1918	—	—
1919	600	900
1920	140	172
1921	868	1506
1922	40	100
1923	1101	1094
1924	1576	1526
1925	820	559
1926	2127	1475
1927	3150	2050
1928	2595	1297
1929	4299	2982
1930	5428	3490
1931	1402	600
Total	26,501	£19,706

RETURN showing the Quantity and Value 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
	Total	183,016

The Goliath Portland Cement Company continued its operations with the Crozier retort during the earlier part of the year. Later all the crude oil produced by the Tasmanite Shale Oil Company was refined at the Goliath plant.

The Tasmanian Shale Oil Inquiry Committee continued to act during the year. An amalgamation of interests was initiated, and, finally, all the companies and individuals amalgamated, and are now operating under the name of the Tasmanite Shale Oil Company. This company received a grant of £2000 from the Commonwealth Government, and a test of the Crozier retort is to be made.

The Geological Survey carried out a systematic sampling campaign, which yielded valuable information as to oil yield, specific gravity, sulphur content, &c.

SCHEELITE.

No scheelite was won during the year.

RETURN showing the Quantity and Value of Scheelite produced during the Years 1917 *to* 1931.

Year.	Quantity.	Value.
	Tons.	£
1917	69	12,130
1918	216	39,252
1919	198·98	43,181
1920	105·09	17,905
1921–1931	—	—
Total	589·07	£112,468

SILVER.

The output was 391,732 oz. (fine), valued at £25,754, as compared with 711,619 oz., valued at £56,068, for 1930.

RETURN showing the Quantity and Value of Silver contained in Silver-Lead and Blister Copper during the Years 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, *and* 1931.

Year	In Silver Lead.		In Blister Copper.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Ozs.	£	Ozs.	£	Ozs.	£
1919	296,719·27	71,831	228,624	53,733	525,343·27	125,564
1920	453,411	118,898	169,948	47,869	623,359	166,767
1921	165,637	27,181	183,021	30,395	348,658	57,576
1922	674,886	104,926	119,699	18,511	794,585	123,437
1923	516,073·61	73,742	122,528	17,597	638,601·61	91,339
1924	494,782	75,598	147,376	22,439	642,158	97,837
1925	597,012·67	86,283	133,181	19,226	730,193·67	105,509
1926	...	80,597	...	17,394	766,653	97,988
1927	640,575	75,135	101,207	11,889	741,782	87,024
1928	564,156	66,386	105,270	12,515	669,326	78,901
1929	714,930	78,252	149,424	16,308	864,354	94,560
1930	528,641	41,485	182,978	14,583	711,619	56,068
1931	242,950	16,104	148,782	9650	391,732	25,754
T'tal	5,889,773·35	916,218	1,794,038	292,106	8,448,364·55	1,208,324

SILVER-LEAD.

RETURN showing the Quantity and Value of Silver-Lead Ore produced from 1888 *to* 1918 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1888 to 1903 inclusive	300,977·5	2,571,771
1904	51,138	203,702
1905	75,270·5	246,888
1906	87,117·75	462,443
1907	89,762·5	572,560
1908	63,116·9	322,007
1909	80,378·35	298,880
1910	51,226·91	247,576
1911	61,501·195	253,361
1912	90,123·868	309,098
1913	83,289·268	319,997
1914	11,565·54	96,225
1915	10,382·95	91,689
1916	11,229·410	153,796
1917	9575·780	152,122
1918	7241·400	127,176
Total	—	£6,429,291

Since 1918 the metallic contents are shown under silver and lead respectively.

TALC.

The output was 15 tons, valued at £58.

RETURN showing Quantity and Value of Talc produced during the years 1928 *to* 1931 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1928	32	96
1929	23	45
1930	13·35	53
1931	15	58
Total	83·35	252

TIN.

The output was 588·83 tons, valued at £70,634, as compared with 511·77 tons, valued at £69,592, in 1930.

RETURN showing the Quantity and Value of Tin exported from Tasmania from 1880 *to* 1904 *(compiled from Customs Returns only), Tin Ore produced during the Years* 1905 *to* 1918 *inclusive, and Metallic Tin produced during the Years* 1919 *to* 1931.

Year.	Quantity.	Value.
	Tons.	£
1880 to 1904 inclusive	76,708·4	7,167,564
1905	3891·5	362,670
1906	4472·75	557,266
1907	4342·75	501,681
1908	4520·8	421,580
1909	4511·2	418,165
1910	3701·01	399,393
1911	3953·05	513,500
1912	3713·825	543,103
1913	4010·41	531,983
1914	2572·713	259,300
1915	2599·234	292,306
1916	2854·636	350,852
1917	2637·337	427,917
1918	2256·203	488,798
1919	1580·22*	395,794
1920	1310·411*	369,362
1921	790·395*	130,257
1922	679·440*	112,407
1923	1160·390*	236,955
1924	1108·450*	275,014
1925	1129·662*	297,515
1926	1096·16*	322,526
1927	1105·74*	317,593
1928	1140·14*	258,676
1929	640·36*	130,014
1930	511·77*	69,592
1931	588·83*	70,634
Total	138,587·806	£16,222,417

* Metallic Tin.

The Pioneer Tin Mining Company Limited.—The General Manager (Mr. C. G. Ryan) reports:—

With the exhaustion of the payable ground in the deep faces at the Pioneer Mine, all plant in the workings was removed to the surface and the excavation allowed to fill with water. A tribute was then let to 11 of the Company's employees on the shallow ground that could be worked with a hydraulic elevator, and sluicing has been carried on continuously by this party since February, which have won 25 tons 18 cwt. 20 lb. of stream tin, valued at £2364 2s. 10d. While this was in progress five men have been employed gathering up and dressing the accumulated residues from streaming boxes and overflow races, which have yielded 14 tons 8 cwt. 17 lb., valued at £1328 10s. 5d. In addition to this, three men have been employed in maintaining essential services such as water-supply, power-station, and mine office.

Argonaut.—This mine has been let on tribute to 11 of its former employees, who have worked continuously during the year and won 35 tons 3 qrs. 26 lb. of stream tin, valued at £3115 16s. 6d.

Siamese Tin Syndicate Limited.—The Tasmanian Agent (Mr. T. Haley) reports:—

Operations during the past year have been confined principally to testing tin areas by boring and pitting. During this period we have expended in wages £1440. This does not include renewal of plant, options, or any application fees for leases. In addition to this we have had two trial surveys carried out to obtain the best route for our water-race from Columbia Falls, and, having obtained the required data, we have had a constructive survey made by Mr. Smith (surveyor). The construction of this water-race will take about 15 months' to complete, and a probable outlay of £25,000. At the present time we have about 100 men on sectional contracts on the water-race, and between 16 and 20 men on wages.

The Mount Bischoff Tin Mining Company.—The Superintendent (Mr. J. H. Levings) reports:—

Operations have been almost exclusively carried out by tributers, and comprise a great deal of thorough prospecting. The workings are very extensive and widespread, and practically extend over the lease. At present 175 men are engaged. Altogether the tributers have crushed 2906 tons of picked ore for a return of 197·8 tons of tin oxide, assaying 65·4 per cent. tin, and of a net value of £12,241, and have also treated 36,800 yards of alluvial, mostly concentrations of old tailings in the Waratah River, which yielded 81·5 tons of tin oxide of a net value of £4977.

WOLFRAM.

The output was ·29 ton, valued at £16.

RETURN showing the Quantity and Value of Wolfram produced from 1899 *to* 1931 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1899 to 1903 inclusive	57·25	2157
1904	15·5	1147
1905	32·25	2371
1906	19·75	1465
1907	40·75	4411
1908	4·5	338
1909	28·35	2494
1910	67·35	7280
1911	69·96	7769
1912	66·49	6601
1913	68·07	7040
1914	46·873	4327
1915	94·685	11,115
1916	106·265	16,910
1917	172·190	28,714
1918	155·362	27,239
1919	120·907	26,613
1920	70·89	13,626
1921	10·34	676
1922	19·26	1024
1923	96·86	6150
1924	54	2785
1925	174·170	14,658
1926	83·15	5265
1927	148·57	9886
1928	176·15	12,094
1929	151·86	18,358
1930	112·6	12,216
1931	0·29	16
Total	2264·552	£254,745

ZINC.

No zinc was produced from Tasmanian ores during the year.

RETURN showing the Quantity and Value of Zinc produced during the Years 1919 *to* 1931 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1919	285	13,110
1920	9·3	334
1921–1923	—	—
1924	2748·75	90,485
1925	3112·69	110,691
1926	5377·75	183,362
1927	6326·2	181,242
1928	7112	188,691
1929	6997	185,964
1930	943	19,322
1931	—	—
Total	32,911·69	£973,201

Electrolytic Zinc Company of Australasia Limited.—The Manager reports:—

"*Risdon.*—Electrolytic Zinc Company, in common with zinc producers the world over, has had an extremely diffifficult position to meet during 1931.

"Record low metal prices have obtained, and this has had an adverse and serious effect on the financial results of the year's operations.

"All avenues of economy have been explored, and wherever possible, consistent with the maintenance of efficiency, reductions in expenditure have been made.

"A general reduction in salaries, wages, and other services has enabled production costs to be lowered, but these economies have been partly nullified by increased taxation.

"There was a further decline in the demand for zinc, and with world's stocks representing several months' consumption, action to meet the position became essential. Important zinc producers in most countries of the world, therefore, agreed to limit output until world's stocks have been reduced to a reasonable tonnage, and the Electrolytic Zinc Company has joined in the concerted action taken to achieve this object. In addition to regulating production so that present surplus stocks will be absorbed, the cartel aims at making future production accord reasonably with consumption.

"The productive capacity of the countries included in the cartel amounts to 1,123,000 tons per annum, which is 97 per cent. of the capacity of European and other countries, excluding the United States, where almost the whole output is absorbed in a highly protected domestic market and does not fall within the ambit of the cartel.

"The agreement came into operation in August, and the overall reduction was fixed at the outset at 45 per cent. of capacity. This was subsequently found to be insufficient and has now been raised to 50 per cent. The actual reduction in the case of individual producers and groups varies. Great Britain and Australia comprise one group, and arrangements were made whereby operations were carried on at full capacity at Risdon throughout the year.

"Production of slab zinc was 53,832 tons, compared with 54,091 tons for 1930, a decrease of 1069 tons.

"A total of 198·7 tons of cadmium metal was recovered, as against 227·5 tons in 1930.

"No changes of a major order were made in either the plant or process during the year, and the construction work on additional cell-room and power-house units remained in suspension.

"The prevailing economic depression and an abnormally wet winter militated against progress in the farming community. Decreased sales made it necessary to operate the subsidiary superphosphate plant on a reduced scale. There is ample evidence, however, that the value of fertilisers is becoming more and more appreciated by the man on the land, and as soon as market conditions improve activity in this direction should be quickly restored.

"The average number of men employed at Risdon was 748.

"*West Coast Division.*—There was no productive work done on the West Coast during the year, owing to the depressed conditions existing overseas and the very low metal prices ruling.

"Construction of the Rosebery mill, the surface works at the Hercules Mine, and the reorganisation of the Zeehan roasting furnaces was, however, completed, and the whole plant is now ready to operate when conditions permit.

"At the close of the year only very few men were employed on necessary maintennace work and the care of the plant and mines generally.

"The average number of men employed during the year was:—

Surface	46
Underground	1
Total	47"

RETURN showing Value of Minerals and Metals raised in Tasmania from 1880 to 1931 inclusive.

Mineral or Metal.	Value.
	£
Asbestos	7105
Barytes	6933
Bismuth	24,542
Cadmium	20,914
Carbide	670,685
Cement	1.188,079
Coal	2,299,565
Copper (Blister) to 1918 (now shown under Silver and Copper)	13,778,527
Copper Matte	133,736
Copper Ore to 1918 (now under Copper)	577,873
Copper (from 1919)	6,257,872
Gold	7,690,476
Iron Ore	25,701
Iron Pyrites	94,169
Lead (from 1919)	1,502,637
Limestone	1,003,944
Nickel	33,162
Ochre	375
Osmiridium	589,176
Scheelite	112,468
Shale	19,706
Silver-Lead to 1918 (now shown as Silver and Lead)	6,429,291
Silver	1,208,324
Talc	252
Tin	16,222,417
Wolfram	254,745
Zinc	973,201
Unenumerated prior to 1894	31,988
Total	£61,165,863

STATISTICS OF PRODUCTION.

RETURN showing the Annual Value of Mineral Products for the State of Tasmania from 1880 to 1931.

Year	Value.	Year.	Value.
	£		£
1880	554,031	1907	2,277,159
1881	602,723	1908	1,650,027
1882	556,306	1909	1,574,995
1883	560,873	1910	1,432,193
1884	468,302	1911	1,349,497
1885	518,885	1912	1,493,502
1886	489,966	1913	1,415,700
1887	593,256	1914	1,007,038
1888	616,733	1915	1,225,575
1889	504,718	1916	1,521,050
1890	444,210	1917	1,582,322
1891	528,388	1918	1,597,694
1892	526,909	1919	1,301,090
1893	627,909	1920	1,421,104
1894	732,764	1921	822,851
1895	575,692	1922	1,013,415
1896	662,058	1923	1,219,456
1897	1,006,140	1924	1,496,804
1898	1,071,084	1925	1,700,861
1899	1,660,622	1926	1,808,844
1900	1,888,695	1927	1,621,027
1901	1,763,896	1928	1,593,828
1902	1,378,406	1929	1,790,653
1903	1,354,044	1930	1,270,114
1904	1,379,204	1931	894,986
1905	1,729,129	Unenumerated prior to 1894	31,988
1906	2,257,147		£61,165,863

STATISTICS OF MINING COMPANIES.

RETURN showing the Amounts paid in Dividends by Mining Companies during the Year ending 31st December, 1931.

Mines.	Dividends.
	£
Copper	34,219
Gold	...
Tin	...
Silver	...
Coal	6012
Total	£40,231

RETURN showing the Total Area of Land and Number of Sluice-heads of Water applied for during the Year ending 31st December, 1931.

Mineral.	Number.	Sluiceheads.	Area.
			Acres.
Asbestos	1	...	80
Coal	7	...	227
Gold	92	...	2214
Marble	1	...	10
Minerals	16	...	428
Silver	1	...	20
Tin	87	...	2783
Machinery Sites	1	...	5
Mining Easements	9	...	18
Water Rights and Dam Sites	98	420	129
Total	313	420	5914

RETURN showing Total Number and Area of Leases and Licences issued during the Year ending 31st December, 1931.

Mineral.	Leases.	Sluiceheads.	Area.
			Acres.
Asbestos	...	...	...
Clay	...	...	...
Copper	...	...	...
Coal	1	...	20
Dredging Claims	4	...	61
Gold	35	...	489
Marble	1	...	10
Minerals	12	...	1219
Molybdenum	...	...	...
Machinery Sites	1	...	5
Mining Easements	15	...	34
Osmiridium	2	...	10
Silver Lead	1	...	7
Shale	3	...	117
Tin	65	...	1908
Water Rights and Dam Sites	57	117	271
Licences to search for Coal and Oil	...	...	...
Total	197	117	4151

RETURN showing the Total Number of Leases and Licences in force on the 31st December, 1931.

Mineral.	Number.	Number of Sluiceheads.	Area.
			Acres.
Gold	57	...	999
Tin	289	...	9667
Minerals	70	...	6919
Stone	1	...	14
Asbestos	2	...	81
Silver	2	...	17
Bismuth	1	...	40
Clay	4	...	100
Limestone	6	...	500
Coal	14	...	5015
Osmiridium	3	...	60
Shale	5	...	1708
Wolfram	2	...	63
Iron	1	...	5
Marble	1	...	10
Ochre	1	...	20
Sand and Gravel	1	...	25
Molybdenum	1	...	80
Mining Easements	77	...	434
Machinery Sites	20	...	209
Licence for Search for Oil	1	...	800
Water Licences	388	1546	2078
Total	946	1546	28,844

RETURN showing the Mining Companies registered during the Year ending 31st December, 1931.

Number of Companies.	Capital.
7	£76,250

In addition to the above, 1 Agent for Foreign Companies and 1 Syndicate under Part Va of the Mining Companies Amendment Act, 4 Geo. V. No. 44, were registered.

RETURN showing the Average Number of Miners employed during the Year ending 31st December, 1931.

Division.	Number.
Northern and Southern	1270
North-Eastern	327
Eastern	490
North-Western	477
Western	1827
	4391

RETURN showing the Average Number of Persons engaged in Mining during the Years 1880 to 1931.

Year.	Number.	Year.	Number.
1880	1653	1906	7005
1881	3156	1907	7516
1882	4098	1908	6466
1883	3818	1909	6054
1884	2972	1910	5770
1885	2783	1911	5247
1886	2681	1912	5566
1887	3361	1913	6107
1888	2989	1914	4741
1889	3141	1915	3908
1890	2868	1916	3864
1891	3219	1917	4050
1892	3295	1918	4278
1893	3403	1919	4413
1894	3433	1920	5364
1895	4062	1921	4011
1896	4350	1922	3835
1897	4510	1923	4785
1898	6052	1924	5264
1899	6622	1925	5110
1900	7023	1926	5309
1901	6923	1927	5044
1902	5934	1928	5170
1903	6017	1929	4986
1904	6194	1930	4606
1905	6581	1931	4391

RETURN showing the Total Amount of Rents, Fees, &c., received by the Mines Department during the Year ended 31st December, 1931.

Head of Revenue.	Amount.
	£ s. d.
Rent of Auriferous and Mineral Lands	8497 14 0
Fees, Auriferous and Mineral Lands	1214 5 11
Survey Fees	1808 1 11
Fees under the Explosives and Inflammable Liquids Act	1377 4 5
Total	£12,897 6 3

COMPARATIVE Statement of Revenue from Mines, being Rents, Fees, Storage of Explosives, &c. (exclusive of Survey Fees), paid to the Treasury for the Years ending 30th June, from 1882 *to* 1903, *and for Six months ending* 31*st December*, 1903, *and for the Years ending* 31*st December*, 1904 *to* 1931, *inclusive.*

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

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, 1921 to 1931 inclusive.

Nature of Lease.	In force on 31st Dec., 1921.		In force on 31st Dec., 1922.		In force on 31st Dec., 1923.		In force on 31st Dec., 1924.		In force on 31st Dec., 1925.		In force on 31st Dec., 1926.		In force on 31st Dec., 1927.		In force on 31st Dec., 1928.		In force on 31st Dec., 1929.		In force on 31st Dec., 1930.		In force on 31st Dec., 1931.	
	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.
For Minerals, Silver, Tin, &c.	901	31,719	716	26,459	614	21,880	460	23,308	532	23,588	541	22,129	642	25,604	728	28,103	652	27,052	418	18,321	379	17,101
For Coal, Slate, Shale, &c.	66	15,430	73	16,809	66	16,053	27	8901	35	9922	49	13,136	39	11,077	52	15,407	36	11,022	32	9960	25	7223
For Gold	92	1894	127	2424	108	1687	91	1829	70	1340	42	870	38	749	40	830	36	746	40	830	57	999
Dredging Claims	29	413	36	399	33	369	20	289	20	195	42	363	41	502	52	626	60	756	30	353	—	—
Mining Easements	97	621	87	607	81	606	77	592	77	570	68	494	77	484	77	475	55	409	73	504	77	434
Machinery Sites	34	152	31	123	30	124	26	115	27	112	25	150	21	110	29	169	25	171	18	117	20	209
Licences to search for Coal or Oil	51	117,031	73	137,692	36	34,761	21	38,528	19	14,130	8	10,669	4	5090	7	7200	9	10,844	3	1080	1	800
Water-rights Mineral and Gold	543	2247 & 2060 sluice-heads	493	3002 & 1814 sluice-heads	435	2147 & 1612 sluic-heads	338	1990 - 1520 sluice heads	371	2167 & 1604 sluice-heads	360	2190 & 1591 sluice-heads	394	2246 & 1748 sluice-heads	371	1552 & 1581 sluice-heads	486	2359 & 2053 sluice-heads	364	2095 & 1558 sluice-heads	388	2078 & 1546 sluice-heads

TABLE Showing the Average Annual Prices for Minerals during Recent Years.

	Average for 1919.	Average for 1920.	Average for 1921.	Average for 1922.	Average for 1923.	Average for 1924.	Average for 1925.	Average for 1926.	Average for 1927.	Average for 1928.	Average for 1929.	Average for 1930.	Average for 1931.
	£ 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	90 19 4	97 12 5	69 8 8	62 3 6	66 7 4	63 4 3	61 9 7	58 0 8	59 5 8	72 2 10	75 19 7	54 3 7	38 7 9
Lead—Soft Foreign: per ton	28 3 11	38 4 7	22 14 6	23 14 10	25 19 4	33 13 11	35 17 3	31 2 2	21 9 6	22 13 6	23 4 11	18 3 1	13 0 7
[redacted] ton	42 5 3	45 4 6	26 4 1	29 14 2	32 18 4	33 12 0	36 5 0	34 2 8	26 6 1	25 14 9	24 15 1	16 16 9	12 9 0
Spelter: per ton	257 9 8	296 1 7	165 8 2	159 10 9	191 7 5	248 17 4	261 1 8	291 3 0	254 17 7	216 6 6	263 18 10	141 19 1	118 9 1
Tin—Standard, spot: per ton	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.
Silver - Standard, spot: per oz	4 9 1/16	5 19/16	3 0·875	2 10·4	2 8·37	2 9·97	2 8	2 4·2	2 2·38	2 2·15	2 0·57	1 5·66	1 2·593
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.			£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Osmiridium: per oz	23 14 0	38 7 7	24 10 6	28 6 7	27 10 4	...	...	11 13 4	21 16 5	25 9 0	22 18 1	17 0 9	14 7 9
Wolfram: per ton	262 10 0	157 12 9	65 7 6	70 0 0	65 0 0	...	...	70 0 0	61 10 0	104 5 0	144 5 0	105 0 0	64 0 0
Nickel: per ton	...	...	...	...	...	...	...	...	...	...	171 0 0	170 0 0	183 15 0

DRAFTING BRANCH.

The number of working plans in use and which are all kept entered up to date is 199, as compared with 189 for 1930.

New plans compiled	3
New working plans for Hobart and Launceston	10
Manuscripts entered to date for reproduction	14
Underground plans examined	10
Instructions issued to surveyors	216
Diagrams of surveys received	166
Diagrams drawn in office	43
Diagrams drawn on leases	380
Tracings prepared for Launceston	218
Tracings and plans prepared for Geologist, State Mining Engineer, and Inspector of Mines	15
Lithographs entered to date	120

The Chief Draftsman (Mr. O. J. Roper), who has been in charge since 1893, reached the age of 70 years in November last and retired after 52 years' service in the State Government. Mr. Roper was a most capable and efficient officer, courteous and obliging, and performed his duties in a most satisfactory manner.

The vacancy was not filled, and the remaining draftsmen (Messrs. L. Turner and A. K. Oldmeadow) have been carrying on with the assistance of a junior.

MINING MANAGER'S EXAMINATION.

Two candidates presented themselves for examination but neither succeeded in obtaining sufficient marks to qualify for a certificate.

CONCLUSION.

In conclusion I desire to express my appreciation of the loyal service rendered by the officers of the Department, which also applies to the officers of the Mining Drafting Branch of the Lands and Surveys Department.

I have the honour to be,
Sir,
Your obedient Servant,

W. A. PRETYMAN,
Secretary for Mines.

APPENDIX I.

REPORT OF THE STATE MINING ENGINEER.

The State Mining Engineer (Mr. J. B. SCOTT, A.Z.S.M., M. Aust. I.M.M.) reports:—

FIELD WORK.

The year's work was characterised by an unusually large number of applications for assistance under the provisions of the Aid to Mining Act, 1927, from mine-owners, tributors, prospectors, and others engaged in mining pursuits. The investigation of these entailed a great deal of field work in practically all parts of the State.

SUSTENANCE TO PROSPECTORS.

The number of grants to prospectors exceeded those of any previous year. Although no discovery of outstanding importance was recorded, much valuable exploratory work was accomplished. The assistance rendered in this direction tended to relieve unemployment, as well as to assist miners and prospectors in the search for claims to afford them a livelihood; in this respect, through the assistance granted, a considerable number located deposits which enabled them to engage in productive work.

The following tabulated list indicates the number of prospecting grants in the various mining divisions for the past five years:—

Northern Division, Including Furneaux Islands.

Year.	Number of Grants.	Number of Men.	Period of Weeks.
1927	4	8	36
1928	2	4	20
1929	4	8	32
1930	11	22	68
1931	14	27	54
Eastern and North-Eastern Division.			
1927	11	23	108
1928	17	28	156
1929	7	16	48
1930	25	45	124
1931	80	161	355
North-Western Division.			
1927	16	30	176
1928	12	23	90
1929	10	18	68
1930	14	25	60
1931	36	49	110
Western Division.			
1927	7	13	76
1928	8	6	38
1929	8	16	82
1930	46	96	224
1931	102	172	453
South and South-Western Division.			
1927	13	32	163
1928	15	38	155
1929	12	29	98
1930	11	29	59
1931	33	72	181
Total for State.			
1927	51	106	558
1928	54	99	459
1929	41	87	328
1930	137	217	535
1931	165	481	1153

In the Western Division prospectors directed special attention to South Dundas areas, particularly in the search for gold and osmiridium. Although a wide distribution of gold occurs between Mt. Dundas and Mt. Lyell districts, nothing of a payable character was discovered. What known payable deposits occurred there were worked out in former days. Other districts in this division received a lot of attention, with satisfactory results in a number of cases.

AID TO MINING.

Zeehan and District.

The prosperity of these districts depends almost entirely upon the production and market value of silver-lead ores. In consequence of the low market rates for these metals, very little activity has been displayed in developmental operations. A number of tributors and leaseholders were granted assistance to develop their holdings, but the continued fall in metal prices to an unprofitable level had a most discouraging effect on productive operations. Only those few operating on high-grade ore, with favourable facilities for mining, were able to continue. In every instance the output of ore has been very limited, as well as intermittent.

North Dundas.

Assistance was rendered to the Deep Lead Syndicate to test the deposit of deep alluvial ground at Williamsford for gold. In connection with this work, information was supplied by the manager to the effect that a shaft was sunk through superficial clay and drift material to 60 feet to slate country-rock forming the western wall of the gutter. Sinking was continued on the incline easterly through drift to 68 feet to bottom of drift. Driving easterly was continued. At 10 feet from shaft, a drift carrying a small proportion of gold was met with. Further driving disclosed a lesser proportion of gold in that direction. At 30 feet from the shaft the eastern rim-rock was met with, the wash at that point being a mixture of clay and drift containing poor prospects of gold. A drive was put out south along the course of the gutter a distance of 18 feet, the prospects obtained showing a decrease of gold content. A considerable inflow of water had to be contended with, estimated at 3000 gallons per hour. Treatment of the gold-bearing portion of the wash yielded 5 oz. gold. Owing to the high operating costs, together with the unpayable grade of the drift material composing the lead, the project was finally abandoned.

Several parties of miners were granted assistance to open up the alluvial tin claims on the Great Northern Creek, near Williamsford. The yield from these claims has been very small. The general prospects, however, warrant further investigation.

Assistance has also been rendered in the development of fahl ore lodes in this district. Low metal prices, combined with insufficient means to continue, caused a cessation of operations.

North-Eastern Districts.

Assistance was also rendered for the development of gold reef claims at Alberton and Warrentinna and for alluvial tin properties in Pioneer district. A party was granted assistance to open up an alluvial gold deposit in Lyndhurst district. Assistance was granted to enable a party of miners to develop a vein complex sulphide ore discovered near the old Mt. Rex Mine, Avoca district. Recourse to shaft work was necessary. A heavy flow of water prevented the objective being reached, causing a temporary abandonment of the project.

Beaconsfield District.

A small grant was made to Clay and Stone to assist them in the development of a reef outcrop discovered in the vicinity of the former workings of the Little Wonder Mine.

A number of visits were made to this field to investigate applications for assistance in the development of claims, but the prospects were not sufficiently encouraging to warrant recommendations being made for that purpose.

RECORD OF BORING OPERATIONS.

Diamond Drill.

West Comet Mine, Dundas (Mineral Lease No. 10,411-M*).*—Drilling to test the large ferro-manganese deposits for the occurrence of galena below the old workings commenced towards the end of 1929, and was continued until June.

Three holes were bored, respectively 275 feet, 425 feet, and 352 feet deep, along the western side of the ridge on which the outcrops occur, and spaced about 200 feet apart. The bores penetrated the ore-body at points well below water-level.

The overlying country-rocks proved to be difficult to penetrate, owing to their incoherent nature, considerable sections consisting of loose ironstone grit.

The drilling work performed proved that, at the points intersected, the ore-body consisted chiefly of siderite with a sparse distribution of galena. In places fairly solid gossan, similar to that occurring near the surface, was intersected. This material contained very small quantities of silver and lead. Crocosite (chromite of lead), which in places was an abundant constitutent of the ore-bodies near the surface, was not found to be present in the deeper sections. The work carried out proved that, if payable ore existed at depths tested, its occurrence was of very limited extent.

Zeehan Area.—With the object of proving one of the most productive lode systems on the Zeehan field at a depth lower than the workings thereon extended, a bore was commenced on the old Spray Mine section, in the vicinity of the entrance to the main tunnel workings.

This work was commenced on 6th July, and was in progress at the end of the term to which this report relates. It had then reached a depth of 740 feet. The bore was commenced at tunnel level, on a bearing of 224 degrees, angle of dip 46° 24″, designed to intersect the lode at depth of 950 feet approximately.

The country-rock passed through consists of siliceous slate banded with quartz and quartzite, its fractured nature rendering drilling work slow and difficult.

Victoria Drill.

This plant was fully occupied during the year in testing alluvial deposits as under:—

1. Ringarooma Deep Lead (tin).
2. Leura, Piper's River (gold).
3. Back Creek, east of Lefroy (gold).

Drilling the line of bores on Mineral Lease No. 9787-M, on the Ringarooma River Deep Lead, between Branxholm and Derby, a short distance above what is known as the "Long" Bridge, over the Ringarooma Rover, on consolidated lease No. 9787-M, was continued. This work was commenced towards the end of the previous term.

Six bores were put down, the respective depths being 170 feet, 154 feet, 191 feet, 198 feet, 203 feet and 206 feet, the deeper ground being in the direction of the present bed of the river. The bores were spaced approximately 5 chains apart, embracing practically the full width of the valley.

The results of the work proved that, at the points bored, the lower sections of the drift did not contain concentrations of tin oxide of economic value, little more than a trace being obtained. The general character of the drift showed no variation in the cross-section tested.

Two additional bores were put down some distance south-westerly of this line, with the object of testing the ground for the continuation of Branxholm Creek lease. The drift proved to be 174 feet in depth and of similar character to that of the line of bores described.

Valley Lead.—A series of four bores were put down on Section 10533-M, to depths respectively of 143 feet, 195 feet, and 80 feet, across the Ringarooma Valley, a short distance below the junction of what is known as the Valley Lead. The conditions met with here were similar to those described higher up the valley. A regular distribution of fine tin oxide was found to be associated with the drifts. In the three deepest bores heavy shingle was struck at a depth of about 110 feet from the surface. This material carried appreciably less tin than the upper sections of the drift.

No. 4 bore was put down on the southern edge of the valley, a short distance below the old workings of the Briseis Central Mine. The tin content of the drift here was in higher proportion than in the other bores, but considerably below what could be regarded as payable quantity, averaging less than 4 oz. of tin oxide to the cubic yard. Drilling work was completed in Branxholm district on 7th July.

Leura, Piper's River.—Boring was commenced on 24th July, and completed on 7th October, on what is known as the "Major" lead, on the eastern portion of old Section 12-93G. Four bores were put down, the aggregate depth being 631 feet. Samples of material removed from each bore at regular sectional depths to represent 1 cubic foot were tested for gold.

No. 1 Bore—Depth 92 feet.

Sectional Depth (in feet).	Strata.
Surface to 10	Clay and ironstone rubble
10 to 50	Clay and quartz rubble
50 to 65	Blue clay with sandy sediment
65 to 70	Grey slate with quartz rubble
70 to 84	Quartz rubble
84 to 88	Grey slate
88 to 92	Blue slate

Samples representing sections of bore as under gave the following assay results:—

35 to 42 feet—
Gold—0 oz. 0 dwt. 12 gr. per ton.
Silver—0 oz. 0 dwt. 6 gr. per ton.

70 to 77 feet—
Gold—0 oz. 0 dwt. 16 gr. per ton.
Silver—0 oz. 0 dwt. 10 gr. per ton.

No. 2 Bore—Depth 150 feet.

Sectional Depth (in feet).	Strata.
Surface to 38	Clay
38 to 76	Basaltic rock
76 to 80	Sedimentary rock
80 to 90	Soft sandy material with quart rubble
90 to 110	Clay intermixed with quartz rubble
110 to 137	Slate with quartz boulder to bedrock of grey slate

Section from 28 to 35 feet was the only sample that contained gold, and assayed 11 grains gold, 7 grains of silver, per ton.

No. 3 Bore—Depth 180 feet.

Sectional Depth (in feet).	Strata.
Surface to 34	Clay
34 to 106	Mixture of clay and sandy sediment
106 to 142	Clay
142 to 145	Quartz rubble
145 to 180	Bedrock of slate veined with quartz

The samples from this bore did not contain gold.

No. 4 Bore—Depth 209 feet.

Sectional Depth (in feet).	Strata.
Surface to 10	Clay
10 to 70	Soft basalt
70 to 103	Hard basalt
103 to 150	Soft basalt
150 to 182	Hard basalt
182 to 196	Clay
196 to 197	Fine rubble
197 to 209	Blue slate bed rock

Samples from this bore gave a negative result for gold when tested.

The respective bores were spaced 2 to 2½ chains apart.

Back Creek Lead.—Boring was commenced on the 13th October, and completed at the end of the year, on L. L. Parry's freehold at a point where the basalt covering of the lead forms a narrow neck.

Three bores were put down in a line across the course of the lead, No. 1 being sited a short distance north-westerly of the centre indicated by the hard basalt cover, which at that point proved to be 84 feet deep, the bedrock being slate. Drilling was carried into the latter to a depth of 10 feet. There was no indication of the occurrence of drift material between these respective rocks.

No. 2 bore, situated 6½ chains north-westerly of No. 1, passed through 18 feet of basaltic clay to a slate bedrock. A layer of rubble quart, 1 foot thick, formed a division between the clay and slate bedrock. The quartz rubble contained no gold.

No. 3 bore, situated 4 chains south-east of No. 1, was continued to a depth of 180 feet. Hard basalt rock was passed through to a depth of 170 feet, then a layer of non-auriferous quartz rubble, resting on slate bedrock.

The boring work indicated a fairly steep dip of the slate bedrock in a north-easterly direction, and proved that the conditions for the deposition of drift in quantity were unfavourable. As far back as the year 1882, and subsequent years, a considerable amount of boring was carried out by the Government on the deep leads in the vicinity of the White and other tributary leads, and later years by private enterprise, with disappointing results.

GENERAL.

In addition to the work in connection with applications for assistance under the provisions of the Aid to Mining Act, 1927, involving numerous visits to the various mining fields of the State, other duties included:—

(1) Attending conferences of the Shale Oil Committee at Hobart, Latrobe, and Launceston, respectively.
(2) Supervision of drilling operations, selecting and surveying bore-sites.
(3) Special report on Warrentinna, Mt. Horror Goldfield.
(4) Departmental report on Poverty Gully, Lefroy.
(5) Conferences with mining advisory committees at (1) Zeehan, (2) Lefroy.
(6) Special visit to Wilson River Osmiridium Field in connection with marketing scheme for that metal.
(7) Reports (2) on the proposed high-level water-race scheme from Wyniford River to South Mt. Cameron.
(8) Conferring with and advising prospectors, miners, and mine-owners concerning their operations, methods of treatment, design of plants, water-power schemes, surveys, &c.
(9) Attending meetings of Board of Examiners, mining managers' examinations and preparing examination-papers for same.

APPENDIX II.

REPORT OF THE GOVERNMENT GEOLOGIST FOR YEAR 1931.

The Government Geologist (Mr. P. B. NYE, M.Sc., B.M.E.) reports:—

SHORT FIELD INVESTIGATIONS.

A number of short field trips, examinations, &c., of mineral districts, mineral deposits, mines, &c. (a complete statement of which is contained in the following list) were made, and some 38 reports prepared as a result:—

(1) Examination of supposed oil-occurrence at Cradoc.
(2) Visit to Latrobe in connection with the Tasmanian Shale Oil Enquiry Committee (February 12-14).
(3) Visits to Latrobe and Launceston in connection with Tasmanian Shale Oil Enquiry Committee (April 13-17).
(4) Examination of Brock's prospect, Mangana.
(5) Visit to Latrobe to initiate sampling of shale.
(6) Visit to Zeehan, and examinations of—
    (*a*) E. Ready's prospect.
    (*b*) Henry Perry's galena mine.
    (*c*) Geo. Bell's galena mine (old Crown Mine).
    (*d*) McDermott and Ledger's mine (old Crown Mine).
    (*e*) Truscott and Hodgett's osmiridium prospect, Farrell Rivulet.
    (*f*) A. Fairbairn's galena prospect.
    (*g*) Grand Prize Mine.
    (*h*) West Comet Mine and drilling.
    (*i*) South Comet Mine.
    (*j*) Turner and Brown's galena mine.
(7) Visits to Rosebery, and examinations of—
    (*a*) H. G. Watson's gold prospect, Ringville.
    (*b*) Evenden and Abel's tin prospect, Ringville.
    (*c*) Dunn and Archer's tin prospect, Ringville.
    (*d*) Williamsford Deep Lead sinking operations.
(8) Visit to Latrobe and examination of Railton shale areas.
(9) Visit to Lefroy and examination of gold prospect of Jenner and party.
(10) Visit to Beaconsfield and examination of Best and Tuskin's operations.
(11) Visit to Adamsfield—
    (*a*) To explain proposed Export Control Bill for Osmiridium to meeting of miners.
    (*b*) Examination of proposal to drain Adams River Valley.
(12) Visit to Waratah in connection with Export Control Bill for Osmiridium.
(13) Visit to Smithton.
    (*a*) To sample limestones for Agricultural Department.
    (*b*) To investigate the economic geology of the district.
(14) Visit to Montumana to examine gold prospect of O. R. Cameron.
(15) Visit to Tewkesbury to examine gold prospects of J. Crowe.
(16) Visit to Sprent to examine gold prospects of C. Beswick.
(17) Visit to Ulverstone-Penguin district to investigate the landslips.
(18) Visit to Launceston for Tasmania Shale Oil Enquiry Committee.
(19) Examination of Espie's prospect, Raglan Range.
(20) Examination of Hartnett's and Penny's gold prospects at Flannigan's Creek.
(21) Visit to Smithton to sample the dolomite deposits.

SYSTEMATIC GEOLOGICAL SURVEY.

Smithton District.

(*a*) Field Work.—The field operations in this district were completed early in the year, Mr. F. Blake finishing the geological and topographical surveys during February, while Mr. K. M. Harrisson finalised his theodolite surveys, &c., by June. Two short field trips were made later in the year in connection with the economic geology of the district.

(*b*) *Drafting.*—The drafting of the Smithton N.E. Quarter-sheet was completed under contract by Mr. T. Hewitt. The drafting of the S.E. Quarter-sheet was commenced by Mr. Q. J. Henderson, who continued same until the end of the year. (This work has since been carried on by Mr. F. Blake, and the original map is almost completed.)

(*c*) *Report.*—One report is in course of preparation describing both quarter-sheets, and to include two maps (N.E. and S.E. Quarter-sheets). Since the end of the year this report has been completed in bulletin form ready for publication.

(*d*) *Printing.*—The printing of the S.E. Quarter-sheet has been completed.

(*e*) *Economic Results.*—The most important economic result of the Smithton surveys was the discovery by the Geological Survey of enormous deposits of high-grade dolomite. These beds had not been reported previously from the Smithton district, nor had they been known to occur within the State. The dolomite is exposed principally along the Duck River, but the surveys proved that it forms the bedrock of a tract of country 5 miles long and 2¾ miles wide. The deposit was sampled at numerous places, and from this sampling it was evident that the dolomite in the vicinity of Blackwood Bridge was of the highest grade.

Dolomite has a number of uses, including manufacture of carbon dioxide, flux in iron industry (as a refractory), in the sulphite process of paper-pulp manufacture, manufacture of basic or technical carbonate, manufacture of magnesium salts, and manufacture of magnesium.

The Smithton deposit, especially that at Blackwood Bridge, is suitable for all the above purposes. If the manufacture of magnesium salts and basic carbonate is attempted in Australia, this deposit should, from all considerations, be a suitable one upon which to operate. It might also be utilised if the paper-pulp industry is established at Burnie.

Rosebery District.

(*a*) *Field Work.*—The topographical and geological surveys were completed by Mr. K. J. Finucane about the middle of the year.

(*b*) *Drafting.*—The drafting of the Rosebery S.W. Quarter-sheet was not commenced during the year, but since then the surveys have been plotted by Mr. Q. J. Henderson, but no topographical or other details have yet been drafted.

(*c*) *Report.*—The report on the Rosebery District is in course of preparation. (Since the end of the year it has been completed and is now ready for publication.)

(*d*) *Results.*—The most important result of the survey has been the information obtained in connectiton with the geological structure of the mineral-bearing districts of the West Coast. This differs somewhat from previously accepted views, and is most important from the point of view of economic geology. Equally important was the working out of the geological conditions and structure governing the deposition of the Rosebery Zinc-lead sulphide ore-body.

TASMANIAN SHALE OIL ENQUIRY COMMITTEE.

A considerable amount of work arose out of the formation of this Committee. I was appointed a member of the Committee, and at a later date as Chairman of the Mining Sub-Committee and Co-ordinating Officer for the Retorting and Refining Committee. Meetings of the main committee were held at Hobart on 15th January, at Latrobe on 12th and 13th February, at Launceston on 17th April, and at Launceston on 13th November. The Mining and the Retorting and Refining Sub-Committees held meetings at Launceston on 15th and 16th April respectively.

Reports were prepared for each of the above Committee and Sub-Committee meetings, and involved considerable time, especially those for the Mining Sub-Committee.

As a result of the Committee meetings held in Launceston during April, it was arranged that the Geological Survey should sample the shale deposits in order to determine the oil content of the shale on distillation. The sampling occupied four weeks, and was carried out by Mr. F. Blake. The shale seam was sampled in 48 places, each of the three sections of the seam (top shale, middle band, and bottom shale) being sampled separately. With 12 samples for moisture determinations, a total of 156 samples were taken, the whole of which were tested in the Mines Laboratory, Launceston, while Mr. E. E. Kurth, of the Hobart Technical College co-operated in the determination of the oil yield. The results of the sampling and testing gave most valuable information as to the thickness, specific gravity, sulphur content, and oil yield of the shale. The average results are shown in the following table:—

Section of Seam	Mine.	Sulphur	Specific Gravity.	Thickness.	Oil Yield Gals./ton.
		per cent.	per cent	ft. ins.	per cent.
Top shale ...	Goliath ...	2·54	2·00	2 2·99	36·3
	Tasmanite	2·78	1·90	1 10·93	44·3
Middle band	Goliath ...	2·52	2·50	1 2·55	7·2
	Tasmanite	2·54	2·45	1 4·20	8·6
Bottom shale	Goliath ...	2·77	2·10	1 8·95	29·65
	Tasmanite	3·01	2·03	1 9·48	32·7
Top and bottom shale	Goliath ...	2·65	2·04	3 11·95	33·3
	Tasmanite	2·20	1·96	3 8·41	38·5
Whole seam	Goliath ...	2·61	2·15	5 2·50	26·22
	Tasmanite	2·77	2·09	5 0·62	29·12

The above sampling and testing campaign is the most important ever undertaken in connection with the tasmanite shale deposits, and has provided accurate and reliable information on the oil yield of the shale, which is of the greatest value to the oil shale industry. Other factors, such as proximate analysis of the shale, complete analyses of the ash, water soluble contents of the shale, tests for arsenic, &c., have also been investigated.

WORK PERFORMED BY OTHER MEMBERS OF THE STAFF.

K. J. Finucane, Field Geologist.—Mr. Finucane spent the first half of the year completing the systematic survey of the Rosebery District, a few weeks of which were devoted to a preliminary examination of the Mt. Reid District, in which similar relationships and problems occur. In December a short trip was made to the Mt. Claude District. The remainder of the year was devoted to preparation of the report on the Rosebery District.

Short reports prepared include—

(1) Ramsdale's prospect, Curtain and Davis District.

(2) Ramsdale's prospect, Curtain and Davis District.

(3) Williamsford Alluvial Lead.

(4) Dolomite in the Smithton District.

F. Blake.—During the year Mr. Blake's title was altered from Field Geologist to Assistant Geologist and Draftsman. Field trips included:—

(1) Completion of systematic survey of Smithton south-east quarter-sheet.

(2) Geological reconnaissance of South Dundas District.

(3) Sampling of tasmanite shale in Latrobe District.

(4) Visit to Smithton in connection with sampling of limestone, economic geology, &c.

(5) Visit to Smithton in connection with sampling and investigation of dolomite.

Short reports prepared include:—

(1) Geological reconnaisance of South Dundas District.

(2) Sampling of tasmanite shale of Latrobe district.

Q. J. Henderson, Cadet Geologist.—Mr. Henderson was engaged in calculations and drafting in connection with the systematic survey. His position was abolished in August, but he was retained in a temporary capacity.

T. D. Hughes, Field Assistant.—Mr. Hughes was engaged in library work, calculations, recording of bore results, rock sectioning, &c. His position was abolished in August.

INTERPRETATION OF THE GEOLOGICAL RECORD OF THE STATE.

The modifications of the interpretation in last year's Report are as follows:—

Proterozoic.

From reconnaissance surveys it appears probable that the quartzites and slates of the Sisters' Hills will have to be included in the uppermost part of the Proterozoic or at the base of the Lower Palæozoic, or even be taken as passage beds between the two.

Palæozoic.

The systematic surveys of the Smithton and the Rosebery Districts have given valuable information about the Lower Palæozoic rocks. These surveys have proved that the Dundas series is the most prominent and wide-spread of the Cambro-Ordovician rocks in western and north-western Tasmania. Generally it is found that this series is in faulted relationship to the Silurian rocks, and in a few cases it is overlain unconformably by the basal Silurian series (West Coast Range). This is suggestive that the Dundas series forms the upper part of the Cambro-Ordovician system. Support is given to this view by the evidence of the graptolites on the N.E. Dundas tram, the graptolite bed being interbedded with the Dundas series, and the graptolites suggesting that the age is either at the summit of the Lower, or at the base of the Upper Ordovician. The Dundas series is therefore now regarded as being of Ordovician age.

The rocks below the Dundas series in western and north-western Tasmania consists of a thick series of dark and light coloured slates, quartzites, thin beds of conglomerate, &c. This series would therefore represent either a part or the whole of the Cambrian system. Its base has not yet been recognised, nor has its relations with the Proterozoic rocks been determined. It includes the pre-Dundas rocks of Rosebery; the pre-Dundas rocks east of Smithton (i.e., between Irish Town and Sisters' Hills; probably the Farrell slates; probably the Balfour slates and sandstones. The presence of such a series of Cambrian rocks in other regions is proved by the presence of fossiliferous Cambrian rocks along the Arthur River; at Caroline Creek; in the Florentine Valley (these rocks only occur on the eastern margin of the Florentine Valley); and probably at Hatfield Plains.

It is thus evident that a satisfactory division of the Cambro-Ordovician rocks is beginning to become apparent. The lower part consists of a system assignable to the

Cambrian, and consisting of dark and light coloured slates and quartzites. The upper part is the Dundas series, assignable to the Ordovician, and consisting of the typical purple or red (at surface slates, breccias (composed of igneous material), lavas, and tuffs, with lesser amounts of dark slates and quartzites.

The work of Mr. K. J. Finucane in the Rosebery District has shown that the Read-Rosebery schists are sheared igneous rocks, so that this series is not regarded as forming portion of the Cambro-Ordovician sedimentary system. Further, the same work, together with observations by the Geological Survey in other parts of the State, have tended to prove that the porphyroid series of lavas, pyroclastics, and sediments does not exist as such. The sediments belong either to the Dundas or pre-Dundas series, and the lavas and pyroclastics are really massive and sheared intruse rocks (see below).

Devonian.

It has been indicated above that the porphyroid series of rocks are now regarded as being massive and sheared intrusive igneous rocks. The unaltered rocks are generally porphyritic, and include quartz porphyries and felspar porphyries. Non-porphyritic rocks approaching felsitic types are also present.

The porphyries are found to be intrusive into all the rock systems up to and including the Silurian. The best evidences of their intrusion into Silurian sedimentary rocks was found in the South Dundas District by F. Blake, and in the Mt. Claude by K. J. Finucane (the mapping of A. M. Reid also suggests this relationship).

These rocks are therefore now regarded as belonging to the Devonian intrusions. The granites are the Plutonic and the porphyries the hypabyssal representatives.

ROUTINE AND OTHER DUTIES.

During the year, the usual routine duties of answering correspondence, interviewing visitors, &c., were carried out. These were mainly concerned with identification of specimens; furnishing of information about mineral deposits, mines, publications, &c., in connection with the mining industry of the State.

Other duties included:—

(1) Weighing and certifying to parcels of osmiridium sent overseas for sale.
(2) Attention and additions to the departmental collections.
(3) Reorganising of the Departmental collection in the Tasmanian Museum.
(4) Preparation of collections of specimens for institutions, &c.
(5) Preparation of rock sections.
(6) Attendance at shale oil conferences.
(7) Attendance at meetings of osmiridium miners.

In conclusion, I desire to place on record my appreciation of the excellent work carried out by the officers of the Geological Branch, and the capable and energetic manner in which such work was done.

APPENDIX III.

REPORT OF THE GOVERNMENT CHEMIST AND ASSAYER.

The Government Chemist and Assayer (Mr. L. H. BATH) reports:—

During the year the work consisted largely of making metallurgical tests and analyses of ores, rocks, coal, oil shale, and minerals.

The total number of assays and analytical tests made for the public and the Department amounted to 7500.

Assays have been made for gold, silver, copper, tin, lead, antimony, bismuth, tungsten, nickel, cobalt, zinc, cadmium, barium, manganese, strontium, calcium, iron, aluminium, cromium, osmium, iridium, osmiridium, vanadium, platinum, magnesium, tantalum, arsenic, flourine, molybdenum, potash, soda, sulphur, phosphoric acid, glucina, tannins, radio-active minerals, rhodium, palladium, research and analyses of oil shale, analyses of water, clays, alloys, cements, dolomite; fusion tests on refractory clays; distillation and fractionation of organic materials; cyanide tests on tailings, slimes, &c.; and research on molybdenite-cobalt-vanadium ores.

GENERAL.

A good deal of usual routine work was attended to, and information supplied, verbally and by correspondence, to enquirers.

I desire to place on record my appreciation of the excellent work carried out by the officers of this branch of the Department.

APPENDIX IV.

REPORT OF THE CHIEF INSPECTOR OF MINES.

Th Chief Inspector of Mines (Mr. J. O. HUDSON) reports:—

Tables are attached showing:—

(1) The number of persons killed and injured in or about mines, works, and quarries in Tasmania.
(2) The rate per 1000 persons killed and injured in the different divisions.
(3) A graph dealing with the occurrence of fatal accidents from the year 1892 to 1931.

The average number of persons employed for the year was 4391, being a decrease of 215 compared with the year 1930.

Accidents.—The total number of accidents reported for the year was 38, being a decrease of 17 compared with the previous year. The 38 accidents caused injury to 43 persons, which was a decrease of 13 compared with the previous year.

The fatal accidents were 3, causing the death of 8 persons, which was an increase of 4 on the previous year, and the non-fatal accidents were 35, being a reduction of 13 on the previous year. The rate per 1000 persons killed or injured was 9·792, compared with 12·158 for the year 1930. The rate per 1000 persons employed who received fatal injuries was 1·821, compared with 0·868 for the previous year.

The rate per 1000 persons employed who received injuries necessitating absence from work for more than 14 days was 7·970, compared with 11·289 for the previous year.

The eight fatal accidents were caused as follows:—

(1) A party of four men, who were employed on a mine in their spare time, were operating on an old alluvial gold lead at a face which had been abandoned. The party were trespassers, having no legal right to the ground or having the necessary notice that they were commencing mining operations. The party were working in a very unsafe manner by gouging under a face of alluvial drift 20 feet in height. A fall of drift occurred, burying three of the men and smothering them.

(2) At a colliery the afternoon shift returned the explosive canisters, which had been used by the respective parties employed, to the time office. The canisters contained the unused explosives which were issued at the beginning of the shift. It was estimated that there were about 12 cansters, in which there was a total of 50 pounds of nitro-glycerine explosives. A violent explosion occurred, completely destroy-

ing the office and causing the death of four persons. The explosives were in good condition, and the occurrence was unaccountable.

(3) A miner was employed in a rise where a previous firing had partially destroyed the pent-house and stulls. The miner, who was fatally injured, was standing on a temporary stull which collapsed; he fell down the ladder-way, a distance of about 106 feet.

Of the 35 serious accidents. 16 occurred on the surface and 19 underground. The injuries in 14 cases were such as to cause fracture or permanent injury; in the remaining cases the injuries were such as to cause absence from work for more than 14 days.

Prosecutions.—There were 11 prosecutions for failure to comply with the provisions of the Act. Convictions were obtained in all of the cases. Three cases were for unseemly and riotous conduct; four cases for failing to comply with requirements for safe handling of explosives: one for failing to supply statistical returns; and three cases for failing to use appliances for the prevention of dust.

Electrolytic Zinc Company.—The company operated continuously during the year and produced 53,832 tons of zinc, valued at £897,212, and 198·7314 tons of cadmium, valued at £45,514, from other than ore mined in Tasmania, and employed an average of 748 men.

Catamaran Coal Company.—This company ceased operations during the year 1930, and work was continued by a small co-operative party of miners who operated on a small scale until about October, 1931. A new company took over, and they have opened up on the seam further up the river. A good seam of coal has been developed, and this company gives every promise of being again a steady producer.

Australian Commonwealth Carbide Company produced 3903 tons of carbide, valued at £67,298, and in addition has supplied limestone to the Electrolytic Zinc Company.

Prospecting operations have been carried out on coal seams at Woodbridge and Strathblane.

Adamsfield.—Three parties are operating on a large ore-body containing osmiridium. The lode is being developed at a depth of 70 feet from the surface. This is the first known defined lode which has been worked for this metal, and development will be watched with interest. There are several sluicing plants in operation on other parts of the field and a large number of fossickers.

Quarries.—The blue-stone quarries have considerably reduced their output during the year, and there has been no improvement in regard to the output from those used in connection with brick-making.

Inspector of Mines.—Mr. J. J. Andrew resigned towards the end of the yaer, and the position is still vacant.

In conclusion, I again desire to express my appreciation for the energetic manner in which inspectors have carried out their duties.

TABLE showing Rate per Thousand Killed and Injured in different Divisions for the Year 1931.

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	1270	5	...	5	5	3·937	...	3·937
North-Eastern	327	3	...	3	3	9·174	...	9·174
Eastern	490	4	4	3	7	14·285	8·163	6·122
North-Western	477	2	...	2	2	4·192	...	4·192
Western	1827	24	4	22	26	14·230	2·189	12·041
Total	4391	38	8	35	43	9·792	1·821	7·970

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.
Mt. Lyell	1441	16	1	15	16	11·103	0·693	10·409
Zeehan, &c.	386	8	3	7	10	25·906	7·772	18·134
Total	1827	24	4	22	26	14·230	2·189	12·041

COMPARATIVE Table of Statistics of Accidents in and about the Mines of Tasmania from 1st July, 1892, to 31st December, 1931.

Period.	Number of Miners Employed.	Number of Accidents.	Number of Persons.		Total Killed and Injured.	Average per 1000 Killed and Injured.	Average per 1000.	
			Killed.	Injured.			Killed.	Injured.
1 July, 1892, to 30 June 1893	3295	28	4	25	29	8·8001	1·214	7·586
„ 1893 „ 1894	3403	25	7	20	27	7·934	2·057	5·877
„ 1894 „ 1895	3789	26	4	24	28	7·390	1·058	6·332
„ 1895 „ 1896	4160	22	7	16	23	5·529	1·682	3·847
„ 1896 „ 1897	4303	36	7	31	38	8·831	1·627	7·204
„ 1897 „ 1898	5530	36	13	33	46	8·318	2·351	5·967
„ 1898 „ 1899	6180	35	9	34	43	6·957	1·456	5·501
„ 1899 „ 1900	6834	19	7	16	23	3·365	1·024	2·341
„ 1900 „ 1901	7017	29	8	23	31	4·417	1·140	3·278
„ 1901 „ 1902	6438	38	7	35	42	6·524	1·088	5·437
„ 1902 „ 1903	6484	44	6	43	49	7·557	0·925	6·632
„ 1903, to 31 Dec., 1903	5604	27	8	20	28	4·977	1·428	3·569
1 Jan. 1904 „ 1904	6192	73	9	65	74	11·951	1·454	10·497
„ 1905 „ 1905	6586	34	7	30	37	5·618	1·063	4·555
„ 1906 „ 1906	7004	65	4	61	65	9·280	0·571	8·709
„ 1907 „ 1907	7516	68	6	64	70	9·314	0·798	8·515
„ 1908 „ 1908	6464	60	6	58	64	9·900	0·928	8·972
„ 1909 „ 1909	6054	54	6	49	55	9·085	0·991	8·093
„ 1910 „ 1910	5770	63	8	57	65	11·265	1·386	9·878
„ 1911 „ 1911	5247	80	4	77	81	15·437	0·762	14·675
„ 1912 „ 1912	5566	60	53*	53	106	19·044	9·522	9·522
„ 1913 „ 1913	6106	64	6	60	66	10·809	0·982	9·826
„ 1914 „ 1914	4741	69	9	62	71	14·977	1·896	13·081
„ 1915 „ 1915	3908	71	6	67	73	18·679	1·535	17·144
„ 1916 „ 1916	3864	53	2	51	53	13·716	0·517	13·198
„ 1917 „ 1917	4050	50	2	48	50	12·345	0·493	11·852
„ 1918 „ 1918	4279	50	5	45	50	11·684	1·168	10·516
„ 1919 „ 1919	4413	58	1	57	58	13·143	0·226	12·917
„ 1920 „ 1920	5364	52	2	50	52	9·694	0·372	9·322
„ 1921 „ 1921	4011	40	3	37	40	9·972	0·748	9·224
„ 1922 „ 1922	3835	31	4	27	31	8·083	1·043	7·040
„ 1923 „ 1923	4785	64	2	63	65	13·584	0·417	13·166
„ 1924 „ 1924	5264	72	1	73	74	14·057	0·189	13·867
„ 1925 „ 1925	5110	62	2	61	63	12·328	0·391	11·937
„ 1926 „ 1926	5369	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

* Mt. Lyell disaster.

APPENDIX V.

REPORT OF THE CHIEF INSPECTOR OF EXPLOSIVES.

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

The imports of explosives were less than for the preceding year, being:—

	lb.
Monobel	10,550
Gelignite	247,950
Ligdyn	2,400
Powder	9,875
Detonators	350,000

The quality of the explosives imported was again very satisfactory. There were no cases of excessive freezing, which may be attributed to the continued use of explosives which are not subject to freezing as other brands which were formerly used.

There have been no complaints in regard to detonators, and the lead-azide detonator now appears to be giving satisfaction.

Only small quantities of explosives have had to be destroyed, and their defective condition was found to be due to want of proper storage and age.

One accident caused by explosion occurred during the year. The miners in a coal mine, at the end of the afternoon shift, returned their explosive canisters, which were constructed of wood, to the surface office. The deputy took delivery of the canisters, and shortly afterwards a violent explosion occurred in the office, which caused the death of four persons. The cause of the occurrence was unaccountable, but as the explosives were in good condition the occurrence can only be attributed to irregular practice on the part of some one in the office.

Inflammable Liquids.—The provisions of the Inflammable Liquids Act and Regulations, which came into force during 1930, have given satisfaction to those concerned and have proved sufficient to ensure control of conditions and safety from the risk of fire or explosion.

There has been an increase in the number of underground installations and a decrease in the number of registered premises in connection with the storage of cases.

The use of storage in drums has increased, and the new regulations dealing with the strength of containers and distance of storage from fire risk has proved satisfactory. A fire occurred at a service-station, the origin of the fire having no connection with the inflammable liquid, but was due to some cause in the building. The occurrence demonstrated the safety of the provisions for underground storage.

A remarkable occurrence was the death of a youth associated with a service-station, who was found dead over the underground tank. On a previous occasion this youth was found unconscious in the same position. Tests made clearly demonstrated that death was not due to leakage of gas, and the post-mortem examination indicated that death was due to drinking petrol. This acci-

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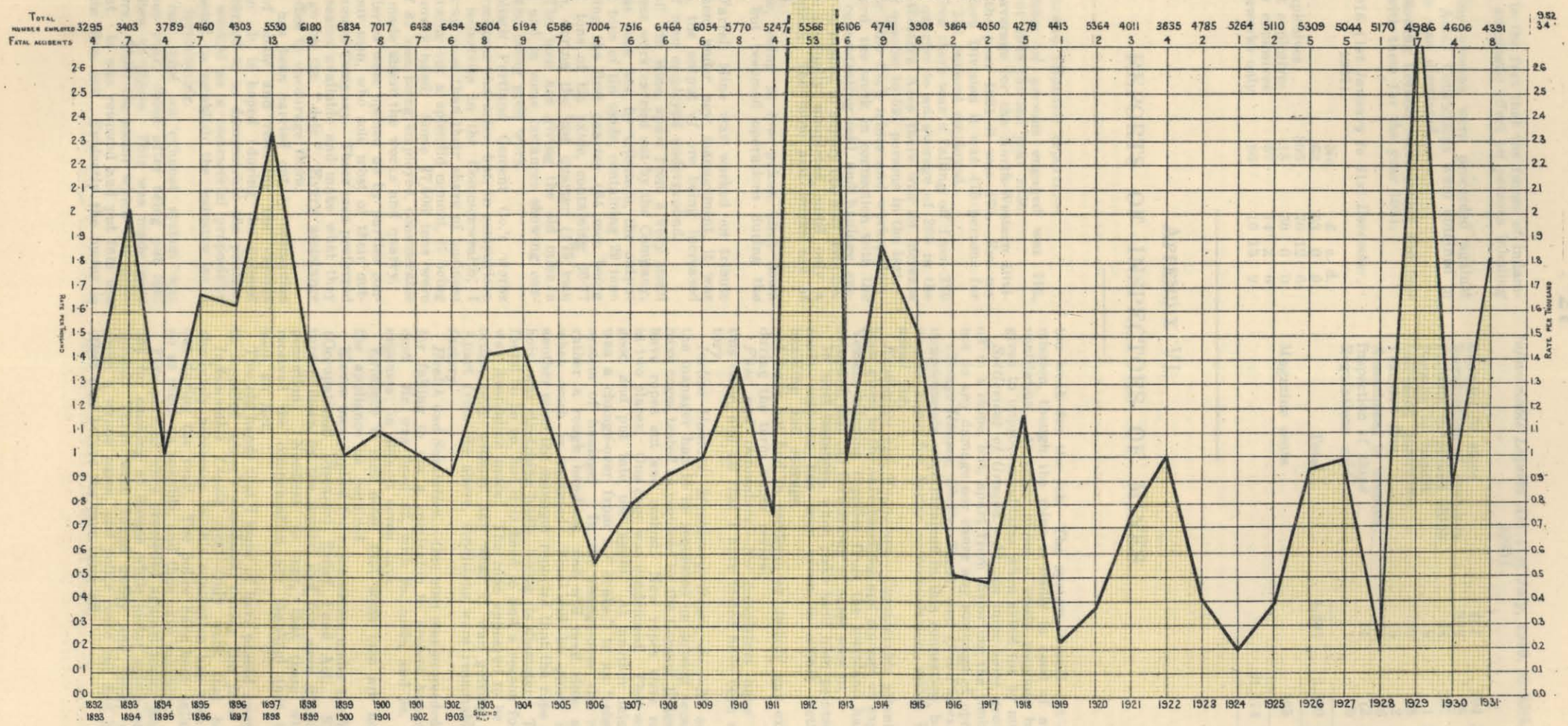
Diagram showing the ratio of Fatal Accidents in Mines in Tasmania

Rate per 1000 men employed



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dent drew attention to the fact that the fumes of inflammable liquid had an anæsthetic effect on persons inhaling them.

Prosecutions.—Nine persons were proceeded against for breaches of the Acts. Convictions were obtained in eight cases, and one was dismissed.

Revenue.—The following licences were issued and fees paid in connection with them for the year 1931.

Explosives Act, 1916 (1*st January to* 31*st December*, 1931).

	No.	£	s.	d.
Magazine licences	63	63	0	0
Permits to sell explosives	305	76	12	6
Permits to import explosives	15	30	0	0
Permits to convey explosives	57	14	2	6
Permits to sell fireworks only	86	10	13	9

Inflammable Liquids Act (1*st July*, 1930, *to* 30*th June*, 1931).

		£	s.	d
Licences to store	411	704	10	0
Registration of premises	312	78	7	6
Permits to unload ships	44	231	0	0
Permits to import	8	1	15	0
Increased quantities	19	18	0	0
Transfer fees	8	2	0	0
Amendment to licences	24	6	0	0
Inspection of ships	14	73	10	0
Regulations sold	1	0	1	0
Total	1,367	1,309	12	3
Magazine rents		165	7	8
		£1,474	19	11

Appendix VI.

REPORTS OF INSPECTORS OF MINES.

Inspector H. A. Vaudeau (Burnie) reports:—

The average number of persons engaged was 712, against an average of 1048 for the year 1930.

During 1930 the average for the North-Western Division was 572; for the year 1931 it was 479. For my portion of the Western Division it was 475 persons for 1930; for 1931 only 233 persons employed.

In the Western Area there was a falling off from 270 persons in the first quarter to an average of 205 in the last. In the North-Western Area there was an increase from 418 in the first quarter to 591 persons in the last.

At the Electrolytic Zinc Co.'s mines and works, Rosebery and Williamsford, the work in connection with the construction of the concentrating mill and haulage systems, &c., which will be needed to supply the mill with ore when working, was gradually completed, until only a few men were required. The mine and works are at present closed down.

The Magnet Mine, owing to low prices, shut down early in the year, but resumed operations during the last quarter.

The North Mt. Farrell Mine was worked on tribute until November, when, under new management, it was restarted on wages, the output of ore being increased with less number of men employed underground.

At the Mt. Bischoff Tin Mine, apart from a very small amount of development work carried out by the Company, the ore produced has been won by tributors, the output increasing from 44·1 tons of tin oxide, containing 29 tons of metallic tin, during the first quarter (84 men being employed), to 104·1 tons of tin oxide, containing 66·77 tons of metallic tin, during the last quarter (175 men being employed). The men are giving the old mine a thorough searching, and in some instances showing considerable initiative and doing good work.

Work at the Goliath Portland Cement Co.'s works has been of an intermittent character, but, in comparison with other cement industries in the Commonwealth, I understand, are getting more than their share of business offering, and are turning out a splendid cement, it being well spoken of on every hand. Some 27,506 tons were made, an average of 81 men being employed, considerable improvement being made about the works and quarry.

Several small collieries were opened up by parties consisting of two to four men, who sold most of their output to the Goliath Cement Company. These men preferred to work the small seams available and make what they could, rather than go on the "dole." Every assistance was given by this office to encourage them.

Intermitten work has been carried out in connection with the mining of shale and retorting the various products from same. It is hoped (during the present year) by those concerned to so demonstrate the practicability of it being worked as a commercial proposition that the money needed to establish the industry on a large scale will be forthcoming.

Ventilation.—At one mine an exhaust system was installed the previous year. Soon after being put into operation the fan flew to pieces. This was made good by the manufacturers. Then the motor which was driving the fan blew out. It was rewound and put into use again, when it again blew out. Evidently the motor is too weak for the job. The system is still out of commission, though the mine is badly in need of auxiliary ventilation. At other mines a ready response has been given to improve conditions when asked for by me.

Settlement of Ground.—At one mine some ground set-off in a stope, but, apart from distorting the timbers, did not do any damage nor cause any stoppage of operations.

Change-Houses, Shelter-Sheds, and Crib-Places.—Some improvements were obtained in this connection, but there is still room for better accommodation, which is being asked for.

Explosives and Magazines.—Considerable attention has been given to the safe-handling and storage of explosives. Vessels bringing supplies from the mainland have been attended, and the forwarding of same seen to.

In most instances, when risks have been pointed out, a ready response has been given to adjust methods of handling and storage.

I have not had to condemn or destroy any explosives during the term under review.

Fuse and Detonators.—No complaints have reached this office, and all that I have tested have been satisfactory.

Incline Haulage, Machinery, Ropes, &c.—At one mine the manager had to be requested on several occasions to have cages tested as required by the General Rules, also to have ropes cut and reshod. New ropes were requested in two places. One cage was condemned. This was made good and put into use again. At another mine there was a change-over from a "brake" to an "electrical" system of haulage. In the change-over the rope got rather a rough handling, and will need close attention when work is resumed. This will be given it. At another mine the manager reported that the rope on main hoist was stretching badly, losing its diameter. This was found to be so, but it is hard to find a reason for it. It was Australian made. The rope appeared to be in good order, only without any wear it was getting smaller. Apart from the above, conditions were reasonably satisfactory.

Health and Sanitation.—One man was proceeded against for failing to use a respirator to protect himself from dust. He was fined £2, with 8s. costs, and 9s. witness' expenses; in default seven days.

Evidence is still noted that some men are not using the appliance as required.

Eleven men applied for examination under the Workers' (Occupational Diseases) Relief Fund Act. Six were turned down by the doctor, and five were granted compensation. Needless to say, that those who have received the compensation are thankful that there is such an Act.

Two old hands that I know of have passed away, owing to so-called miner's complaint, during the year.

Inflammable Liquid Act.—Only work that has been absolutely necessary in this connection has been carried out during the year. The police have been called on to do as much as possible, and thus save expense..

Five persons were proceeded against under Regulation 164 for smoking at pumps while motor spirit was being served. Three were found guilty and fined; one had given a wrong name, and police could not find him; the other died before the case came off.

Three others were charged under Regulation 155 for serving motor spirit from pumps while there was means of ignition within 10 feet of same. They were found guilty and fined.

In taking these cases it was hoped that it would be a warning to others to stop smoking while motor spirit was being served from pumps.

Many new pumps have been installed, and are cutting out a good many of the small depots. Where smoking is cut out, it is a much safer method of handling inflammable liquid.

Breaches of the Mines and Works Regulation Act, 1915.—Other than the case noted above, where man failed to use respirator, two other men were convicted under Section 72 of the Act and fined: one for using abusive language and the other for assault. The occurrence took place in a change-house at a mine.

General.—The various mines, works, and quarries in my district which are under the provisions of the Mines and Works Regulation Act have been inspected as the importance of the operations called for and as time permitted. In most instances where improvements have been asked for concerning safety and better working conditions, they have been granted as speedily as possible, but there are still those in charge of operations who will not see that it pays to have safe and good conditions for men to work in.

To those who have given me their assistance and hearty co-operation in my endeavours to get a reasonable degree of safety, I would like here to express my appreciation.

I have also been called on to make reports in connection with the Aid to Mining Act, and for the Warden of Mines, in connection with Extended Prospecting Claims and Special Prospecting Licences under the Mining Act, which were furnisehd as required.

There is a lot of prospecting work being carried out in various parts of this district, and some men have got on to gold in small quantities, which have given them good wages.

Inspector H. A. VAUDEAU further reports:—

Mr. J. J. Andrews having resigned his position as Inspector of Mines and Explosives for part of the Western Division, including the Mt. Lyell Group of Mines and those at Zeehan, Dundas, and Heemskirk Area, I was instructed to take over from him at the end of October. Since then I have been in charge of this district as well as my own, and have to report for this area as follows:—

The average number of persons employed was 1522, against 1436 for the previous year; 1446½ being the average for the Queenstown Area; 55¼ for Zeehan; 7½ for Dundas; and 12¾ for the Heemskirk Area.

Ventilation, Health, and Sanitation.—Several complaints reached the office during the year as to smoke and fumes being in the main tunnel in one mine at the change of shifts, when men were being conveyed through it. An endeavour was made to cut this out, but, until an auxiliary method of ventilation was put in these conditions had to be dealt with from time to time, more than there should have been any need for.

Since I took over, at two mines, owing to some developmental work being put in hand in a hurry, conditions were far from satisfactory. I spoke and recorded very strongly against these. Exhaust systems were put in hand in two working places at one mine at once, which made conditions much better. At the other mine, previous to the work mentioned above being put in hand, a drive was being put in at the bottom tunnel level; when air-current was up-cast, smoke and fumes used to travel right up through many of the upper workings; when down-cast, used to travel right along the bottom tunnel level, to the inconvenience and ill-health of those working in it. As soon as I became aware of it, I requested that an adequate system of ventilation be put in as quickly as possible. A little time afterwards I was informed that a large fan had been ordered, also 2000 feet of pipes, in this connection. I am trusting to see these very soon in service. Conditions in two other stopes were not satisfactory and were recorded against.

Several improvements were asked for, and many received attention, in connection with crib-places and change-houses; but at one mine, though there was an extension added to the change-house, so many more men were put on that at the time I took over there were many lockers that were being used by two men, and even three in some. Alterations have been promised.

Settlement of Ground.—No big settlements of ground have occurred since I took over up to the end of the year, but there is evidence of a considerable tonnage having done so previously in two mines. Early in January, 1931, while relieving Mr. Andrews, I drew attention at one mine, owing to the strong evidence of structural weaknesses in the ore-bodies being mined, to the urgent necessity of giving proper support to roofs as soon as these weaknesses were observed. From information obtained and observations made, this has not been done as occasion demanded at all times, so I have again drawn attention to it.

Many stopes have been taken over the height, as allowed under General Rule 85. In most instances this is not desirable for safety, and in my opinion, in most of the ore being mined in this group of mines, in "open stope" it would be advisable to keep the stope height much lower, so that as soon as possible and convenient passes could be built up to the roof and where affected "bulked," so as to give adequate warning of any settlement. There is also much less chance of timbers being knocked about by the blasting, and they can be put up much quicker than where stopes are high, and this would more than repay for any extra costs, if any, occurred in mullocking. It is known that when big settlements occur that no timbers will hold the ground up, but if stopes are kept at a reasonable height, being treated as above, it gives much greater safety.

Travelling-ways.—Ladders in these were found in many instances to be overhanging from 5 to 13 inches in the length of the ladder. No doubt the man-ways had been pushed over when being filled with the wet mullock being used in this mine, but there was no reason for them to be left in this condition. Strong exception to it was taken, and at the close of the year a good many had been put right, and I believe the general manager gave strong instructions that such conditions should not exist.

Machinery.—As far as records show in this office, the customary attention was given to this, and nothing had to be condemned during the term under review.

Explosives.—Supervision was given to inward shipments of these regarding safe handling and forwarding. No complaints have been received as to fuse, detonators, or high explosives. On one occasion slight exudation was noticed in some gelignite, but nothing to worry about.

Inflammable Liquids.—Only a few details had to be dealt with in connection with depots, the necessary alterations and additions being obtained when requested.

Reduction and Smelting Works.—From records in office, at times there was much to complain about, but, on this being pointed out, it is stated conditions were improved.

Since taking over, conditions existing outside a dry-crushing plant were not at all satisfactory, some of the dust passing through the "dust-extraction chamber" was blowing, according to the direction of the wind, right up and along top ore-bin, to the nuisance of those driving the locomotives and men tipping the ore-trucks. No improvement had been made up till the end of the year, but it has since been made much better.

Owing to a lot of alterations being made at one works, things are in rather a transitional condition, and, though I have seen things I could have complained about, one has to be reasonable. I am hoping to see conditions satisfactory once things settle down.

Prosecutions Under the Mines and Works Regulation Act, 1915, and Amendments.—Two men were found working in a stope in smoke and fumes and dusty conditions, and were convicted under General Rule 12, Section 2, and fined: one £2, with 6s. 6d. costs; the other £1, with 6s. 6d. costs.

Another person was proceeded against under Section 72 for assaulting a person underground by striking him with his clenched fist. He was fined £2, with 6s. 6d. costs.

A man left two plugs of gelignite in a stope and was proceeded against under General Rule 20, Section 13, and fined £2, with 6s. 6d. costs.

Another man was proceeded against under General Rule 20, Section 7, the general manager and mine foreman of the mine reporting that they had found some three plugs of gelignite lying on a board in a drive leading in to the stope where men had been working. He was fined £3, with 10s. 6d. costs.

The person in charge of distributing explosives was proceeded against under General Rule 20, Section 3, for giving out explosives to a man other than in a proper canister. He was fined £2, with 6s. 6d. costs.

Workers' (Occupational Disease) Relief Fund Act.—As far as records show, 17 men applied to be examined for compensation. Four men were refused this by the medical certifying officer, the others receiving same.

Work in connection with this Act has taken up considerable time in the Lyell Division.

Summary of Mining Activities.—The Mt. Lyell Mining and Railway Company Limited is steadily increasing the size of its plant and mining operations generally, so that it can successfully handle the lower-grade ores, which are available in large quantities.

The new hydro-electric power plant was also completed and put into service.

At Zeehan some fifty odd men have been engaged at various places, winning silver-lead ores. A little galena and tin ore was won in the Dundas Area and a quantity of tin oxide in the Heemskirk District.

The improvement in the price of tin is helping somewhat, but a considerable rise in the price of all metals is what is badly needed to be of much use in these areas.

Inspector W. H. WILLIAMS (Launceston), reports:—

The average number of men engaged in mining and metallurgical operations was 894, as against 795 for the previous year, the increase being largely due to added activity in the search for auriferous ores and alluvials.

In the general administration of the provisions of the Mines and Works Regulation Act, due regard was directed to the production and maintenance of safe operating conditions at the collieries, metalliferous mines, and quarries. Inspection records reveal that many instances of laxity were encountered in regard to the safety of the walls of opencut workings and races, that innovations were often necessary to the methods adopted in sinking prospecting and working shafts, and that additional measures were frequently required in regard to the security of underground places. It was necessary, in the interests of safety, to interrupt the systems of mining being pursued at three metalliferous mines and one colliery and to prescribe the methods to be adopted to enable operations to be continued with reasonable safety. Irregularities were encountered in the lesser details of mining practices, but no outstanding difficulty was experienced in obtaining an application of corrective measures.

There were no extensive settlements of ground and the roof movements which developed in two collieries during the previous year were well controlled and caused no interruption of productive operations.

Health and Sanitation.—Matters pertaining to health and sanitation have not been slighted, and, although the production and maintenance of equitable conditions are an essential factor in all industrial operations, records reveal many instances of improper regard therefor.

Thermometrical conditions were neither excessive nor oppressive, but nuisances due to smoke and fumes from shot-firing, dust, deficient air, and fogged atmosphere were recurring factors and demanded frequent requests for their elimination. Emanations of gas, essentially carbon dioxide, from the strata in one locality, called for an exercise of more than ordinary care, and with any extension of mining operations added precautions will become necessary. Flame extinction tests revealed, in one case, that persons were venturing into an atmosphere laden with not less than three per cent. of carbon dioxide. At one colliery an additional connection was effected with the surface, and this relieved previously unsatisfactory conditions of ventilation. At a second colliery there was no material alteration of the ventilation conditions, and smoke and fumes, lingering from intermittent shot-firing, continued to be a nuisance. Some progress, however, was made with the project of providing a new airway, and it is expected that the necessary connection will be effected during the coming year, when ample scope will accrue for the enforcement of improved conditions throughout the colliery. Roadway dust caused dissatisfaction at one colliery, and, as the use of water was impracticable owing to the creation of a factor of unsafety from a heaving floor, the use of an alkali was successfully resorted to for dust suppression. Beneficial innovations were made in connection with a repression of the dust nuisance at a large rock-crusher station.

Congenial industrial conditions benefit the health of employees, but the result does not terminate at that stage, as it becomes apparent that the working capacity of the individual is increased, and thereby accrues a direct economic benefit to the employer. Contentment amongst the employees also results, and it is generally accepted that a contented employee is an industrial advantage. The recorded instances of deficient conditions indicate that much is still possible by those responsible for the conditions, and, although certain results have attended the actions of this office, there is ample scope for improvement. Little is often attempted without an official direction or recommendation, and this fact, apart from other consderations, pronounces the importance of intense inspection, necessity for which continues to be confirmed by the records made in compliance with Section 11 of the Act.

No innovations were made in regard to the bathing and changing accommodation at the collieries and metalliferous mines, the demand at the former being negligible and the expansion of operations at the latter mines being insufficient to warrant additions or alterations. Latrine arrangements were maintained as required, and no complaint arose in connection herewith.

First Aid.—Facilities for rendering first aid to injured persons were not different from those obtaining hitherto, but initial consideration was given to reorganising the arrangements at the principal mines, as these have been of a mean order and less than the standard prescribed by Regulation 7. Reasonably equipped rooms are a necessity, and it is anticipated that these will be provided at the principal mines in the near future.

Machinery. — Maintenance and protection of the machinery in use at the various mines and works received the attention demanded by the provisions of the Mines and Works Regulation Act. Deficiencies were more outstandng at small mines and prospecting claims than at the principal producers, and in several instances it was necessary to condemn windlass arrangements, sinking ropes, connections, and buckets to ensure the observance of a desirable standard of safety.

Explosives.—Customary regard was given to the administration of the Explosives Act and the provsions of the Mines and Works Regulation Act relating to explosives.

Except in the case of small isolated quantities affected by local conditions of exposure, the quality of the nitro-compounds was satisfactory, and nothing untoward was encountered in connection with the safety-fuse used. Frequent inquiries were made into the behaviour of the lead-azide detonators, and, although the use of the fulminate detonators was preferred at two mines, any irregularities were insufficient to cause exception to be taken to the use of the former.

One serious accident was associated with explosves, but the circumstances suggested that the cause was due to some irregularity in practice and not to the quality of the nitro-compound or detonators.

The establishment of improved systems of handling and distribution of explosives was advanced a further stage, and former irregularities are being gradually eliminated. Legal proceedings were instituted against five persons for improper practices.

Inflammable Liquids.—The provisions of the Inflammable Liquids Act have been sufficient to ensure complete control of conditions governing the storage and handling of inflammable liquids. There was an appreciable increase in the units provided for bulk storage, and, consequent upon an extension of bulk distribution, new registrations principally concerned pump installations and drum storage, the latter being confined more to country districts owing to the necessary safety-distances to be observed.

One outbreak of fire at a service-station came under official notice, but the cause of the fire had no connection directly or indirectly with the storage of inflammable liquids, and the safety of the arrangements, provided for the storage of mineral spirit, was pronounced by the fact that the spirt contained in three pumps remained intact.

Prosecutions.—Legal proceedings were instituted in eight instances, six of which concerned breaches of the Mines and Works Regulation Act, whilst two were presented under the provisions of the Inflammable Liquids Act. The offence and result of the proceedings, in each case, are shown in the appended tabulation.

Contravention.	Result.
Mines and Works Regulation Act, Section 65.—Failure to furnish statistical returns.	Mine Owners: Convicted and ordered to pay costs amounting to 6s. 6d.
General Rule 12 (ii), Part III., of the Schedule.—Unlawfully taking into a coal mine explosives other than in a secure case or canister.	Mine Official: Convicted, fined £1, and ordered to pay costs amounting to 6s. 6d.
General Rule 12 (i), Part III., of the Schedule.—Unlawfully storing explosive substance in a coal mine.	Miner: Conviction recorded without costs.
Ditto	Ditto
Ditto	Ditto
Ditto	Ditto
Inflammable Liquids Act, Section 5. — Unlawfully storing more than 16 gallons of mineral spirit, otherwise than in registered premises.	Garage Proprietor: Convicted, and ordered to pay costs amounting to 7s. 6d. Farmer: Complaint dismissed without costs.

General.—In addition to the duties ordinarily performed under the abovementioned Acts, special examinations were made of four mining properties, and economic reports were prepared thereon for the purposes of the Aid to Mining Act; a special report was prepared upon the construction of roads to two coal mines; investigations were made into the improper disposal of tailings from alluvial workings and a report was furnished upon the suggested extension of a township survey.

Statistical returns of mineral production and men employed in mining operations were prepared for each quarterly period, and occupied several weeks in the compilations. Despite the impression that any depression in mining lessened the duties of this office, it is of interest to note that the number of men engaged in mining operations was greater than for the previous year and that the duties of this office required more service than would have been available with an observance of regulation hours.

APPENDIX VII.

REPORT OF THE MOUNT CAMERON WATER-RACE BOARD FOR THE YEAR ENDED 31ST DECEMBER, 1931.

Gladstone, 17th February, 1932.

SIR,

We have the honour to submit our report for the year ended 31st December, 1931.

Race.

The main race is in fair condition, but there is a growth of a species of rush from Channel-keeper Keegan's cottage for some 5 to 6 miles lower down, which, to a certain extent, impedes the free flow of the water, and this will require to be removed during the present summer months.

Syphons and Flumes.

These are in a satisfactory condition, apart from the Ringarooma River syphon, the wooden portion of which requires constant attention.

The trestle at the Little Mussel Roe River, referred to in our last report, has been repaired and is now giving good service. The other syphons and flumes are in good order. The Hume-pipe syphon has continued to give very satisfactory service, and has not required any attention since it was laid down in 1927.

Dams.

With the exception of "Harvey's" Dam, near the manager's residence, all the dams are in good condition. It is anticipated that the first-mentioned will require attention in the near future, the timbers supporting the embankment having decayed to a serious extent.

It has not been found necessary to raise the height of the embankment at the Native Lass Dam, and no portion of the £80 provided for this purpose has therefore been expended.

General.

The agitation for the restoration of the old No. 6 syphon was started in October last, and a full report thereon was obtained from the State Mining Engineer and submitted to the members of the Board for their comments. The estimated cost of replacing the syphon with a 15-inch pipe of No. 16 gauge galvanised iron was given by the State Mining Engineer at £660, and, after perusing the report and comments, you decided the matter must be deferred.

Messrs. Higgs and Kerrison are still obtaining good results at Lark Creek, and are being supplied with approximately 12 heads of water.

Messrs. Standage and Bowen, at the "Lochnaber," have had good results, and are being supplied with 12 heads of water. Their first clean-up realised 30 cwt. of tin.

Messrs. Watt and Butcher are doing fairly well with three heads of water from the Native Lass Dam.

The ground now being worked is poorer than that of former years, and can only be profitably dealt with by hydraulic elevators or "blowers," which require a much larger quantity of water for successful operations, and as there are some five of these at work all the water coming through is being used.

We have again to express our appreciation of the loyal service rendered by the Manager (Mr. David Shields) and the Channel-keepers.

Rainfall.

The registered rainfall for the year was as follows:—

Great Mussel Roe	41 inches 58 points.
Little Mussel Roe	40 inches 67 points.

Revenue.

The revenue for the year amounted to £433 12s. 4d., being a decrease of £95 0s. 10d. on the previous year.

Expenditure.

The expenditure amounted to £841 7s. 4d., being a decrease of £58 17s. 9d. on the previous year.

Statistics.

The statistics for the year are as follows:—

Average number of claims supplied per week	12
Greatest number supplied in any one week	18

Total number of heads supplied under—	Heads.
Fixed, or cash, scale	41 7/12
Royalty, or credit, scale	2,890
Total	2,931 7/12

Tin ore raised—	Tons	cwts.	qrs.	lbs.
Under royalty scale	36	6	2	24
Under fixed scale	2	9	0	0
Total	37	15	2	24

Average number of men employed per week 22

Receipts for Year.	£	s.	d.
Water sold under fixed scale	28	17	0
Water sold under royalty scale	404	15	4
Total	£433	12	4

Expenditure.	£	s.	d.
Salaries and wages	730	18	0
Travelling expenses	11	7	6
Insurance	6	18	6
Repairs to race	61	2	6
Stationery	3	10	6
Stores and freights	2	10	4
Building dam (half cost)	25	0	0
Total	£841	7	4

We have, &c.,

W. A. PRETYMAN, Chairman of the Board.
CECIL C. RYAN, } Members.
GEORGE MALLINSON, }

The Hon. the Minister for Mines, Hobart.

WALTER E. SHIMMINS,
GOVERNMENT PRINTER, TASMANIA.