(No. 3.)

TASMANIA

REPORT

OF THE

SECRETARY FOR MINES

FOR

YEAR ENDING DECEMBER 31

1923

INCLUDING REPORTS OF THE INSPECTORS OF MINES, GOVERNMENT GEOLOGISTS, GOVERNMENT CHEMIST AND ASSAYER, MOUNT CAMERON WATER-RACE BOARD, &c.

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

Tasmania:
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REPORT OF THE SECRETARY FOR MINES.

Mines Department,
Hobart, 14th May, 1924.

SIR,

I HAVE the honour to submit my report on the Mines Department and the Mining Industry for the year ending 31st December, 1923.

GENERAL REMARKS.

The aggregate value of minerals raised during the year was 1,219,456, being an increase of 206,041 on the output for the previous year. The principal increases were in tin, £124,548; lead, £9285; coal, £9781; copper, £43,878; and those which show a decrease are:—Carbide, £70,789; silver, £37,098; osmiridium, £15,870.

APPENDICES.

Appended will be found:—

Annual Report of Mt. Cameron Water-race Board.
Reports of the Government Geologists and Government Chemist and Assayer.
Report of the Chief Inspector of Mines.
Report of the Chief Inspector of Explosives.
Reports of the Inspectors of Mines.

AID TO MINING.

Productive mining operations in the Zeehan district were fairly active until the close of the period, when, owing to varying circumstances, two of the largest producing mines—the No. 6 Argent and the No. 2 Argent Mines—ceased operations. The district did not, however, suffer from the depression that may have been expected, as most of the men thrown out of employment were absorbed in constructional operations at the local works of the Electrolytic Zinc Company.

ZINC-LEAD ORES.

In expectation of the Electrolytic Zinc Company becoming purchasers locally of mixed galena-zinc blende ores, considerable attention was given by tributers to the Comstock district, in which this class of ore predominates. Although a schedule of terms and conditions of zinc-lead-silver ores has been issued by the Electrolytic Zinc Company, no buying transactions have resulted.

Until the flotation unit now under construction at the local works of this company is completed it is not expected that a market for these ores will be available.

A fair amount of prospecting work has been carried out by tributers, but nothing extensive of a permanent character was located on the tributing areas.

Preparations are in hand by a local syndicate to unwater the old T.L.E. mine workings; a few months hence should see this work accomplished, when developmental operations will be undertaken.

The new discoveries of high-grade galena lodes made 3 miles north of Zeehan last year have developed satisfactorily, considering the limited amount of work carried out by the lessees. The ore won and marketed from these lodes is of a very high average grade.

No. 6 Argent.—This mine was closed down in December, and a special report by officers of the Department was furnished which dealt with the position and prospects of the mine.

No. 2 Argent.—The syndicate operating this mine not being financially strong enough to carry out necessary developmental work to open up further reserves of ore at a lower level, were compelled to hand the working of the mine to a tribute party. The latter carried on operations with varying success until an accident occurred to motor of the electrical pump in October. Want of funds necessary to have repairs effected to the pump and again unwater the mine compelled a complete cessation of operations for the time being.

It is probable that an effort will be made by those interested to have the pump put in order and reopen the mine, the tributers being well satisfied with the prospects when the accident occurred.

Swansea Mine.—Operations at this mine have been successfully carried on, but in order to maintain it on a productive basis a developmental policy below the No. 2 level is necessary. Preparations are now in hand to have this work carried out.

A satisfactory market having been obtained for the accumulated stacks of high grade zinc-blende—estimated at 900 tons—the work of bagging and shipping the ore is in progress.

The essaying of ores, as in the past, has been continued, tributers and others taking advantage of the opportunity of having this work done for them at a nominal charge. During the year 221 sale samples and 567 prospect samples were assayed; also a large number of mineral identifications were made. Where required, free surveys of tributes were effected.

The total quantity and value of ore sold during the year on account of State tributers was as follows:—

Quantity. Tons.		Value. £ s. d.
1157·2151	...	25,501 3 9

In addition to this, the co-operative party working the No. 6 Argent Mine at latter part of the year raised 245·0913 tons, valued at £5455 6s. 6d.

The amount received from ore sales was £16,494 8s. 2d., which was distributed as follows:—

	£	s.	d.
Paid to tributers	14,035	14	4
Royalty paid to lessees	282	14	8
Royalty paid to State	1,966	15	2
Miscellaneous payments to State	209	4	0
	£16,494	8	2

EXPENDITURE.	£	s.	d.
Salaries and wages	520	9	5
Assistance to prospectors under Part I.	248	7	0
Assistance to prospectors under Part III.	80	0	0
Advance to No. 6 Argent Mining Co., N.L.	352	2	6
Advance to E. L. Martin for purchase of plant	60	0	0
Pumping charges, No. 2 Argent Mine	154	19	6
Expenses incurred in keeping No. 6 Argent Mine unwatered to enable an inspection and report to be made	306	2	1
Premium of insurance on buildings, &c., No. 6 Argent Mine	22	10	1
Filling in old shafts, Western Mine	2	0	0
Assay material	90	15	0
Office expenses	27	8	8
Miscellaneous expenses	10	11	7
Refund of royalties	6	1	0
Royalty paid to lessee, Zeehan-Montana Mine	6	0	0
	£1,887	6	10

RECEIPTS.	£	s.	d.
Royalty paid by tributers	1,966	15	2
Assay fees	81	13	0
Interest on loans	519	16	10
	£2,568	5	0

No. 6 Argent Mining Company, No Liability.

During the year the sum of £352 2s. 6d. was advanced to the Company. The net proceeds from ore sold by the syndicate amounted to £12,232 14s. 4d., from which the State received £1161 15s. 6d. in liquidation of loans, and £90 14s. 6d. in interest on loans.

The Company's loan account at 31st December, 1923, was as follows:—

	£	s.	d.
Total amount advanced	9,856	16	5
Repaid by royalty on ore sold	3,400	18	0
Balance owing	£6,455	18	5

	£	s.	d.
Owing by Company	6,455	18	5
Interest to 21st November, 1923	365	5	3
	£6,821	3	8

No. 2 Argent Prospecting Syndicate, No Liability.

A sum of £533 was received in royalty, and was created as follows:—

	£	s.	d.
Tribute royalty	173	10	1
Pumping Account	179	14	10
Installation of plant (Loan Account)	179	15	1
	£533	0	0

The Syndicate's loan account at the 31st December, 1923, stood as follows:—

	£	s.	d.
Total amount advanced	3,222	10	4
Repaid by royalty on ore sold	1,017	12	11
Balance owing	£2,204	17	5

GOLD.

The following return shows the quantity and value of gold won during the year:—

	Fine Ozs.
Beaconsfield	205·701
Lefroy	...
Lisle, Golconda	200·534
Mt. Claude	160
Mt. Cameron, Mt. Victoria, and Warrentinna	82·485
Mathinna	1,001·470
North-West and West Coasts	2,033·934
Total	3,684·124

Value, £16,639.

Beaconsfield.—Apart from prospecting and the dismantling of the Tasmanian G.M. Company's plant, no other work has been done in this centre during the period.

Lefroy and Back Creek.—The foregoing remarks equally apply to these fields.

Golconda, Panama.—Work has continued on the Mt. Brown and Jack's sections, but in neither case has anything permanent been discovered.

Lisle.—At the New Bonanza and Lisle Hydraulic Sluicing Mines small recoveries have been made, but with improved water-supplies, especially in the former, better results are anticipated.

Lisle Gold Mining Company, No Liability.—Sluicing operations were carried on during the latter part of the year by three men, and gold to the value of £80 was recovered.

Mt. Victoria.—Ringarooma United Gold Mining Company, No Liability.—Mr. J. C. Matthews, manager, reports:—

General.—There are nine different lodes or reefs on the property, all gold-bearing, and some of the shutes of stone in places are exceedingly rich. The property consists of several sections held and worked in the past by different companies. Capital was subscribed in Adelaide with a view of investigating the different lodes before laying out a site for a main shaft to test values at a depth, and as there is every probability of the lodes being deep-seated, this work is now being taken in hand. Work for the past year has been confined to cleaning out and repairing old workings, driving on some of the lodes, erection of buildings and machinery, purchase and delivery of crushing plant with a view to producing regular monthly yields of gold.

Repairs to Old Workings.—Underground Work: Timbering and cleaning out long or low level tunnel 1300 feet, laying down steel truck-road for full length of tunnel and levels; in all about 1370 feet. North and south levels cleaned out, and timbered where necessary, on Rosalind reef; a crosscut east of north drive intersected the No. 3 lode, and proved to contain payable values. This crosscut will be continued later to intersect Premier reef. Large chamber at this level was retimbered and winding-winch installed. Main winze or shaft on Rosalind reef unwatered by a Cameron's sinking pump. The winze was timbered and made secure, the full depth being 65 feet. At this point the reef was opened out, and showed a fine body of stone, 6 feet wide, carrying arsenical pyrites and iron sulphites; shows free gold, and assays from reef gave good values. Sinking of this winze was continued to 115 feet. The reef is going down strong, and contains from fair to good gold values.

Hannah's Tunnel.—This has been driven 280 feet; total length, 380 feet. At a point 280 feet from the approach Hannah's reef was intersected. A drive on course of lode was driven south 10 feet, and a rise put up 60 feet, connecting this tunnel with old workings. The country at this tunnel level is very much broken; the reef difficult to follow; the stone is well mineralised and of good gold values. This tunnel was continued east past Hannah's reef, and another reef cut, what would be termed an east-west reef; this is 3 feet wide, and samples taken gave gold up to 2½ oz. per ton. A drive on the course of the lode for 100 feet proves the reef and lode formation to carry good payable values. The work of driving on both these lodes is being pushed on to enable stopes to be opened up for the crushing plant which is now being erected. The other lodes on the property will in due course have my attention, and with adequate capital I anticipate this mine will develop into one of the best gold-producers in the State.

Plant and Buildings.—To carry out the above work and the sinking of the main winze to intersect the junction of the Rosalind, No. 3, and Premier reefs, the following plant and machinery was installed:—Air-compressing plant to supply power to winding-winch, Cameron's sinking pump, and rock-drills; capacity of air-compressor 700 cubic feet of air per minute; one large boiler, 26 feet x 7 feet diameter; electric lighting plant for all underground works and surface; buildings—machinery and boiler house, blacksmith's shop, change-house, store-room, and magazine. The above plant is installed at the main or low-level tunnel mouth.

Summary of work done to 31st December, 1923.—Driving on Hannah's tunnel, 280 feet; driving south on Hannah's reef, 10 feet; driving on east and west reef, 100 feet; driving crosscut east of north drive in low-level tunnel to cut No. 3 reef, 32 feet; driving north on No. 3 reef, 48 feet. Total driving, 450 feet. Rising on Hannah's reef, total 60 feet; sinking prospecting shaft on Premier reef, 48 feet; sinking main winze, long tunnel, 53 feet. Total sinking, 101 feet. Old workings, low-level tunnel: Cleaning up and repairs, steel road laid, air pipes and electric cable, tunnel, and north and south drives, and large chamber, 1370 feet; total tram-lines in low-level and Hannah's tunnels, 2000 feet; total air pipes laid on mine, including steam pipes, 3310 feet.

Work now in Hand.—Cleaning up upper tunnels on Rosalind and Premier reefs, also No. 3 reef; opening up Hannah's and east and west reefs for stoping in Hannah's tunnel. Future work: Sinking of main shaft from surface to intersect junction of Rosalind, No. 3, and Premier reefs. Crushing plant: Battery and concentrating plant delivered on mine and now in course of erection.

Other Mines.—Work of a prospecting character has progressed on the (1) Forest King, (2) Wallace, (3)

Fowler, (4) Long Struggle, and other minor shows without, however, establishing anything of importance. About 30 men have found employment in and about the district.

Forrester Settlement.—Linton Prospecting Association.—Work that for some time had been in abeyance has recently been resumed on this property by extending the ends on the reef that was cut in the No. 2 adit, both of which are reported to have prospected favourably, and upon which the management purpose erecting a 5-head battery. Eight men employed.

Johnstone's Sections, situated about half a mile to the eastward: Serviceable work on a small reef that both dollies and pans favourably has been done by three men employed on these sections.

Mathinna.—New Golden Gate Mine.—From the beginning of the year to the 27th January 100 tons were taken from the stopes above and below No. 4 level, from which 46·8 oz. of gold were obtained. Six copper plates were treated and yielded 183 oz. of gold. Sixteen men were employed during this period. The mine was then acquired by the Golden Gate Consolidated, No Liability, and the manager, Mr. E. Moses, reports as follows:—

Work commenced 27th January, 1923. The water level in the shaft was at No. 6 plat on that date, and bailing the mine (one shift) was commenced to open up the deeper and more important levels of the old mine.

No. 2 Crosscut and Level: The level north on Loane's reef has been pickd up and repaired 193 feet, and driven 84 feet 6 inches, including a crosscut east for about 15 feet. The level south has been driven 101 feet, on contract, to pick up the continuation of the reef being stoped above No. 4 level, and from the end of the drift 68 feet of crosscuts, and cuddy workings were put out into country in search of the reef formation. At the same time a rise was connected between the stopes and No. 2 south level a total of 102 feet, of which 78½ feet were on contract, to hole through.

No. 4 Level: One thousand and eighty-four tons of payable quartz were broken for the period from the swinging stope back of this level, under contract. A rise has been put up 25 feet above the level, and about 45 feet north of the stope, to pick up the continuation of the stope north towards the main slide. On the workings of Loane's reef at No. 4 the crosscut has been picked up 62 feet, and the level south for a distance of 120 feet, and at this point a winze sunk 11 feet to pick up a wedge of payable stone in the neighbourhood of the main slide.

No. 4 Intermediate Level: Stoping on contract has been continued intermittently below No. 4, and 188 tons were broken and crushed. Much time and labour was given to keeping the main ore-passes to No. 6 level in repair, as the logging could not be renewed

No. 6 Level: A winze has been sunk in south on the slide at No. 6 in broken ground on the course of the original air-pass to No. 7. This was restored, and a ladder-way and second exit provided. Twenty-five feet above the foot of air-pass prospecting drives were put in for 25 feet on reef formation, unpayable. From the western face of the main crosscut a prospecting drive was put out 22 feet south and west into country to pick up extensions or spurs of the old Zig-Zag reefs. A prospecting rise was put up 8 feet on the north end of the big stopes where it meets the slide.

No. 7 Level: A good deal of attention and work has been given to opening up this level. The old crosscuts and levels, both east and west of the main shaft, have been cleared, picked up, and sleeper tracks laid. This work involved 366 feet of clearing and track-laying in the western portion. Baulked ground was picked up and secured with stout timber sets and logging in numerous places. The mullock and slurry from the main levels was trucked away and stowed, or else taken to surface. East of the shaft the crosscut was cleared 183 feet and track laid; level north, 138 feet; and south, 94 feet. At the 94 feet south a winze is in progress to connect with the old stopes back of No. 8 level on Eastern reef. This connection will provide the second exit. The level north on Eastern reef has been extended 98 feet 6 inches on contract; total, 138 feet. Prospecting.

No. 8 Level: The crosscut and level south has been cleared and picked up, and track laid for 354 feet. At this point a cross-drive was extended south-east 25 feet in hanging-wall to prospect new country.

Shaft Repair: The main shaft has been cleared of debris as the water level was lowered. Skids, centres, and wall plates renewed, and a general weekly testing and repair in details effected.

General Repairs: Where required mine timbers and main sets have been renewed, and a careful supervision given to level timbers and upkeep of passes and main connections. New opening-out sets have been put in both east and west at the No. 2 and No. 4 level plat, and in addition shaft and plat repairs at No. 7 level.

Second Exits: Exits and ladder-ways between levels have been installed, also ladder-ways in main shaft down to No. 8 level. All travelling-ways have been installed according to the Act, and have been passed by your inspector as being in good order and reasonably safe. The water-level has been lowered for the period a total of 252 feet 6 inches, and the mine workings and the adjoining Consols workings drained to this level.

Tonnage: For the first half-year 1092 tons of quartz were crushed, returning 565·70 oz. smelted gold, and 14 tons concentrates containing 114 oz. gold; value per ton, £1 14s. 3d.; total working cost, £1 4s. 1d. For the second half-year ended 913 tons were crushed, returning 322½ oz. smelted gold; or for the year ended 31st ultimo 2005 tons, yielding 888·2 oz.

Total driving, 424 feet; total picking up old levels, 1411 feet 6 inches. Total rising, 135 feet. Total sinking, 11 feet. Total crushing, in tons, 2005; total yield, 888·2 oz.; gross value, exclusive of concentrates, £2937 12s. 3d. Total number employed: Wages, 32·4; carters, 5; cutters, 9; salary, 2·25.

Miner's Dream.—The Mine Manager (Mr. J. F. Egan) reports:—Operations were started on 20th February. The work consisted of road-cutting, cutting site for shaft and machinery, erection of poppet-legs and installing winding-engine. The shaft, which is being sunk to cut the lode at about 300 feet in depth, reached a depth of 126 feet, when a burst of water was cut that proved too heavy for our present appliances, and work in the shaft was discontinued. An adit to connect with the shaft at about 60 feet was also driven, and which will be the principal outlet for water and quartz to mill. Am at present engaged in erection of more powerful machinery to cope with water in the shaft. An average of 10 men have been employed during the term.

North Esk.—Blessington Gold Mining Syndicate.—Work on this property has continued along the line of reef for 200 feet, and as the present face prospects are improving there is reasonable ground for believing that a payable proposition will follow. Five men have been employed.

Tower Hill Consolidated, No Liability.—The Mine Manager (Mr. W. G. Spiller) reports:—A new main shaft was started and sunk to 63 feet. Water became too strong for our appliances, and the work was stopped in order to instal machinery. This work is at present being executed, and consists of 70-feet poppet-legs, engine and boiler, and air-compressor. Huts and other necessary buildings were built during the term. Average number of men employed: Shaft-sinking, 9 men; surface, 2 men; total, 11 men.

West Coast.—Hall's Creek.—A small syndicate, latterly employing two men, further explored an extensive quartz occurrence, operated on by the Coupon Syndicate some years ago, in anticipation of locating shoots of ore of sufficient value to enable the occurrence to be worked to economic advantage. Sporadic disseminations of gold were encountered, but results were disappointing, and latterly the project was abandoned. A small two-head stamper battery was installed and used for sample crushings. A recovery of 3 oz. of gold was returned for the period.

SILVER-LEAD.

The quantity of silver produced was 638,601·61 oz., valued at £91,339.

The producers were:—

	Ounces.	Value. £
Zeehan Mines—		
Mt. Zeehan (Tas.)	1,879	271
Nike	7,515	1,073
Zeehan-Montana	1,295·52	186
Oonah	33·17	5
Swansea	4,662·52	673
Zeehan Queen	1,216·45	178
No. 6 Argent	62,671·60	9,020
No. 2 Argent	14,530·32	2,085
Colston	1,997·03	287
N. Zeehan	8,462·66	1,221
Others	28,474·80	3,764
Mt. Jasper	3,097	442
North Mt. Farrell	187,345·60	26,851
Magnet Mines	165,078	23,695
Round Hill	26,875	3,853
Mt. Lyell Mine	122,528	17,597
Tasman and Crown Lyell	939·94	138
Total	638,601·61	91,339

The quantity of lead produced was 4784·057 tons, valued at £127,542.

The producers were:—

	Tons.	Value. £
Zeehan Mines—		
Mt. Zeehan (Tas.)	18·85	499
Nike	72·56	1,931
Zeehan-Montana	13·51	372
Oonah	·31	9
Swansea	166·88	4,578
Zeehan Queen	16·76	468
No. 6 Argent	585·85	15,667
No. 2 Argent	138·49	3,693
Colston	20·30	550
N. Zeehan	53·737	1,422
Others	100·42	2,754
Mt. Jasper	20·17	542
North Mt. Farrell	1,927·17	50,816
Magnet Mines	1,336	35,718
Round Hill	297	8,060
Tasman and Crown Lyell	16·05	463
Total	4,784·057	127,542

Northern and Southern Division.—The Round Hill Silver and Lead Mining Co., No Liability.—The Mine Manager (Mr. J. J. Andrew) reports:—

South-east Drive, Shaft Level: The main drive south-east of shaft has during the year been driven a distance of 231 feet, making total distance from shaft 368 feet. This drive has been on the course of the lode. The lode for this distance has been patchy, but in places showing some excellent ore. Stoping is being carried out above this drive.

Drive North-west of Shaft: With a view of getting back under the old workings worked by tributers we have driven north-west of the shaft 54 feet. Several rich veins of fahl ore have been cut, but so far the main lens of ore has not been found. We expect 150 feet of further driving before this is reached. This work will be continued in conjunction with the drive on south-east of shaft.

Crosscuts: To test north and south of the lenses of ore crosscuts have been put in north-west and south-east sides of the shaft, the total footage of crosscuts being 80 feet.

Rises: For ventilation and working facilities a rise has been put up from shaft-level to No. 1 tunnel a distance of 80 feet, at a point 90 feet from shaft. No. 2 rise, 200 feet from shaft, is also started.

Stopes: Stoping has been carried out above shaft-level on the quartzite lode. Five thousand three hundred tons of lode stuff have been sent to the mill for treatment; this has produced 538 tons of marketable ore, containing 160 oz. gold, 26,875 oz. silver, and 297 tons lead; the average assay value being 6 dwt. gold, 50·2 oz. silver, and 55·2 per cent. lead per ton. The average number of men employed during the year has been 40.

Washington Hay Silver-lead Mine, Moina.—Operations have been carried on in driving and crosscutting for the lode formation.

Mt. Farrell Company's Devon Mine.—At this mine, which was acquired from Mr. B. Hortin, a small galena lode has been cut.

North-Western Division.—Magnet Silver Mine.—The Mine Manager (Mr. R. G. Hales) reports:—Ore treated, 19,102 tons; metal obtained, 3358 tons; silver, 217,066 oz.; lead, 1336 tons; gross value, £65,614; net value, £37,205; men employed, 118. The principal mining operations have been confined to stoping over the north and south drives at No. 14 level, which have produced average-grade values of silver and lead. The stope over the south drive has been extended for 48 feet on average-grade ore. The bands of metal are small in proportion to the amount of mullock or gangue which has to be taken out. The stopes in question being 33 feet wide with four bands of metal from 1 to 2 feet wide, with small veins running diagonally through the gangue, making it imperative that the whole 30 feet has to be taken out to ensure that no payable ore is left behind, the mullock or waste rock being used for filling.

No. 13 Level: Stoping with payable results both north and south is the only work being carried out at this level, which is nearly depleted.

No. 11 Level: Stoping has been continued over the north hanging-wall drive, from which fair-grade metal has been obtained, the lode being in places 40 feet wide with small veins and bunches of metal in it, requires a good deal of sorting, but on the whole is payable.

No. 10 Level: Prospecting work has been carried out at this level with a view of picking up the downward trend of the south central schute of ore worked above No. 9 level. Several veins of metal have been met with, which will have attention during the present year by rising on them.

No. 8 Level: Driving south has been continued permanently since February, but owing to the lack of good miners in the early part of the term under review progress was very slow; but good progress is now being made with this drive, and although nothing of value has been met with, this drive is to serve the double purpose of prospecting previously unexplored ground and also to provide another exit.

Adit Level: A good deal of prospecting work has been carried out at this level, and although no payable metal has been met with, several small veins of metal have been passed through, and valuable information regarding the behaviour of the ore-channel disclosed which may lead to further discoveries. At present a drive is being driven south on a strong formation 3 feet wide on the contact of the slate. Although splashes of metal are frequently seen, nothing so far of a payable nature has been met with.

Although the rainfall was above the average for January and February, the latter month was very wet during the first six days, followed by dry weather during the latter part of that month. February and March, with April the driest month on record (31 points), gave us great concern, as only sufficient water was procurable for power purposes to enable the mine to be kept free from water. This was followed by an excessive downpour, 22 inches of rain being recorded from the 7th to the 31st of May, flooding the mine with water, which prevented us from sinking the main shaft. This work is to be carried out early in the present year for 200 feet, which will bring the total depth of shaft to 950 feet, or 1210 feet from the outcrop. The scarcity of good miners or miners of any class, also labourers, has been keenly felt, and has retarded not only prospecting but production, and severely handicapped the mining industry. Fifty to 60 more men could have been employed if they had been available. The outlook for labour has improved very much during this year, and I am hopeful that prospecting work will be carried out which will put the mine on a satisfactory basis.

Mt. Jasper Mine.—Driving on the course of the lode has been continued with the object of getting well into the hill, where it is believed good results will be met with. Four men were employed.

Victorian Magnet.—This mine has been closed down and its assets sold.

North Mount Farrell Company.—The Mine Manager (Mr. Owen B. Williams) reports:—During the year a total of 19,550 tons has been mined and milled for a return of 2669 tons of marketable product, containing 187,345·8 oz. of silver and 1927·29 tons of lead, of an estimated value of £77,869 9s. 8d. These figures include adjustments on last year's figures, final adjustments on which were not in until March, 1923. Owing to a bad breakdown of the compressor, early in January, all underground work was badly retarded until September, when the new compressor came to hand. During the period the developmental work carried out was as follows:—

No. 7 Level.—Completion of plat and main crosscut driven 217 feet, cutting the lode-channel at 165 feet from the plat, and the main lode at 200 feet. A main drive has been put in on the lode for a distance of 162 feet to the north and 50 feet to the south, and, except for a small barren zone met about 70 feet north, has been in good average milling ore. Two rises have been put up connecting with No. 6, and stoping carried on.

No. 6 Level.—This level has been advanced a further 122 feet, making a distance of 418 feet north of main crosscut, and 465 feet overall. The necessary rises have been put in and a little crosscutting done to get the walls. The stopes have improved in value as beaten up.

No. 5 Level: Only a little stoping has been done above this level, and work in the main north drive has just recommenced. A crosscut west was put out to pick up the downward extension of the ore met in west magazine crosscut on No. 4. The ore was cut at 103 feet, but was too patchy to be of value.

No. 4 Level: The only work, apart from a little stoping, has been the extension of the main north drive into the Macintosh sections. This has been advanced a total of 283 feet, making a total distance by survey north of the main shaft of 1193 feet. This drive has so far been without results in regard to opening up payable ore-bodies.

On the surface, as noted above, a new highspeed Sentinel air-compressor, of 80 cubic feet capacity, has been installed, and is giving satisfaction. The average number of men employed has been 121.

Western Division.—Mount Zeehan (Tas.) Silver Lead Mines Limited.—No active mining was pursued by this Company, but tributers operating on the leases, principally at the Britannia Mine, produced 3614 oz. silver and 35·6 tons lead, of a total gross value of £1466 8s. Latterly the Company surrendered and sold all holdings with the exception of areas whereon are situated machinery, buildings, and other plant.

Oonah Mine.—The following is a report of work done for the year ending 31st December, 1923:—(1) Driving off main tunnel, 115 feet. (2) Driving crosscut to cut Sinclair's lode from tunnel, 158 feet; driving on lode, 43 feet. The lode proved to be no good. Connection was made with old workings. (3) Sinking Caudry's shaft, 47 feet; driving crosscut from shaft, 83 feet; driving crosscut south-west, 32 feet. Three lodes were cut by these crosscuts, but they were valueless. Total driving and sinking for the year, 478 feet. No new ore was produced from the property, but 9 cwt. 3 qr. of galena ore were collected off the old dumps and sent to the Broken Hill smelters.

No. 6 Argent Mining Company.—Operations were actively pursued by this Comapny until the latter end of the year, when financial embarrassment resulted in a total cessation of mining. This was a vital shock to Zeehan mining, and of serious moment to the community, as No. 6 Argent was the largest producer of metallics and gave employment to an average number of 55 men. Fortunately, the men idled were absorbed elsewhere. Quarterly records show that 62,672 oz. silver and 585·85 tons lead, of an approximate total gross market value of £24,687·67. were produced during the year. Following the resumption of operations in August, 1922, when the mine was unwatered to the 120-feet level, and Nos. 3 and 4 lode-channels were driven on southerly from the old workings, revealing ore occurrences of marked value, the auxiliary shaft was completed to the 120-feet level, and the use of the main shaft was discontinued except for pumping purposes. Further driving, southerly, on Nos. 3 and 4 lode-channels proved the ore occurrences to persist into portion of an adjoining leasehold, which was subsequently acquired by the No. 6 Argent Company. With a gradual depletion of developed ore at the 120-feet level, attention was directed to sinking the auxiliary shaft to the 160-feet level, on a winze, and further developing the ore occurrences on that level. The sink was accordingly completed to the 160-feet level, appellated No. 4 level. At No. 4 level and from the main crosscut, the north drive on No. 3 lode-channel was extended to 136 feet, and the south drive on this channel was advanced to 165 feet.

From the point of intersection of a crosscut from the south drive on No. 3 lode-channel, No. 4 lode-channel was driven on 80 feet northerly and 53 feet southerly, but this channel was not penetrated from the northern workings on No. 3 lode-channel. Northern developments on No. 3 lode-channel disclosed a well-defined fissure varying up to 6 feet in width and carrying lesser widths of second-class ore with an irregular dissemination of bands of first-class ore. Southern developments revealed an irregular ore occurrence from approximately the 15 to the 102 feet measurements, the remainder of the drive showing no values. This southerly developed ore has been mined and depleted to the 120-feet level. Limited stoping was done on the northern ore development, but results are ascribed to have proved that overhead values were insufficient to enable the lode to be economically mined under the existing conditions.

No. 4 lode-channel is reported to have varied up to 5 feet in width with an inclusive width of up to 2 feet of ore, but developments are ascribed to have been disappointing, and on the 19th October last the Company notified employees of its financial inability to carry on, and offered the mine on tribute to them. From that date tributers operated on No. 4 lode at No. 4 level, and to a limited extent on No. 3 lode between Nos. 3 and 4 levels in the northern workings. Results are ascribed to have again established that under existing conditions the grade of ore in No. 3 lode-channel, over the north drive, was not payable, and, faced with a gradual depletion of other developed ore, it was apparent that unless extensive developmental work was undertaken and proved depth persistence or other makes of payable ore, a cessation of operations was inevitable. The position appears to have been aggravated by difficulties in obtaining adequate supplies of firewood, and these two factors culminated in a cessation of operations on the 12th December, 1923.

No. 2 Argent Mine.—This mine suffered a period of retrogressing activity. Stoping was actively pursued on No. 30 and Hornby's lodes between Nos. 1 and 2 levels, but with the depletion of payable ore attention was directed to Watson's and No. 13 lodes, and eventually confined to No. 15 lode, where limited stoping and driving were done on a small shoot of galena. Towards the close of the year a breakdown of the pumping arrangements occurred, and resulted in a cessation of operations except at Hornby's tribute, which is above water-level. At Hornby's tribute two men continuously operated in the winze workings on a short shoot of clean ore, with satisfactory results. Quarterly records show that 14,530 oz. silver and 138 tons lead, of a total gross market value of £5778, were produced from the mine and sub-tributes, and that an average number of 17 men were employed.

Nike Mining Company.—With the economic depletion of developed ore above No. 3 level operations were suspended pending the raising of capital to sink the main

shaft and develop two ore occurrences partly explored by winzing from No. 3 level. Efforts in this direction were not immediately successful, and the workings at and above No. 2 level were thrown open to tributers, who produced small quantities of ore. Latterly tributing ceased, and the Company proceeded with the development of the main lode persisting in a winze sunk 26 feet from No. 3 level. Preparatory work was undertaken, a main winze was sunk 50 feet in the hanging-wall country, and a short crosscut was driven to intersect the lode, but the result was a little disappointing, the ore occurrence not being encountered at the close of the period.

Coltson's Tribute.—Situate on the Nike lease, this tribute passed through a period of retrogressing activity, and latterly underground operations were suspended. Some attention was then directed to jigging surface dumps, and small quantities of ore were recovered therefrom.

Several small tribute parties intermittently operated on the old Zeehan-Queen, Montana, Western, Montagu and State areas, and produced small quantities of silver-lead ore, but there is nothing of material importance to be recorded in connection with developments. Bell Brothers (4) carried out a creditable amount of exploratory work at the Oonah Mine, but encountered nothing of economic importance. A small parcel of ore from previous operations realised 33·175 oz. silver and 0·312 tons lead, of a gross value of £13·878. A party of three men resumed operations in Gardiner's section (8581M) at Austral, and produced 122 oz. silver and 14 tons lead, of a gross value of £425·8. Results, however, were disappointing, and the mine again lapsed into dormancy.

Swansea Mine.—Exploitation of developed ore between Nos. 1 and 2 levels was continued with good results, but a gradual depletion of that ore resulted in reduced mining activity, and the future of the mine is largely dependent upon development of the ore-body below No. 2 level. This involves further sinking, and whether or not the operators will undertake this is yet to be seen. Surfacing and sinking northerly from the workings disclosed nothing of material importance; 4662 oz. silver and 166·9 tons of lead, of a total gross value of £5251, were produced. Latterly four men were employed.

Sunshine Mine.—A discovery of blue pug, carrying fragmental silver-lead ore, was made at the Swansea dam, and added to the interest of mining development in the district. From surfacing several small parcels of ore were produced, and realised 2238 oz. silver and 30 tons lead, of a total gross value of £1171. Nothing material has been done to determine the position or persistence of the lode-channel responsible for this secondary formation, operations being limited to open-cutting. The metal-bearing material is hand-sorted, sluiced, and jigged. Active exploration at this mine is awaited with interest.

Susanite Mine.—Exploration by extending the adit level and driving from Flaherty's shaft was continued at this mine in hopes of meeting silver enrichments associated with the pyritic mass driven through, but nothing material was encountered, and latterly operations were suspended. Negotiations for the sale of the iron pyrites did not merge into importance.

Several other parties pursued limited mining in the Comstock line of lodes, and recovered small quantities of ores, but there are no developments of consequence to be recorded in connection therewith. Underground operations were resumed at the Kynance Mine, the immediate project being an extension of the lower adit level to intersect parallel lode-channels known to exist on the leasehold. Developments at this mine will be followed with interest.

North Mount Zeehan.—The discoveries of silver-lead lodes by Messrs. Clarke, Brown, and Blacklow, 2 miles N. 50° W. from the Zeehan township, caused undivided interest to be directed to the field. A full report upon the discoveries was furnished on the 12th February, 1923, and a perusal of that report is commended. Operations had then barely advanced beyond the discovery stage. As "surface shows" the prospects were sufficiently encouraging to warrant extended and systematic exploration, and until such exploration has been undertaken a reasonable and economic valuation of the discoveries could not be made. At Quigley's old workings an open-cutting was extended between 50 and 60 feet along the No. 2 lode exposure, and small parcels of first and second class ore were recovered. One hundred and twenty-five feet southerly from Quigley's open-cut a small shaft was sunk 18 feet in No. 1 lode exposure, and 28 feet of driving was done from the bottom thereof. The ends of the drives show 17 to 22 inches of sub-sulphides carrying a little galena, and suggestive of limited lateral persistence of this ore occurrence in a defined pyritic lode-channel. The shaft bottom shows nice galena, and results attending an extension of the south drive will be followed with interest. At Blacklow's workings a tunnel was driven into the low ridge some distance northerly from the original lode exposure, and intersected the ore-channel. At the original exposure an underlie shaft was sunk 23 feet on the lode, displaying anticipated characteristics of a small width of clean ore and an irregular dissemination of galena through portion of the remainder of the channel filling. Several parcels of first and second class ore were won from these workings. The output of first and second class ore from these discoveries returned 8463 oz. silver and 53 tons lead, of a total gross value of £2644. Five men were employed.

Dundas.—Electrolytic Zinc Co. of Australia Limited.—More active operations were carried on during the latter part of the year. The "sending-off" station was altered from No. 4 to No. 5 level. A main ore-pass was put in to send all ore mined above No. 5 level to this level and thus per incline tram to Williamsford. At No. 5A level a fine body of zinc-lead ore was crosscutted, and this and the ore-body at No. 5 level is now being opened out on. Good grade zinc and milling ore are being sent into the works at Zeehan in order to have a supply on hand when the works are ready to start. About 25 men employed.

Jupiter Mine (Williamsford).—The owners have recently entered into a contract to supply regular shipments of ore. Five men employed.

Mt. Lyell.—A Zeehan syndicate acquired the lease abandoned by the Tasman and Crown Lyell Extended Company, and, with two men, operated on a limited scale. One parcel of ore was produced, and returned 939·94 oz. silver and 16 tons lead, of a total gross value of £601. The ore also contained 18 per cent. zinc, but no payment was made for the zinc content.

COPPER.

The quantity of copper produced was 6064·7 tons, valued at £435,413.

The Mt. Lyell Mining and Railway Company Limited.—Ore and metal-bearing flux smelted (as reported by the general manager) were as follow:—

Source of Material.	Tons (dry).
Ore from the Company's Mt. Lyell Mine ...	9,857
Ditto from the Company's North Lyell Mine	5,842
Concentrates from the Company's North Lyell Mine ore	32,674
Purchased ore	21
Total	48,394

Blister copper produced, 6104 tons, containing—Copper, 6052 tons; silver, 122,527 oz.; gold, 1996 oz.; approximate value, £460,598.

Average number of men employed—		
Mining Department—		
At the Company's Mt. Lyell Mine...	164	
At the Company's North Lyell Mine	371	
At the Company's Lyell Comstock Mine	1	
At the Company's Crotty leases... ...	—	
		536
Reduction Works Department (including Lake Margaret	...	394
Railway Department—		
Mt. Lyell Railway	120	
North Lyell Railway	9	
		129
Total	...	1059

Dividends paid during year, £128,919 10s. = 2s. per share.
Dividends paid from the inception of the Company to the 31st December, 1923, £4,023,388.
Copper produced from the inception of the Company to the 31st December, 1923, 186,212 tons fine.
Silver produced from the inception of the Company to the 31st December, 1923, 13,206,454 oz. fine.
Gold produced from the inception of the Company to the 31st December, 1923, 380,395 oz. fine.

During the year the mining operations were practically confined to the North Mt. Lyell Mine, the Mt. Lyell Mine being worked to a limited extend only above the base of the open-cut for the production of the reduced tonnage of basic ore now required for smelting purposes, and for export to the mainland for acid manufacture.

Mt. Lyell Mine.—A small amount of development work was done during the year with the object of opening up and working the pyrites remaining above the base of the open-cut and covered by the fallen overburden material. Pyrites extraction was mainly on account of the requirements of fertiliser plants working on the mainland, the local smelting requirements covering a small tonnage only as compared with the previous year. A small tonnage of copper precipitates was recovered from the overflow waters of the underground workings.

North Mt. Lyell Mine.—Development work in this mine was again on a restricted scale. Ore-breaking was actively carried on throughout the year, the principal sources of production being the 850-feet to 1100-feet levels inclusive. The tonnage produced during the latter half of the year was materially increased in conformity with the greater capacity of the treatment plant as redesigned. An appreciable tonnage of copper precipitates was recovered from the mine waters during the term.

Lyell Comstock Mine.—This property was again idle during the period, the maintenance of plant and buildings being the only items which received attention.

Reduction Works.—During the year the new ore-treatment method was put into complete operation on the lines previously described, various additional plant items being installed for the purpose, comprising principally a Symons' vertical disc crusher, Marcy mill, sub-aeration flotation machine, D. & L. sintering machine, and Dorr thickener and classifier. The reorganised plant was running smoothly and efficiently towards the close of the term, after sundry minor adjustments had been made. In addition, special ventilation apparatus was installed, having for its object the elimination of dust arising mainly from the handling of hot sinter. The reduction plant as now operated is capable of dealing with the maximum output of ore from the mines. The metal-bearing material dealt with during the year totalled 48,394 tons, including 9857 tons of Mt. Lyell pyrites, 5842 tons of North Lyell ore, 32,674 tons of concentrates produced from North Lyell ore, and 21 tons of purchased ore. This total is approximately 9000 tons lower than the preceding year, the explanation being that during the installation of portions of the revised treatment plant a number of shut-downs were unavoidable. During the last half of the year, however, the operation of the new plant permitted ore-extraction from the North Lyell Mine being restored to the former basis of 10,000 tons per month.

Hydro-Electric Plant.—The Company's hydro-electric plant at Lake Margaret was operated throughout the year, and supplied the whole of the power and lighting requirements for the Company's mines and works and adjacent settlement.

Mt. Balfour.—Copper Reward Mine.—The concentrating mill was put into service and some of the ore "at grass" was treated. The Manager (Mr. R. Sticht), however, was called away on urgent private business, and the works were shut down.

Dundas Cuni Mining Company Limited.—Mr. T. H. Vincent, Manager, reports:—I have to report that, despite all efforts made both in London and on this side, we have not been able to find a market for the stock of ore on hand. Negotiations are in progress for the provision of capital for the development of the property, but so far I have not been advised of the result.

TIN.

The quantity of metallic tin won was 1160·39 tons, valued at £236,955; an average value of £165 8s. 9·7d. per ton.

The statistics for the year are:—

	Tons.	Value. £	Miners Employed.
Northern and Southern Division	·17	35	38
North-Eastern Division.	651·21	133,441	323
Eastern Division	215·86	44,039	219
North-Western Division	247·19	50,091	201
Western Division	45·96	9,349	61
Total	1,160·39	236,955	842

Northern Division.—The output was ·17 tons.

North-Eastern Division.—The output of tin was 651·21 tons, obtained as follows:—

	Tons.	Tons.
Pioneer and Gladstone Districts.—		
Pioneer Tin Mine	169·81	
Monarch	8·99	
Endurance	62·12	
Harman	6·65	
Other claims	61·91	
		309·48
Ringarooma, Derby, and Branxholm Districts.—		
Briseis Tin Mines	254·10	
Arba Tin Mine	34·65	
New Ruby Flat	7·55	
Other claims	42·15	
		338·45
Moorina District.—		
Weld Tin Mine	...	1·23
Straits Islands	...	2·05
Total	...	651·21

Eastern Division.—The output of tin was 215·86 tons, obtained as follows:—

	Tons.	Tons.
Weldborough, Lottah, and Blue Tier Mines.—		
Total	...	44·53
St. Helens Mines.—		
Argonaut	23·55	
Lanka	3·75	
Others	27·17	
		54·47
Avoca Mines.—		
Story's Creek	105·20	
Others	11·66	
		116·86
Total	...	215·86

North-Western Division.—The output of tin was 247·19 tons, obtained as follows:—

	Tons.	Tons.
Mt. Bischoff	194·38	
Mt. Bischoff Extended	44·95	
Waratah Sluicing	2·03	
Mt. Balfour	1·00	
Others	4·83	
		247·19
Total		247·19

Western Division.—The output of tin was 45·96 tons, obtained as follows:—

	Tons.
Dreadnought Boulder	1·31
Montana	3·35
Renison Bell	21·81
Others	19·49
Total	45·96

Northern Division.—Forth Valley Tin Syndicate, No Liability.—The Manager (Mr. R. Magee) reports:—The term has been practically one of pioneering, building camps and cutting tracks, clearing, &c. My object has been to make certain that I had quantities with sufficient values to warrant the outlay on any hydraulic scheme, and with that view I battled through the few tests given by the very unsatisfactory method of ground-sluicing. My syndicate is all Melbourne investors, and they are leaving all the operations to myself, but quite recently the Chairman, Mr. R. G. Turner, and Mr. Mark Ireland visited the area and were exceptionally satisfied with the deposit; so we can safely look forward to the property becoming (I trust) another of Tasmania's producers.

Work Completed: Main race 20 chains, to be used in future for hydraulic; other races 25 chains, for testing the bulk by ground-sluicing; tail-race 5 chains.

Tests taken by ground-sluicing—(*a*) 17 yards = 23 lb. tin oxide = 5 feet ground; (*b*) 43 yards wash = 97 lb. tin oxide = 2 feet ground (overburden); (*c*) overburden 4 feet, wash 2 feet, gave ·644 lb. per yard. All tests taken below basin, which holds much better prospects and which it is now intended to work by 13 chains of 9-inch average column.

Road being built from Bull Creek bridge to property, 72 chains, 10 feet wide, at an estimate of £110. At present all material has to be carried across a deep gorge fitted up with a cage.

Tracks cut from cage to two new men's huts (12 x 14), 9 chains; from cage to deposit, 62 chains; from deposit to bridge, 72 chains; from deposit to dam, 43 chains; total, 186 chains. Clearing scrub and heavy timber, 6 acres.

Amount spent on development work, £447 3s. 5d.; amount spent on leases, licences, &c., £70 5s. Men constantly employed, four. Men on contract building dam, two. Man on contract timber-splitting, one.

Tin oxide recovered from small tests, 120 lb., of 67·7 per cent. assay, and about 20 or 30 lb. of uncleaned oxide. Work at present, building dam, building road; work in future, erecting 13 chains hydraulic plant. Water supplied at present from Dolcoath Creek. Anticipation of commencing sluicing early in April.

The whole of the prospecting has shown that the upper or detrital material which is to be worked is resting on a false bottom which in places contain seams of brown coal. (Mr. Nye gave this as altered wood, say logs, &c., but since then I have proved otherwise). This in turn is resting on the upper portion of an ancient river-bed or deep-lead. Same gives a moderate prospect of tin from the high wash, and an endeavour will now be made to thoroughly test this body to the main bottom. The whole can be worked by hydraulic, as I have 250 feet fall down to the Forth River.

Rainfall: I have kept a correct record of rainfall, so as to know my supply of water, or the flow of the creek supply in comparison to fall. It may be of some interest to you:—1923: May, 1968 points; June, 806 points; July, 554 points; August, 307 points; September, 1063 points; October, 542 points; November, 580 points; December, 202 points.

North-Eastern Division.—Derby.—The Briseis Tin and General Mining Company Limited.—The General Manager (Mr. C. Lindesay Clark) reports: I have to report that nothing of special note has taken place during the year. Work has been steadily carried out with a fair water-supply most of the year. The information desired is sent herewith:—

Average number of men employed	93
Black tin won	353 tons
Equivalent metallic tin	253 tons
Value	£52,200

Branxholm.—Arba Tin Mine.—The Manager (Mr. R. Rogers) reports:—The following work was done on the mine, and tin ore won during the year ending 31th December, 1923:—No. of yards of ground sluiced, mostly old tailings on old talings dump and in creeks, 40,000 yards.

Tons of tin ore	50
Value of tin ore	£527
Number of men employed	20

There are four parties of tributers working on the mine, mostly working old ground that was worked years ago.

New Ruby Flat Tin Mining Co.—The following particulars have been furnished by the Legal Manager (Mr. T. P. Husband):—

Output of tin ore, 6 tons 1 cwt. 3 qr. 23lb.
Value of same, £798 18s.
Number of men employed, 7.
Expended in wages, £698 8s. 2d.

The mine closed down on 27th October last, pending determination of future policy.

Bradshaw's Creek.—The Pioneer Tin Mining Company Limited.—The General Manager (Mr. C. G. Ryan) reports:—For the year ending 31st December, 1923, 239 tons 11 cwt. of stream tin, value approximately £35,925, were raised at the Pioneer Mine, 67 men being employed Sluicing was suspended from the end of December to the last week in May, owing to the slack water-supply. The continued destruction by fire of the timber and scrub on the upper watersheds of the rivers from which the mines in this district draw their supply is now so marked that while in former years sluicing could be carried on for nine months in the year, the average time now worked is not more than 6½ months, and the position will continue to grow worse unless these watersheds, which comprise only third-class land, are withdrawn from selection and indiscriminate burning off checked.

At the Argonaut Mine 26 tons 15 cwt. of stream tin, value approximately £4012, were raised by 14 men. The payable ground suitable for working with the steam-driven centrifugal sluicing plant was exhausted early in the year. Since then operations have been carried on with a hydraulic elevator in the southern portion of the property. The closer prospecting of this ground, rearrangement of the pipe columns, and dead work necessary before commencing sluicing, and smaller scale of operations, accounts for the reduced yield of stream tin.

South Mt. Cameron.—Endurance Tin Mining Co., N.L.—At the Endurance Tin Mine sluicing along the course of the main lead at the southern base of Mt. Cameron has been carried on, the average ground values being maintained. The Company has made important additions to the plant, and further machinery has been ordered, which is expected to materially increase the output.

The Monarch Tin Mining Company, No Liability.—The Monarch Tin Mining Company commenced operations in July last on an extensive flat at the north-western base of Mt. Cameron, sluicing with a temporary plant, pending installation of powerful and up-to-date machinery.

Gladstone.—This centre embraces the men that are served by the deviated branch of the Mt. Cameron Water-race, about 20 of whom are working shallow ground in the vicinity of Fly-by-Night Creek, its branches and terraces, with profitable results.

Amber Hill.—Groves Bros. (3) continue on shallower ground below their high face, on good wages.

Weldborough.—Laffer Tin Mining Co.—Chiefly confined to shallow workings with four men.

Weld-Waverley have recently kept a couple of men employed in shallow ground on the Main Creek.

Nichols' Section, Cream Creek.—Stoping a 6 to 10 feet open-cut; granitic formation, with a five head battery worked by Pelton water-power, employing four men.

Brock-Richardson Show.—On the north-west flank of the Rattler Hill. An adit giving 100 feet of backs has been advanced 150 feet, and cut a remarkably clean make of cassiterite that is worth further extension and consideration.

Brice Bros. and other small parties are working shallow ground that provides employment for eight to ten men.

Lottah.—Gough and party have resumed operations on the old Anchor face with a 10-head battery that is giving employment to six men. Specimen stone obtained from the eastern portion of the Pentridge face is of exceptional quality and promises further development.

Lottah.—Lawry and party have recently cleaned out both of the adits that were driven 40 years ago, and report favourably on the prospects they have uncovered.

Victory T.M. Co.—A couple of men have been recently engaged in further prospecting the lode and alluvial on this property.

Eastern Division.—George's Bay.—George's Bay Tin Mining Co., N.L.—The work done on the mine for the period of 12 months ended 31st December, 1923, has consisted of continuous sluicing, with the exception of repair work required owing to very severe storms which resulted in the breaking away of two dams and rather serious damage to races. The average number of men employed in connection with the above work has been nine, and the quantity and value of ore won is as follows:—317 bags, weighing 15 tons 16 cwt. 0 qr. 14 lb, realising £2119 14s. As the result from the nozzle operations is not considered commensurate with the volume of water available, it has been decided by the directors of the Company to forthwith instal a blower which it is thought should have the effect of considerably increasing the amount of material moved, thereby proportionately enhancing the value of future returns.

Ben Lomond.—Story's Creek Tin Mining Syndicate.—Summary of operations for 1923: Developmental work was confined to the south main drive on No. 2 lode, which was advanced to 495 feet 6 inches from No. 1 adit, and 75 per cent. of the ore mined was obtained from the north and south stopes on No. 1 lode, the balance coming from the "Cross" and No. 2 lodes. The following is the result of the year's operations:—Tons mined and treated, 10,360; yield, 155·6 tons tin oxide, containing 112·9 tons metallic tin, value £20,150; and 103·2 tons wolframite, value (Launceston), £3807. Total, £23,957. Average number of employees, 81.

Foster's Freehold.—This mine is let on tribute to C. W. Foster, and 26 bags of ore, valued at £189, were won by two men during the year.

North-Western Division.—Mt. Bischoff Tin Mine.—The Superintendent (Mr. J. H. Levings) reports:—The following is a condensed report of the Mt. Bischoff Co.'s operations for the year ending 31st December, 1923:—

Tons of dirt crushed	47,803
Tons of pyrites roasted	3,153
Total output of tin oxide from all sources	308 tons
Value of output	£34,038
Number of men employed at beginning of year	76
Number of men employed at end of year	164
Average number of men employed for year	116

A vigorous developmental policy has been entered upon at this mine, and so far the result has been encouraging. It is anticipated that in the year 1924 between 200 and 300 men will be employed.

Mt. Bischoff Extended Tin Mining Company, No Liability.—The Mine Manager (Mr. H. B. Schell) reports:—The mine ceased operations on February 12, 1921, owing to the high cost of wages and stores and the low price of tin prevailing. Operations were again resumed on April 8, 1923, when tin was standing at £234 per ton. From this time on the tin market fell in price. Together with the low price of tin and the high cost of running steam power, the Company failed to run at a profit, and was again compelled to close down, active operations ceasing on December 19, 1923. The matter of a cheaper power than steam is being investigated by the Board of Directors, and when decided will be placed in operation. The future of the mine is decidedly good, although the lode-channel at No. 6 level is small (lode about 10 inches in width); the values stand at 1·0 per cent. Sn. Development at No. 9 level (350 feet below No. 6 level, shows the lode to continue to that depth, and although of a dirty nature it shows an assay value of 0·8 per cent. for a distance of 137 feet, the lode over this distance being 2 feet wide. Undeveloped ground between No. 6 level and No. 9 level shows, roughly, 300 feet backs, by 2000 feet on course of lode. During the term from April 8, 1923, to December 19, 1923, the mine was operated with an average of 80 men. Ore mined and crushed, 7040 tons. Pyritic concentrates roasted and treated, 423·5 tons. Tin oxide won (net dry weight), approximate, 66 tons, of assay value of 68·0 per cent. Sn. Value of output, £9900. No development work was done for the term.

Waratah Tin Sluicing Co.—Work was continued here on very restricted lines during the year, and during the latter part was conducted by tributers.

Wombat Tin Mine.—There has been three to four men employed here during the year, and they are doing very well for themselves. They put in a good deal of dead work, turning the creek, &c., but from appearances they should be well repaid for their trouble, as there is a very nice flat of alluvial ground ahead of them.

R. W. Pryde M.'s R. Claim.—This man is getting a little tin and doing prospecting work as well.

A few others have been winning a little tin, but hardly payable.

Western Division.—At the X Gorge and River a little tin has been obtained by ground-sluicing.

Renison Bell District.—North Dundas.—Renison Bell Mine.—Tributers have done most of the work carried out during the year, working on a small deposit of oxidised ore, also some alluvial ground near the Montana section. No work has been carried out on the large deposits of pyritic ore.

Montana Tin Mine.—Three men are engaged here tributing. They are engaged hydraulic sluicing and milling the fines, and making a decent living.

Dreadnought-Boulder Tin Mine.—Very little work is being carried on here. One man is tributing and obtaining a little tin.

Electric Tin Mine.—Prospecting work was carried on here by Manager (Mr. E. Flight), but results proved disappointing.

Olympic Tin Mine.—This has been taken over by an Adelaide (South Australian) syndicate, and is now known as "The Williamsford Tin Syndicate." They have three men at work, and the prospects look decidedly encouraging.

On Pine Hill, situated to the north of Confidence Saddle, two men are working on alluvial claims, but results are not very encouraging. Just lately Mr. Coleman, who is working for Mr. Heywood on M.L., 5 acres, states he has obtained a few slugs of tin oxide, 5 to 6 lb. in weight, and states the wash is improving in value as he works towards where the "Gormanston" nugget was obtained.

A. Kemp's M.L.—These people put up a small mill to re-treat the Dreadnought-Boulder tailings, but up to the present results have been disappointing to them.

A little tin is also being obtained where men are obtaining osmiridium and gold.

Stanley River and Mt. Lindsay District.—Only a limited amount of work has been carried on here, a little tin being obtained.

Heemskirk District.—Ground sluicing was continued by an average of nine men at North Heemskirk, and small quantities of tin were recovered. Nothing of material importance ensued in connection with limited operations at the Federation Tin Mine and other holdings at South Heemskirk.

At Dundas operations were more active at the Peace Tin Mine, now known as the Razorback Tin Mine, five men working as a tribute party. Oxides to the approximate gross value of £1132 were recovered from the treatment of produce from open-cutting in the weathered zone.

COAL.

The total quantity of coal raised amounted to 80,718 tons, valued at £70,797.

The raisings at the different collieries were:—

Colliery.	Tons Raised.
Mt. Nicholas	32,457
Cornwall	43,068
Cardiff-Jubilee	1,242
Spreyton	55
York Plains	931
Illamatha	623
Catamaran	1,827
Excelsior	7
Preolenna	300
Allison	189
Others	19
Total	80,718

The Mt. Nicholas Coal Company Proprietary Limited.—The Manager (Mr. J. L. Pemberton) reports:—I beg to report that mining operations at the above colliery have been carried on uninterruptedly during the year 1923 in the Nos. 1 and 3 tunnels in the 6-foot seam in this Company's leases. The main gateway in the long-wall (No. 7) workings has been advanced a distance of 1 chain, making a total distance of 64·85 chains from tunnel mouth. The seam is keeping about its usual thickness, and the quality of the coal is being well maintained. In the No. 3 tunnel (bord and pillar) on the 6-foot seam the driving of the main headings has been resumed during the year. The main work done is the first and second left headings and first and second right headings, which are in 6 and 8 chains respectively from the main heading. The seam here is of good quality. The average number of men and boys employed above and below ground during the year was 97. The output was 32,457 tons, valued at £27,871.

Excelsior Coal Mine.—The Manager (Mr. A. T. Rubenach) reports:—A drive on coal seam, 19 feet in length, was put in and then abandoned owing to fault in country coming in. Clearing away debris and deepening approach to an old drive was then proceeded with. This drive was 50 feet in length; advanced it another 20 feet and removed the marketable coal for a width of 12 feet for that distance. Laid tram-line for 400 feet and erected a ground whim to pull coal up a small hill. Also put in another small drive and approach, about 40 feet in all, at a point distant 800 yards from firstmentioned drives. Sold and delivered 16 tons of coal, value £20. Two men were employed for a period of three months and four men for two weeks. The seam from which the coal has been mined is 2 feet 10 inches in thickness, good coal, non-spitting, and no difficulty to get some of the coal to coke; and I believe contains a large amount of gas. Work on the mine is now suspended owing to the difficulty of cartage to Avoca Railway-station.

Seymour Coal Mine.—The Manager (Mr. J. T. Rigby) reports:—Have been engaged prospecting by sinking and cleaning our 30-feet shaft out and retimbering same, and cleaning old workings and retimbering same, erecting poppet-legs, hopper for coal, and screens. Erected large coal hopper at jetty site; jetty partly erected, when work ceased on 22nd December for Christmas holidays. Have restarted all necessary work on 7th January, 1924. Also started to raise the first consignment of coal, 7th January, 1924.

Catamaran Colliery Proprietary Ltd.—The Manager (Mr. J. H. Gard) reports:—The following is a *resume* of the operations for the year ending December 31, 1923:—Mining: Coal-mining at main shaft seam ceased on May 15, 1923. Tonnage of coal produced from January 31 to May 15, 1923, 1792 tons gross; value at mine, £1 per ton. Average number of men employed, 30. Prospecting: Since the suspension of work at main shaft prospecting has been carried out on the several leases and licence to search areas with success. Three new seams of coal have been discovered on Lease 8879M, outcropping about 10 chains north of the Catamaran River and dipping 1 in 5 in a northerly direction. Description of New Seams: No. 2 seam—Height, 2 feet 6 inches, and free from bands. This is a very light, high-grade coal, which on analysis gave 82 per cent. fixed carbon, 9 per cent. ash, and cal. 13·690 B.T.U. This seam is about 140 feet vertically above main shaft seam (or No. 1). No. 3 Seam—Height, 6 feet, good hard coal with one 6-inch black band in centre. No analysis yet to hand of this seam, which is 12 feet vertically above No. 2 seam. No. 4 Seam—Height, 6 feet 3 inches; coal 3 feet 9 inches, in three bands; mudstone bands, 2 feet 6 inches, in two bands. This seam is about 8 feet vertically above No. 3 seam. The outcrops of the above seams have been traced for a distance of 60 chains, and apparently without any faulting in that direction. Drilling: For the purpose of testing the abovementioned coal seams at a depth the use of the Victoria drill has been secured, and a start was made on November 29 to put down No. 1 bore; position, 12 chains 25 links N. 45° E. from north-west corner of Lease 8879M, and about 30 chains from the coal outcrops. This borehole is not yet completed. For the purpose of transporting drill plant a light steel tramway was laid for a distance of 60 chains west from main shaft to No. 1 site. This tram has now been extended a further distance of 30 chains west from No. 1 bore to a position where it is proposed to put down No. 2 bore. A close daily record is being kept of the boring and all strata passed through, &c. Track-cutting: A considerable amount of track-cutting has been done in all directions over the leases and L.S. areas for the purpose of prospecting and exploring the country.

Spreyton Mine.—Work has been suspended here during the year. The owners are opening up another colliery at Dawson's Siding. They sold 55 tons of coal.

Illamatha Colliery.—Work has been continued here during the year with an average of four men, and 623 tons have been sold.

Allison's Colliery at Dawson's Siding.—Mr. J. Allison has opened up another pit here, and has had an average of four men at work, and since getting on to coal has sent 189 tons away.

Fitzroy Coal Mining Syndicate.—The Manager (Mr. Hugh Barr) reports:—Output of coal, 14 tons, at £1 18s. per ton at Wynyard. Coal was taken from outcrops as samples. Prospecting work consisted of opening out the four seams along outcrop on a mile frontage, starting prospecting tunnels, cutting tracks, &c. Two men were employed.

Preolenna Coal Mining Co.—The Manager (Mr. J. Barsby) reports:—No. 1 left heading in No. 1 seam was driven a distance of some 450 feet in a good quality steam coal, varying in thickness from 14 inches to 16 inches. This drive is running nearly parallel with the outcrop and on the level course also on the faces of the coal seam, and is about 200 feet from the outcrop at the surface. No. 1 right heading in No. 2 seam was driven a distance of some 200 feet in a good quality gas coal, varying in thickness from 13 inches to 16 inches. This drive is also parallel to the outcrop, or nearly so, and is also about 200 feet from the outcrop. Some 15 or 16 roads are broken away to the full rise of the coal seam and are on the ends of the coal, driving back to the surface, but are now stopped. An air-course was driven from the No. 1 right back to No. 1 tunnel. An air-course is also put through No. 1 left across the No. 2 tunnel to No. 1 tunnel. Excavations were made on the surface and the rails laid, this forming

the main haulage road from the No. 2 tunnel mouth to the railway-line. A steam tractor was made stationary, and acts as the hauling engine. Excavations were made for dam. This now acts as the water-supply for the engine.

SHALE.

The total quantity of shale won was 1101 tons, valued at £1094.

The producers were:—

	Tons.
Southern Cross Motor Fuels Co.	796
Tasmanian Cement Co.	305
	1,101

The Southern Cross Motor Fuel Co. (Latrobe).—The retorting plant was completed and a good deal of experimental work carried out, and results are stated by the management to have been successful. The capital has been enlarged, and it is hoped that as soon as a few necessary alterations are made that retorting will be in full swing.

Tasmanian Cement Proprietary's Shale Mine.—This mine is being opened up by the Tasmanian Cement Co., who are constructing cement works near Railton. It is their intention to use the shale residue, after distilling the oil, in the manufacturing of cement. A main tunnel is being driven into the hillside on a fine seam of shale. A main shaft was started some distance ahead, but was stopped for the time owing to water trouble. This will be started again at a later date. Good progress is being made with construction work both at the works and at the mine end.

BISMUTH.

No bismuth was won during the year.

OIL.

Mersey Valley Oil Co.—The Manager (Mr. J. Andrew Wauchope) reports:—Report of the work done by the Mersey Valley Oil Co. Ltd. for the year ended December 31, 1923:—Franklin Rivulet, 1000 acres, right to search for oil: The work done on this area has been confined to surface prospecting. Exemption granted up to December 31, 1923, owing to heavy floods in the Rubicon Valley. Burgess' Lease: A geological survey has been made of this area by the Government Geologist, and adversely reported upon. Awaiting decision of directors as to future operations. Hermitage Area (Private Property): Drilling was commenced on May 7, and abandoned after drilling 600 feet. Bottomed in igneous rock. Latrobe Area (Recreation Ground): Drilled 2000 feet, two holes 1000 feet each. Bottomed in diorite.

WOLFRAM.

The output of wolfram was as follows:—

	Tons.	Value. £
Avoca Mines	96·86	6,150
S and M. Mine, Middlesex	—	—
Total	96·86	6,150

LIMESTONE.

The Broken Hill Proprietary Company employed an average of 88 men at its quarry at Melrose, quarrying 120,990 tons of limestone for shipment to its works at Newcastle; and the Hydro-Electric Power and Metallurgical Company employed an average of 114 men at its quarry near Ida Bay and at the works at Electrona in the manufacture of 3236 tons of carbide of calcium.

IRON ORE.

No iron ore has been produced during the year.

The Blythe River Iron Mine.—Only sufficient work has been carried out to comply with lease covenants.

Savage River Iron Deposits.—Messrs. Hoskins Bros.' I. and S. Co., of New South Wales, have taken up a large area, and their local manager (Mr. W. Thomas) has inspected and reported to them on the property, and states that mining operations are to be undertaken at once to prospect and develop the ore-bodies.

Comstock.—Exploratory work was continued with two men on the sections held by the Hoskins Iron and Steel Company in the Comstock district. The manager reports that a considerable amount of trenching, sinking, and tunnelling has been done proving large bodies of very pure iron ore, notably in Lease 8419M. In this lease the ore-body has been traced for 600 feet across its strike, and offers oportunity for several million tons of ore of a grade similar to that in the Tenth Legion Hill. Exploitation of these extensive deposits of valuable iron ore is awaited with much interest, as such must necessarly have a stimulating effect upon the immediate West Coast community.

IRON PYRITES.

The output was 11,882 tons, valued at £26,737.

OSMIRIDIUM.

The output for the year was 673·423 oz., valued at £19,642, and the average number of men engaged was 219.

BARYTES AND SCHEELITE.

No barytes nor scheelite was won during the year.

PAINTS AND PIGMENTS.

Serpentine Paint Company.—The oxide deposits at Beaconsfield continue to supply the requirements of the Company's paint factory at Launceston.

ZINC.

Electrolytic Zinc Company of Australasia Limited.—Operations at Risdon during the year 1923:—Operations have proceeded steadily throughout the year. The amount of power taken from the Hydro-Electric Department was increased to 30,000 h.p. in March last, and subsequently an additional amount was contracted for, the electrical energy now purchased from the Department being at the rate of 33,000 h.p. Forty-one thousand one hundred and fifty-three tons of slab zinc were produced at the works, valued at £1,328,615. The silver lead residue produced for shipment to Port Pirie contained altogether 6557 tons of lead and 917,425 ounces of silver. A cadmium plant, which treats a by-product from the zinc process, was put into operation during the year. The tonnage of cadmium produced during the year was 122·999 tons, valued at £34,776. The construction of a plant designed to produce annually 25,000 tons of superphosphate was begun during 1923, and this plant should be in operation at an early date. The average number of employees, including staff at Risdon, was 1282, a considerable increase over the number employed during 1922.

ZINC-LEAD.

After pursuing extended experimental work the Electrolytic Zinc Company proceeded with the installation of a plant for the primary treatment of mixed (zinc-lead-silver) ores. Crushing and calcining units were installed and prepared for the treatment of the higher grade zinc ores, and when satisfactory working results have been established the installation of flotation and other treatment units will be proceeded with. All calcines are to be shipped to the Company's works at Risdon for further treatment. An average number of 131 men were employed during the last quarter of the year. Active operations at the above works was an opportune incident for Zeehan, as such absorbed many men idled by reduced mining activity and to some extent veiled the depression in mining. The long-expected purchasing tariff for zinciferous ores was published by the Zinc Company, but it was not viewed as of economic importance by operators outside the Company, and no material activity in the development of zinciferous lodes resulted.

OUTPUT.

Revised return showing the Quantity and Value of Mineral Products for the State of Tasmania during the Year ending 31st December, 1923.

Mineral.		Quantity.	Value.
			£
Gold	ozs.	3684·124	16,639
Osmiridium	"	673·423	*19,642
Silver	"	638,601·61	91,339
Lead	tons	4784·057	127,542
Copper	"	6064·7	435,413
Tin	"	1160·39	236,955
Coal	"	80,718	70,797
Wolfram	"	96·86	6150
Bismuth	"	...	...
Shale	"	1101	1094
Iron Pyrites	"	11,882	26,737
Scheelite	"	...	...
Asbestos	"	...	...
Zinc	"	...	...
Barytes	"	...	...
Carbide	"	3236	64,720
Limestone	"	100,113	122,428
Total		...	£1,219,456

* Value at market-price at time of export, subject to correction.

The Electrolytic Zinc Co. recovered 41,153 tons of Zinc, valued at £1,328,615, and 122·999 tons of Cadmium valued at £34,776.

PLANS.

The number of different plans now stocked by the Department is 104. Of these 27 were revised for reproduction by the Government Printer, and two new compilations were made. Upon the transfer of the Geological Branch to Hobart the preparation of geological plans was taken over by the mining branch of the drafting staff of the Lands and Surveys Department, and 10 geological sketch-maps, 25 plans for the underground water-supply papers issued by the Department, were prepared. The colour work in connection with 10 other plans was also undertaken, together with the preparation of three large flow sheets of leading mines for the British Empire Exhibition. The number of copies of plans reproduced by the Government Printer was 700, and owing to the extra cost of this work it was decided to raise the sale price of such plans from 1s. to 2s. 6d. per copy.

Large Scale Plans.—Owing to the pressure of other work no further progress was made in the preparation of the new plans on a scale of 10 chains to an inch, but it is anticipated that these will be proceeded with during the ensuing year.

Underground Survey Plans.—Twenty-five plans of additional underground workings were received, checked, and filed in accordance with the provisions of "The Mines and Works Regulation Act, 1915."

GEOLOGICAL SURVEY BRANCH.

The Reports of the Government Geologists and the Government Assayer are appended.

INSPECTORS OF MINES.

The Reports of the Chief Inspector of Mines and the three inspectors are appended.

REVENUE.

The revenue for the year amounted to £13,224 11s. 9d.

The sum of £2365 13s. 9d. deposited as survey fees with applications for leases is not included in the above.

MINING MANAGERS' EXAMINATION.

As there was no candidate for examination no examination was held.

DEPARTMENTAL STAFF.

In accordance with the provisions of Section 10 of "The Public Service Act, 1923," a plan for the reorganisation of the Department was prepared by the Public Service Commissioner, approved by the Governor, and brought into operation on the 1st July.

Included in the plan of reorganisation was the transfer of the Geologists to the Head Office at Hobart; the abolition of the offices of Chief Clerk and Clerk, Hobart; Director Geological Survey; Draftsman, Geological Survey Branch; and Clerk, Geological Survey Branch; and the alteration of the title "Government Assayer" to "Government Chemist and Assayer."

The transfer of the Geologists, with their office records, equipment, &c., took some time, and it was not until the 2nd November that it was finally effected.

The changes in the staff were as follow:—

Mr. A. B. Bryan, Cashier and Accountant, appointed Chief Clerk and Accountant, 1.7.23.

Mr. B. C. Greene appointed Registrar of Mines, Devonport, 1.7.23.

Mr. Edward Rider appointed Magazine Keeper and Inspector of Explosives, Hobart, 1.8.23.

Mr. J. S. Leitch appointed Registrar of Mines, Zeehan, 1.4.23.

Mr. J. Gatty, Zeehan, resigned, 31.3.2°.

Miss M. F. O'Keeffe, Clerk, Geological Survey, resigned, 15.6.23.

Mr. J. G. Edwards, Draftsman, retired (office abolished), 30.6.23.

Mr. J. H. Thorne, Registrar of Mines, Waratah, retired (office abolished), 30.6.23.

Mr. Loftus Hills, Government Geologist, resigned, 30.10.23.

Mr. A. T. Walker, Warden of Mines, Strahan, resigned, 31.12.23.

Mr. H. A. Vaudeau, Inspector of Mines, Zeehan, transferred to Burnie, 31.7.23.

CONCLUSION.

In conclusion I desire to acknowledge the loyal assistance rendered by the officers of the Department, as also the officers of the Mining Branch of the Lands and Surveys Department.

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

WM. A. PRETYMAN,
Secretary for Mines.

The Hon. the Minister for Mines.

No. 1.

RETURN showing the Quantity and Value of Gold won from 1880 *to* 1923 *inclusive.*

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
	1,884,055·848	7,543,118

No. 2.

RETURN showing the Quantity and Value of Silver-Lead Ore produced from 1888 *to* 1923 *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	88,289·268	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
1919	*—	136,234
1920	—	261,166
1921	—	59,422
1922	—	223,183
1923	—	201,284
	—	7,510,580

* "Quantity" discontinued, as it has been found previous figures are misleading, concentrates, hand-picked ore, and crude ore having all been added and included under the one head.

No. 3.

RETURN showing the Quantity and Value of Blister Copper produced from 1896 *to* 1923 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1896 to 1903 inclusive	52,154	4,186,805
1904	8371	*582,540
1905	8610	*704,287
1906	8708	*862,444
1907	8247	*832,691
1908	8833	*603,063
1909	8638	*586,419
1910	8193	*553,822
1911	6022	*385,797
1912	5136	*430,965
1913	4569	*364,732
1914	7509	*477,361
1915	7901	*709,167
1916	6305	*884,689
1917	5845	*841,583
1918	5559	*772,162
1919	5071	*557,710
1920	4837	*576,046
1921	6221	*493,271
1922	—	*410,046
1923	—	*452,879
	—	16,268,479

* Value of Gold contents deducted.

No. 4.

RETURN showing the Quantity and Value of Silver contained in Silver-Lead and Blister Copper during the Years 1919, 1920, 1921, 1922, *and* 1923.

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

No. 5.

RETURN showing the Quantity and Value of Lead included in Silver Lead during the Years 1919, 1920, 1921, 1922, *and* 1923.

Year.	Quantity.	Value.
	Tons.	£
1919	2357·142	64,403
1920	3855·639	142,268
1921	1484·794	32,241
1922	4925·880	118,257
1923	4784·057	127,542

No. 6.

RETURN showing the Quantity and Value of Copper in Blister Copper and Copper Ore during the Years 1919, 1920, 1921, 1922, *and* 1923.

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

No. 7.

RETURN showing Quantity and Value of Copper Matte exported during the Years 1902, 1903, *and* 1904 *to* 1923 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1902	2500	50,112
1903	3727	83,624
1904–1923	—	—
	6227	133,736

No. 8.

RETURN showing the Quantity and Value of Copper Ore produced from 1896 *to* 1923 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1896 to 1903 inclusive	23,736·5	298,292
1904	104	1640
1905	1150·75	52,939
1906	2234·5	72,480
1907	788·25	36,975
1908	1185	6588
1909	1587·8	21,619
1910	671·27	13,150
1911	2286	22,852
1912	1391·6	9479
1913	1966·8	10,932
1914	3287·75	18,680
1915	66	1367
1916	96·84	3765
1917	771·40	6171
1918	444·170	3944
1919	123	984
1920	1·50	60
1921	—	287
1922	—	—
1923	1·70	131
	41,894·83	579,335

No. 9.

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* 1923 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1880 to 1904 inclusive	76,708·4	7,167,564
1905	3891·5	362,670
1906	4472·75	557,266
1907	4342·75	501,681
1908	4520·8	421,580
1909	4511·2	418,165
1910	3701·01	399,393
1911	3953·05	513,500
1912	3713·825	543,103
1913	4010·41	531,983
1914	2572·713	259,300
1915	2599·234	292,306
1916	2854·636	350,852
1917	2637·337	427,917
1918	2256·203	488,798
1919	1580·22*	395,794
1920	1310·411*	369,362
1921	790·395*	130,257
1922	679·440*	112,407
1923	1160·390	236,955
	132,366·674	14,480,853

* Metallic Tin.

No. 10.

RETURN showing the Quantity and Value of Iron Ore produced from 1897 *to* 1923 *inclusive.*

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
1909–1923	—	—
	42,762	25,701

No. 11.

RETURN showing the Quantity and Value of Wolfram produced from 1899 *to* 1923 *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
	1363·852	179,467

No. 12.

RETURN showing the Quantity and Value of Coal raised from 1880 *to* 1923 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1880 to 1903 inclusive	767,261	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
	2,030,097	1,551,691

* Value at pit's mouth.

No. 13.

RETURN showing the Quantity and Value of Osmiridium produced during the Years 1910 *to* 1923 *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
	13,136·063	298,280

No. 14.

RETURN showing the Quantity and Value of Barytes produced during the Years 1916 *to* 1923 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1916	83	359
1917	52	234
1918	217	977
1919	399	1160
1920	1048	4163
1921–1923	—	—
	1799	6893

No. 15.

RETURN showing the Quantity and Value of Bismuth produced from 1904 *to* 1923 *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	—	—
	74·059	23,052

No. 16.

RETURN showing the Quantity and Value of Asbestos produced from 1899 *to* 1920-23 *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
1920–1923	—	—
	3565·5	7105

No. 17.

RETURN showing the Quantity and Value of Shale produced during the Years 1910 *to* 1923 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1910	364	214
1911	500	250
1912	—	—
1913	130	130
1914	75	75
1915	—	—
1916	1286	1286
1917	—	—
1918	—	—
1919	600	900
1920	140	172
1921	868	1506
1922	40	100
1923	1101	1094
	5104	5727

No. 18.

RETURN showing the Quantity and Value of Iron Pyrites produced during the Years 1915 *to* 1923 *inclusive.*

Year.	Quantity.	Value.
	Tons.	£
1915	12,835·59	8945
1916	14,005·084	13,597
1917	7,685·549	7137
1918	5,105·600	4667
1919	3,456·95	4288
1920	4,440	7346
1921	606·5	2579
1922	8,276	18,620
1923	11,882	26,737
	68,293·273	93,916

No. 19.

RETURN showing the Quantity and Value of Zinc produced during the Years 1917 to 1923 inclusive.

Year.	Quantity.	Value.
	Tons.	£
1917	48	1968
1918	3822	152,880
1919	285	13,110
1920	9·3	334
1921–1923	—	—
	4164·3	168,292

No. 20.

RETURN showing the Quantity and Value of Scheelite produced during the Years 1917 to 1923 inclusive.

Year.	Quantity.	Value.
	Tons.	£
1917	69	12,130
1918	216	39,252
1919	198·98	43,181
1920	105·09	17,905
1921–1923	—	
	589·07	112,468

No. 21.

RETURN showing the Quantity and Value of Carbide produced during the Year 1923.

Year.	Quantity.	Value.
	Tons.	£
1922	4512	135,509
1923	3236	64,720
	7748	200,229

No. 22.

RETURN showing the Quantity and Value of Limestone produced during the Year 1923.

Year.	Quantity.	Value.
	Tons.	£.
1923	100,113	122,428
	100,113	122,428

No. 23.

RETURN showing the Quantity and Value of Ochre produced during the Years 1918 to 1923 inclusive.

Year.	Quantity.	Value.
	Tons.	£
1918	100	200
1919	—	—
1920	—	—
1921	14	56
1922	—	—
1923	—	—
	114	256

No. 24.

RETURN showing Value of Minerals and Metal raised in Tasmania from 1880 to 1923 inclusive.

Mineral or Metal.	Value.
	£
Gold	7,543,118
*Silver-lead Ore	7,310,580
*Blister Copper	16,268,479
Copper Matte	133,736
Copper Ore	579,335
Tin	14,480,853
Iron Ore	25,701
Wolfram	179.467
Coal	1,551,691
Osmiridium	298,280
Barytes	6893
Bismuth	23,052
Asbestos	7105
Shale	5727
Iron Pyrites	93,916
Zinc	168,292
Scheelite	112,468
Carbide	200,229
Ochre	256
Limestone	122,428
Unenumerated prior to 1894	31,988
Total	£49,143,594

* Metallic contents and values are shown in Tables Nos. 4, 5, and 6.

No. 25.

RETURN showing the Amounts paid in Dividends by Mining Companies during the Year ending 31st December, 1923.

Mines.	Dividends.
	£ s. d.
Copper	39,263 0 0
Gold	...
Tin	11,577 13 0
Silver	2397 3 0
Coal	7624 5 6
Total	£60,862 1 6

No. 26.

RETURN showing the Average Number of Persons engaged in Mining during the Years 1880 *to* 1923 *inclusive.*

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

No. 27.

RETURN showing the Mining Companies registered during the Year ending 31*st December*, 1923.

Number of Companies.	Capital.
4	£35,750

In addition to the above, eleven Agents for Foreign Companies and one Syndicate under Part Va. of the Act were registered.

No. 28.

RETURN showing the Average Number of Miners employed during the Year ending 31*st December*, 1923.

Division.	Number.
Northern and Southern	1919
North-Eastern	343
Eastern	481
North-Western	584
Western	1458
	4785

No. 29.

RETURN showing the Total Amount of Rents, Fees, &c., received by the Mines Department during the Year ending 31*st December*, 1923.

Head of Revenue.	Amount.
	£ s. d.
Rent of Auriferous and Mineral Land	11,800 18 10
Fees, ditto ditto	940 1 0
Survey Fees	2365 13 9
Fees under "Explosives and Inflammable Liquid Act"	483 11 11
Total	£15,590 5 6

No. 30.

RETURN showing the Total Area of Land and Number of Sluiceheads of Water applied for during the Year ending 31*st December*, 1923.

Mineral.	Number.	Sluiceheads.	Area.
			Acres.
Arsenic	5	...	210
Asbestos	...	...	...
Barytes	1	...	80
Bismuth	...	...	...
Chrysotile	...	...	...
Clay	...	...	...
Coal	1	...	250
Copper	5	...	474
Gold	59	...	1073
Gypsum	...	...	...
Iron	23	...	1450
Kaolin	...	...	...
Limestone	2	...	331
Minerals	52	...	4925
Nickel	2	...	90
Oil	2	...	701
Oxide	...	...	...
Porphyry Granite	...	...	...
Phosphate Rock	...	...	...
Pyrites	1	...	80
Silver-lead Ore	14	...	568
Shale	2	...	147
Serpentine	9	...	485
Slate	1	...	37
Tin	93	...	2784
Wolfram	...	...	...
Timber Reserves	...	...	...
Machinery Sites	2	...	7
Mining Easements	9	...	34
Dredging Claims	3	...	34
Water Rights and Dam Sites	45	174	34
Licences to search for Coal or Oil	24	...	33,473
	355	174	47,267

No. 31.

RETURN showing Total Number and Area of Leases and Licences issued during the Year ending 31*st December*, 1923.

Mineral.	Leases.	Sluiceheads.	Area.
		...	Acres.
Coal	7	...	1750
Copper	1	...	80
Gold	39	...	528
Iron	13	...	1132
Kaolin	1	...	5
Limestone	1	...	40
Minerals	26	...	1027
Oil	1	...	640
Osmiridium	1	...	10
Phosphate Rock	1	...	30
Silver Lead	3	...	110
Tin	59	...	1868
Talc	1	...	20
Dredging Claims	3	...	42
Mining Easements	14	...	84
Machinery Sites	2	...	6
Water Rights	32	50	163½
Licences to search for Coal or Oil	24	...	30,472
	229	50	38,007½

No. 32.

RETURN showing the Total Number of Leases and Licences in force on 31st December, 1923.

Mineral.	No. of Leases.	No. of Sluiceheads.	Area.
			Acres.
Asbestos	...	...	...
Bismuth	...	...	...
Barytes	2	...	160
Coal	56	...	13,553
Copper	17	...	777
Clay	4	...	32
Chrysotile	...	...	...
Dredging Claims	33	...	369
Gold	108	...	1687
Iron	15	...	1274
Limestone	6	...	820
Mining Easements	81	..	606
Machinery Sites	30	...	124
Minerals	118	...	6486
Manganese	...	..	...
Nickel	1	...	80
Osmiridium	5	...	93
Oil	1	...	640
Plumbago	...	...	...
Pyrites	...	...	...
Silica	...	...	...
Slate	2	...	91
Scheelite	...	...	...
Shale	2	...	1589
Silver-lead	26	...	1583
Tin	417	...	10,635
Water rights and Dam Sites	435	1612	2147
Wolfram	7	...	83
Zinc	1	...	37
Licences to search for Coal or Oil	36	...	34,761
	1403	1612	77,627

No. 33.

RETURN showing the Annual Value of Mineral Products for the State of Tasmania from 1880 to 1923 inclusive.

Year	Value.	Year.	Value.
	£		£
1880	554,031	1903	1,354,044
1881	602,723	1904	1,379,204
1882	556,306	1905	1,729,129
1883	560,873	1906	2,257,147
1884	468,302	1907	2,277,159
1885	518,885	1908	1,650,027
1886	489,966	1909	1,574,995
1887	593,256	1910	1,432,193
1888	616,733	1911	1,349,497
1889	504,718	1912	1,493,502
1890	444,210	1913	1,415,700
1891	528,388	1914	1,007,038
1892	526,909	1915	1,225,575
1893	627,909	1916	1,521,050
1894	732,764	1917	1,584,290
1895	575,692	1918	1,750,574
1896	662,058	1919	1,301,090
1897	1,006,140	1920	1,421,104
1898	1,071,084	1921	822,851
1899	1,660,622	1922	1,013,415
1900	1,888,695	1923	1,219,456
1901	1,763,896	Unenumerated prior to 1894	31,988
1902	1,378,406		
			£49,143,594

No. 34.

RETURN showing the Number and Area of Leases held under "The Mining Act," in force on 31st December, 1915 to 1923 inclusive.

Nature of Lease.	In force on 31st Dec. 1915.		In force on 31st Dec., 1916.		In force on 31st Dec., 1917.		In force on 31st Dec., 1918.		In force on 31st Dec., 1919.		In force on 31st Dec., 1920.		In force on 31st Dec., 1921.		In force on 31st December, 1922.		In force on 31st December, 1923.	
	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.
For Minerals, Silver, Tin, &c.	907	36,437	872	34,458	876	36,203	796	32,011	823	31,006	795	30,043	901	31,719	716	26,459	614	21,880
For Coal, Slate, Shale, &c.	45	11,522	52	13,742	50	13,138	44	10,729	45	11,562	50	11,667	66	15,430	73	16,809	66	16,053
For Gold	94	2026	85	1692	91	1761	43	657	32	537	65	1403	92	1894	127	2424	108	1687
Dredging Claims	29	351	30	437	30	401	23	323	31	482	30	410	29	413	36	399	33	369
Mining Easements	102	553	106	641	105	628	111	594	113	608	104	616	97	621	87	607	81	606
Machinery Sites	40	183	37	190	38	175	37	165	38	180	33	147	34	152	31	123	30	124
Licences to search for Coal or Oil	—	—	—	—	—	—	—	—	—	—	—	—	51	117,031	73	137,692	36	34,761
Water-rights Mineral and Gold	568	1988 & 2135 sluice-heads	572	2302 & 2061 sluice-heads	557	2085 & 2035 sluice-heads	494	2121 & 1865 sluice-heads	551	2116 & 1975 sluice-heads	559	2094 & 1982 sluice-heads	543	2247 & 2060 sluice-heads	493	3002 & 1814 sluice-heads	435	2147 & 1612 sluice-heads

No. 35.

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* 1923, *inclusive.*

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

The above Statement does not include Stamp Duties upon Transfer of Leases and Registration of Companies, nor the Tax payable upon Dividends, from which sources large sums are derived.

No. 36.

RETURN Showing the Average Annual Prices for Minerals during recent years.

	Ten-Year Average ended **1913.**	Average for **1914.**	Average for **1915.**	Average for **1916.**	Average for **1917.**	Average for **1918.**	Average for **1919.**	Average for **1920**	Average for **1921.**	Average for **1922.**	Average for **1923.**
	£ 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	67 13 3	59 11 3	72 12 9	116 1 3	125 2 5	115 11 6	90 19 4	97 12 5	69 8 8	62 3 6	66 7 4
Lead—Soft Foreign : per ton	15 3 6	18 13 9	22 17 8	30 19 6	30 0 0	30 2 8	28 3 11	38 4 7	22 14 6	23 14 10	25 19 4
Spelter : per ton	23 16 6	23 6 8	66 13 8	68 8 11	52 3 6	52 3 11	42 5 3	45 4 6	26 4 1	29 14 2	32 18 4
Tin—Standard, Spot : per ton	164 19 7	151 2 9	164 4 0	182 3 5	237 13 1	329 11 2	257 9 8	296 1 7	165 8 2	159 10 9	191 7 5
Silver—Standard, Spot : per oz	s. d. 2 2·81	s. d. 2 1·32	s. d. 1 11·69	s. d. 2 7·32	s. d. 3 4·88	s. d. 3 11·57	s. d. 4 9·06	s. d. 5 1·56	s. d. 3 0·875	s. d. 2 10·41	s. d. 2 8·37

REPORT OF THE MOUNT CAMERON WATER-RACE BOARD FOR THE YEAR ENDED 31ST DECEMBER, 1923.

SIR,

WE have the honour to submit the report of the Board for the year ending 31st December, 1923.

Manager.—The resignation of Mr. H. Harvey having been accepted at the last annual meeting of the Board, it was resolved to appoint Mr. D. Shields Acting-Manager, on probation, for a period of six months from the 21st February, 1923. Mr. Shields took up the duties on that date, and at a special meeting of the Board held at Gladstone on 9th August, 1923, he was duly appointed Manager from 21st August, 1923, the duties pertaining to the position having been satisfactorily performed by him during the six months of his probation.

Race.—The top end of the race was scrubbed during the year, and is in good order and condition, with the exception of the by-wash outlet gates—four above Channel-keeper Keegan's and one below—and it will be necessary to replace these gates during the year. It will also be necessary to put in a new gate at the Cascade intake. The floods in May caused some damage, which necessitated the employment of two men in effecting repairs for about three weeks, but it was not necessary to cut off the water during such repair work. The race between Keegan's and Moore's requires to be cleaned out, and this work must be attended to during the current year.

Flumings and Syphons.—No. 2 Syphon (old No. 4) requires re-tarring for the greater part of its length; No. 3 is in good condition, and the trestle bridge which carries this syphon over the Ringarooma River is also in good condition, and withstood the heavy floods in May without the slightest damage; but at No. 4 (Cybele Creek) a severe wash-away occurred, which caused a considerable amount of damage. About 40 feet of fluming had to be put in, and this work, although started at once and carried out as expeditiously as possible, took over three weeks to complete, and the water had to be turned off during the whole of that time.

Deviation.—The money provided having proved to be insufficient, the Government provided a further sum of £500 to complete the deviation and the Purdue extension branch, and a contract for the cutting and building of the latter was let to Messrs. Watt and Frost for the sum of £200. A start was made in June, and the work was completed and the water running through in August.

General.—The fences on the Board's property at Gladstone having got into a bad state of repair, the Board, at its meeting in August last, authorised the Manager to obtain 100 posts and 50 rails, and under this authority he has been putting them in himself, and at present the boundary-fences are all in good condition.

The Board desires to stress the fact that the figures for the year cannot be taken as an indication of what the future returns, consequent upon the expenditure incurred in the deviation of the race, will show. A large amount of deadwork in finishing up the deviation had to be performed, and this also applies to the undertakings to which the Board is now supplying water. It is expected that as these are brought under proper working conditions there will be an increased demand for water, and the finances of the Board will improve.

Further, the severe floods in May mulcted the Board in some £124 for repairs. This was an unexpected outlay, and consequently a severe loss.

Rainfall.—The registered rainfall for the year was as follows:—Main intake, 43 inches 94½ points; Little Mussel Roe intake, 43 inches 40 points.

Revenue.—The revenue for the year amounted to £825 8s. 11d., being an increase of £686 5s. 11d. on the previous year.

Expenditure.—The expenditure amounted to £882 17s. 11d., being an increase of £516 4s. 2d. on the previous year.

Statistics.—The statistics for the year are as follow:—

Average number of claims supplied per week, 9.
Greatest number supplied in any one week, 15.
Total number of heads supplied—Under fixed or cash scale, 352 1/6; under royalty or credit scale, 1281½. Total, 1633⅔.

Receipts.—Total receipts for the year—

	£	s.	d.
Water sold under fixed scale	228	14	6
Water sold under royalty scale	596	14	5
	£825	8	11

Expenditure—

	£	s.	d.
Salaries and wages	644	17	10
Travelling expenses	37	11	5
Repairs to race	19	19	0
Repairing damage caused by flood waters	123	12	7
Building dam	3	0	0
Repairs to Manager's house	18	7	6
Insurance	7	4	4
Purchase of harness	12	0	3
Stationery and stores	16	5	0
	£882	17	11

Paid to the Public Debts Sinking Fund for the year ended 30th June, 1923 (including moiety of rents of mineral lands served by the race)	£0	12	6

We have the honour to be,
Sir,
Your obedient Servants,

WM. A. PRETYMAN, Chairman
CECIL G. RYAN,
JOHN SIMPSON,
CHAS. BARNES,
EDWARD L. HALL,
J. O. HUDSON,
} Members.

The Hon. the Minister for Mines.

REPORTS OF THE GOVERNMENT GEOLOGISTS FOR THE YEAR 1923.

I HAVE the honour to submit my report upon the work performed by me during the year 1923.

Field Investigations.

The most important undertaking was the investigation of the oil-shale deposits of the North-Western Division. This work entailed the careful geological mapping of an area of 600 square miles, extending from the sea-front, between Forth River and Asbestos Range, to Quamby Bluff and Mt. Roland. The results accruing from this investigation were of both scientific and commercial value. Heretofore the known occurrences of oil-shale were confined to small areas near Latrobe, Railton, Nook, and Beulah; now the deposits have been proved to extend over an area more than twice as large in that district, and another field of oil-shale has been discovered near Henrietta.

In addition to the district examination referred to, which occupied six months of the year, special investigations were made of—

Fingal Coal Mine, Fingal;
Old Boys' Gold Mine, Mathinna;
Monarch and Mt. Rustler Tin Mines, Weldborough;
Brookstead Tin Mine, Avoca;
Railway Route to Dalmayne Coal Mine, East Coast;
Dial Range Iron Mine, near Ulverstone;
Quamby Brook Copper Mine, near Quamby Bluff;
Tin Spur Mine, near Lorinna;
Jubilee Gold Mine, Mathinna;
Brock's New Find, near Mathinna;
Forestry Reserve on Mineral Areas near Beaconsfield;
Henrietta Oil Shale Deposits;
Mersey Valley Oil Company's Holdings at Sassafras;
Alberton and Forest King Gold Mines, at Alberton;
Stonehenge Area, near Parattah;
Railton Cement Works;
Cormiston, Rosevale, and Cluan Tertiary Deposits;
Macquarie Harbour Tertiary Coal Area.

Preparation of Bulletins and Reports.

Bulletin 34 dealing with the Mt. Bischoff Tinfield was completed, and a considerable portion of the bulletin on the Oil-shale Deposits of Tasmania was prepared.

Reports were furnished on the results of the investigations of Fingal Coal Mine, Old Boys' Gold Mine, Monarch and Mt. Rustler Tin Mines, Brookstead Tin Mine, Quamby Brook Copper Mine, Mersey Valley Oil Area, and Alberton and Forest King Gold Mines.

In addition to these, special reports were prepared for the "Industrial Australian and Mining Standard" on the prospects for natural oil in Tasmania, the Mineral Resources of Tasmania, for inclusion in the pamphlet dealing with the natural products of Australia for the British Empire Exhibition, and several others of minor importance.

Correspondence.

During the year the correspondence in and out was particularly large. Inquiries on all subjects pertaining to mining and attendant industries were received and answered.

Visitors.

Inquirers find it more convenient and more satisfactory to call in person in their search for knowledge of the mineral resources and industries. The large number of visitors caused serious interruptions in office routine, and prevented the fulfilment of work according to programme. The transference of the Geological Survey Office from Launceston to Hobart had no effect on the number of callers.—Yours, &c.,

A. McINTOSH REID,
Government Geologist.

W. A. PRETYMAN, Esq.,
Secretary for Mines, Hobart.

Hobart, 9th April, 1924.

SIR,

I HAVE the honour to submit my report for the year ending 31st December, 1923.

The work of the Geological Survey was interefered with to a considerable extent by the removal of the office from Launceston to Hobart. A large amount of time had also to be devoted to the collection of exhibits for the British Empire Exhibition, and the preparation of mineral maps and reports in connection with the Tasmanian exhibit. In spite of these drawbacks a considerable number of visits of inspection were made and geological survey field-work carried out, as well as the preparation of the reports in connection with these visits.

The field-work performed consisted of the following:—

(1) An examination of Mr. A. T. Walter's property at Powranna, to determine the possibility of obtaining supplies of underground water.
(2) A geological investigation of the Forestier Goldfield, including the Linton P.A. Mine.
(3) A geological examination of the Richmond-Bridgewater-Sandford district, to determine the possibility of obtaining supplies of underground water.
(4) A short visit to the property of Mr. G. T. Butler, Bagdad, to determine the possibility of obtaining supplies of underground water.
(5) A short visit to Mr. E. Brock's tin mine on Rattler Hill, Weldborough.
(6) An examination of portion of the Old Boys' Gold Mine, Mathinna.
(7) A geological survey of the Lilydale and Lebrina districts, in connection with occurrences, or reported occurrences, of oil-shale, coal, limestone, slate, gold, &c.
(8) A geological examination of the Jubilee Mine, Mathinna, to determine the factors controlling the formation of the auriferous quartz lodes.
(9) An examination of Mr. Gates' sand-quarry, Moonah, in connection with alleged fire-brick material.

In connection with these investigations, the following reports were furnished:—

(1) Report on the Possibility of Obtaining Supplies of Underground Water at Powranna.
(2) Report on the Forestier Goldfield.
(3) Underground Water-supply, Paper No. 3: The Underground Water Resources of the Richmond-Bridgewater-Sandford District.
(4) Report on Mr. E. Brock's Tin Mine, Weldborough.
(5) Report on Portion of the Old Boys' Mine, Mathinna.
(6) Report on Mr. Gates' Sand-quarry, Moonah.
(7) and (8) Portions of the reports on the Lilydale-Lebrina district and the Jubilee Mine were written, and these reports were completed during the early part of the current year.

In addition to the above, the following reports were also prepared:—

(9) The Mineral Resources and the Mining Industry of Tasmania. (Pamphlet prepared for State Commission, British Empire Exhibition.)
(10) Development of the Rock and Mineral Resources of Tasmania. (Joint Report by A. M. Reid and P. B. Nye for submission to the State Development Advisory Board.)

British Empire Exhibition.

The collection of specimens, minerals, ores, rocks, &c., was carried out in co-operation with Mr. W. D. Reid, Government Chemist and Assayer. A large amount of correspondence was necessary in order to get in touch with people who could supply the material required. Considerable work was also involved on receipt of the material and in preparing it for despatch from Tasmania. Spot maps were prepared to illustrate the localities of the specimens, &c. The above work occupied a large part of the period between May and November.

The report on the Mineral Resources and the Mining Industry of Tasmania was specially prepared for the Exhibition.

Removal of Geological Survey Office.

The removal of the Survey Office from Launceston to Hobart greatly interfered with the progress of work during the year. The packing and despatch of the library, office equipment, and instruments, rocks, and minerals, &c., occupied practically the whole of the months of July and August, as well as parts of September and October. Even now the removal is not complete, as small portions of the library remain in Launceston, and the whole of the rock and mineral collections, comprising many tons, has yet to be removed to Hobart.

P. B. NYE, M.Sc., B.M.E.,
Government Geologist.

W. A. PRETYMAN, Esq.,
Secretary for Mines.

REPORT OF THE GOVERNMENT CHEMIST AND ASSAYER, LAUNCESTON, FOR THE YEAR 1923.

SIR,

I BEG to submit my annual report for the year ending 31st December, 1923.

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

The total number of assays and analytical tests made for the public and the Department amounted to 5015.

Assays have been made for gold, silver, lead, tin, zinc, copper, bismuth, tungstic acid, molybdenum, barium, iron, manganese, sulphur, nickel, cobalt, osmium, indium, ruthenium, rhodium, platinum, chromium, antimony, arsenic, titanium, phosphorus, magnesium, potassium, sodium, varedium, mercury, fluorine, and aluminium. Complete analyses have been made of rocks, ores, clay, shale, coals, and alloys. Distillation tests of shale, &c., have been carried out.

Personal Interviews.

In addition to the large number of inquiries by post, over 1500 personal interviews have been attended to. The large amount of technical information supplied has involved considerable work after office hours.

Mineral Exhibit.

During the period under review a representative collection of Tasmanian ores, minerals, building and ornamental stones was collected for inclusion in the Commonwealth exhibit for the British Empire Exhibition. The exhibit, weighing over 20 tons, will compare favourably with any other exhibit from the mainland States. The assistance rendered by mine-owners and others has been much appreciated, as without their assistance the collection could not have been made a representative one.

Interstate Mineral Conference.

In July I was selected to represent Tasmania at the Interstate Mineral Conference held at Adelaide. The details in connection with the Commonwealth mineral exhibit were finalised, and it was decided that each State would be allowed equal space for mineral display. The work of classifying and packing the exhibit was undertaken principally by the laboratory staff and Mr. Nye.

By the removal of the Geologists to Hobart the necessary additional room required for the expansion of the Mines Department laboratory has been made available.

To carry out the programme of research work £200 will be required for apparatus next year. Assistance has been rendered the Launceston Municipal Council in carrying out numerous tests of the water as supplied to the city.

Correspondence.

A large amount of correspondence has been dealt with during the year, the number of letters in and out totalling 1650.

During the year Mr. St. C. Manson was promoted from the position of Laboratory Assistant to that of Second Assistant-Chemist, and L. H. Bath was confirmed in his position of First Assistant-Chemist.

I desire to place on record my appreciation of the services rendered by the laboratory staff.—I have, &c.,

W. D. REID,
Government Chemist and Assayer.

W. A. PRETYMAN, Esq.,
Secretary for Mines, Hobart.

REPORT OF THE CHIEF INSPECTOR OF MINES.

Chief Inspector of Mines' Office,
Hobart, Tasmania, 30th April, 1924.

SIR,

I HAVE the honour to forward my annual report for the year 1923 in connection with the inspection of mines.

The information in connection with mining accidents is tabulated in the attached tables and graph, which show that during the year there were 64 accidents, causing the death of two persons and injury to 63 persons—one accident causing injury to two persons. One fatal accident occurred underground in a coal mine, and the other at surface of a metal mine. The former was caused by a small fall from the roof in a small seam, and caused injuries which proved fatal. The man was working down dangerous roof when the fall occurred. The latter fatal accident occurred at the surface of a metal mine, and was due to a truck which was being used to form a new tramline being left at the top of the gradient with two of its wheels chocked by stones. The day was very boisterous, and it is assumed that the heavy wind released the truck, which ran down the line and collided with another which was being pushed up the gradient. The deceased was knocked down and pinned beneath the bow of the bed-frame of the truck, and he was so severely injured that he succumbed three days after the occurrence. The serious accidents were such as caused absence from work for 14 days. Sixteen of these occurred underground and 47 on the surface of mines and works. Of the 63 serious accidents, 13 were fractures of limbs and hands, and the remainder were slight injuries, such as sprains, bruises, electric shocks, and burns, which were not attended by very serious results. A large number of the serious accidents were occurrences which could have been obviated only by more care on the part of the persons injured.

The average number of persons employed in connection with mining was 4785, which does not include those employed in connection with quarries. The death-rate per thousand persons employed was 0·417, and the rate per thousand persons employed—killed and injured—was 13·584, and for injured only 13·166.

Inspectors have continued to give special attention to dust and ventilation, and it is pleasing to note that special mines are devoting considerable attention to these matters. At the present time it is essential, when laying out operations, that steps should be taken to make adequate provision to ensure good working conditions in the lower levels. Delay in this direction only means a very large expenditure at some period of operations, or unsatisfactory working conditions, which do not tend to economy or to the employment of the best class of labour.

During the year there were 16 prosecutions for non-compliance with the provisions of "The Mines and Works Regulation Act, 1915." In all the cases convictions were obtained. Four cases were for failing to use appliances for the prevention of dust; one case against the shift-boss for failing to enforce the use of appliances to prevent dust; eight cases were in connection with the careless handling of explosives; one for riding in a cage with material; one was for taking charge of a winding-engine without the necessary certificate; and one for employing a winding enginedriver who did not hold the necessary qualifications.

The inspectors' districts have been altered to make a more equitable division of the work. To carry this out it was found necessary to station Inspector Vaudeau at Burnie in lieu of at Zeehan.

The reports of the district inspectors are attached.—I have, &c.,

J. O. HUDSON,
Chief Inspector of Mines.

W. A. PRETYMAN, Esq.,
Secretary for Mines, Hobart.

ANALYSIS of Statistics for the Western Division.

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.
Mt. Lyell	1064	19	1	18	19	17·856	0·939	16·917
Zeehan, &c.	394	5	...	5	5	12·690	...	12·690

TABLE showing the Number of Persons Killed and Injured in and about the Mines of Tasmania during the Year 1923.

Place or Cause of Accident.	Inspection Districts.													
	Northern and Southern Division.		North-Eastern Division.		Eastern Division.		North-Western Division.		Western Division.				Total.	
									Zeehan and other Districts.		Lyell District.			
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Underground—														
Falls of ground	...	...	...	2	...	...	1	1	...	...	...	3	1	6
Shaft Accidents—														
Falling down passes and shafts.....	...	...	...	...	...	...	...	...	...	...	...	2	...	2
Total	...	...	...	2	...	...	1	1	...	...	...	5	1	8
Miscellaneous (underground).														
Haulage.....	...	...	...	...	...	...	...	...	...	1	...	1	...	2
Trams, &c.	...	...	...	...	...	1	...	...	...	...	...	2	...	3
Sundry accidents..... ..	...	1	...	...	...	...	...	...	...	...	...	3	...	4
Explosives	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	...	1	...	...	...	1	...	...	...	1	...	6	...	9
Total Underground	...	1	...	2	...	1	1	1	...	1	...	11	1	17
On Surface—														
Smelting and other works	...	26	...	...	...	...	...	...	...	3	...	7	...	36
Machinery	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sluicing	...	...	...	2	...	1	...	1	...	...	...	...	...	4
Tramways	...	...	...	...	...	...	...	1	...	1	1	...	1	2
Falls of persons	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Explosives	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Miscellaneous	...	1	...	...	...	1	...	2	...	...	...	...	...	4
Total Surface..... ...	...	27	...	2	...	2	...	4	...	4	1	7	1	46
Gross Total, 1923	...	28	...	4	...	3	1	5	...	5	1	18	2	63

TABLE showing Rate per Thousand Killed and Injured in different Divisions for the Year ending December, 1923.

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	1919	28	...	28	28	14·590	...	14·590
North-Eastern	343	4	...	4	4	11·661	...	11·661
Eastern	481	3	...	4	4	8·316	...	8·316
North-Western	584	5	1	4	5	8·561	1·712	6·849
Western	1458	24	1	23	24	16·460	·685	15·775

COMPARATIVE Table of Statistics of Accidents in and about the Mines of Tasmania from 1st July, 1892, to 31st December, 1923.

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

REPORTS OF INSPECTORS OF MINES.

Mr. Inspector CURTAIN (Launceston) reports:—

In addition to the tabulated list of casualties herewith submitted, I beg to include the following report in connecton wth the general conditions that prevailed during the period under review throughout this somewhat varied and extensive district.

Accidents.—All of those connected with mining were of a minor or trivial nature, and may be classed under that category, except Parker's, at the Mount Nicholas Colliery, which was occasioned by a fall of rock at the head or top of a "jig-drive" leading into the No. 1 or "new workings," where he and others were employed clearing away the effects or results of a preceding fall that had recently taken place, and with which the men were all acquainted.

The cause or causes are attributable to the presence of old and uncharted workings, with which the management state it was unacquainted, which is most regrettable, but nevertheless demonstrates the necessity and wise precaution of having all such excavations accurately plotted at the time of their inception, and kept in safe custody for all future reference as required by the Act and its regulations.

Ventilation and Equipment.—With the exception of the workings in the No. 3 pit of the Mount Nicholas Coal Mine, the ventilation in the balance of the other mines is reasonably satisfactory. Here a Sirocco fan capable of displacing and exhausting 54,000 cubic feet of free air per minute has been installed, and should adequately supply the quantity of pure air necessary and required for the welfare of the number of men and horses employed in the pit. This, however, is not permanently maintained in consequence of the frequent "settlements" which attend those workings, whereby "the current" is intermittently cut off and diverted from the inner or more advanced portions of the latter. The position is fully realised and understood by the management, who are certainly making progress towards opening other portions of the seam on more approved principles, that will eventually supersede and regulate the whole of the mine's extractions.

Cornwall Colliery.—An 8-feet diameter circularly bricked-up cast shaft 145 feet deep, situated at the north-east extremity of the main workings has been "holed through," and its presence appreciated, which will be further improved and benefited on the completion of its furnace-setting that is now under way. In connection with these workings it is also pleasing to note that an endless system of rope-haulage has replaced that of the electric traction, which change was much desired, and merited the approval of our department.

New Golden Gate, Mathinna.—As the deeper levels are again being unwatered, provision by "winzing" to regulate the current immediately follows; that will be pursued during the further progress of these operations.

Storey's Creek, Ben Lomond.—A well directed current pervades the whole of the adit workings, that will be further improved by the completion of the connection between the south drive and mill adit that is now under way.

Dust and Fumes.—In the mines measures are taken to control and abate these nuisances; but such cannot be said of the stone quarries, whose officials state that the serviceable "spraying" of the rock in its course through the crushing plants would so mitigate its efficiency as to render it unfit for the principal purposes for which it is required.

Changing-houses.—There are attached to the chief metal mines, also the Mount Bischoff Smelters, and are invariably found clean, and appreciated.

Plant, Ropes, and Cages.—These are all in good order, and the ropes in use are all practically new, and I am only awaiting the receipt of the maker's certificate for those recently installed at the New Golden Gate to comply with the Act's requirements.

Explosive Magazines and Inflammable Liquid Depots.—These in the mines, town and country, have received periodic inspection, and their general conditions found reasonably safe and satisfactory.

General.—Mining on the whole has been satisfactory, and more than held its own during the past term throughout the various centres of this district. The chief factors of supply have been our tin and coal mines, that, with the price of the metal and demand for the latter, promise to extend their ramifications, while the gold prospects at Mount Arthur, Forrester Settlement, Mathinna, Tower Hill, and Blessington are encouraging.

LIST of Accidents in Inspector Curtain's District for the Year ending December, 1923.

Fatal —: Non-fatal 31.

Date.	Name of Mine or Works.	Locality.	Cause of Accident.	Name of Sufferer.	Married or Single, and Age.	Nature of Injuries.	Killed.	Injured	Remarks.
Feb. 9	Briseis Tin & General Mg. Co.	Derby	Slipped off a plank	Henry Bates	Single, 41 yrs.	Bruised ribs	—	1	While crossing a plank between sluice box and gate, slipped and injured ribs
April 4	ditto	ditto	Fall of clay	Edward Hayes	Married, 48 yrs.	Fracture of right arm	—	1	Was rolling a boulder when ball of clay rolled from bank and struck him
May 14	Mt. Nicholas Coal Mg. Co.	Mt. Nicholas	Fall of rock	Douglas Parker	Married, 26 yrs.	Fractured thigh and right upper arm	—	1	Was doing repair work, consequent to a fall, when another fall occurred, causing permanent injuries to thigh and arm
May 14	ditto	ditto	ditto	Leslie Smith	Single, 26 yrs.	Bruised hand and scalp wound	—	1	Similar to previous details, but consequences of a less serious nature
June 22	Electrolytic Zinc Co.	Risdon	Pick jarred hand	Martin French	Single, 46 yrs.	Jarred hand	—	1	During excavation work, pick jarred hand
June 23	ditto	ditto	Hit with shovel	John Dalton	Married, 43 yrs.	Poisoned arm	—	1	Workmate's shovel became caught in Dalton's arm, and caused blood poisoning
June 29	ditto	ditto	Moving truck struck rib	Charles Butler	Married, 49 yrs.	Broken rib	—	1	While stooping over truck line attending to water tap, was accidently struck by moving truck, which broke rib
June 30	ditto	ditto	Explosion	Henry Clark	Married, 20 yrs.	Burns to face and arms	—	1	Was feeding dump zinc into furnace, when explosion occurred causing severe burns to face and arms
July 19	ditto	ditto	Truck caught finger	William Newitt	Married 37 yrs.	Septic poisoning	—	1	In tipping earth from truck, finger became caught and septic poisoning set in

LIST of Accidents in Inspector Curtain's District for the Year ending December, 1923—continued.

Date.	Name of Mine or Works.	Locality.	Cause of Accident.	Name of Sufferer.	Married or Single, and Age.	Nature of Injuries.	Killed.	Injured.	Remarks.
July 23	Electrolytic Zinc Co.	Risdon	Drilling-machine caught finger	Ernest Stanwix	Married 45 yrs.	Crushed finger	—	1	While drilling ironwork, finger became caught in machine and was severely crushed
July 26	ditto	ditto	Zinc splashed into eye	William Hunt	Married 30 yrs.	Injured eye	—	1	Zinc splashed into right eye, while feeding zinc sheets to furnace
July 31	ditto	ditto	Ladder slipped	Benjamin Lewis	Married 58 yrs.	Abrasions to head and shoulder	—	1	Ladder slipped causing fall, and he struck head and shoulder
Aug. 3	ditto	ditto	Piece of wood struck eye	Charlie Chapman Giles	Single 20 yrs.	Injured eye	—	1	Piece of wood from lath struck eye, and caused a severe cut
Aug. 9	ditto	ditto	Acid fell into eye	Percy Hill	Single 45 yrs.	Burnt eye	—	1	Struck wooden support with hammer while wiring electric motor, causing acid to fall into and burn right eye
Aug. 20	ditto	ditto	Electric shovel caught finger	Thomas Henry McGuire	Married, 33 yrs.	Cut finger	—	1	Finger became caught in electric shovel, while adjusting its gear, and was almost severed
Aug. 27	ditto	ditto	Fall of timber	J. J. T. Franklin	Single, 47 yrs.	Injured ankle	—	1	While stacking timber, it slipped and struck legs, causing injuries to ankle and left patella.
Sept. 5	ditto	ditto	Filter-press wrenched muscles	Harold McGuire	Married, 24 yrs.	Injured muscles of left shoulder	—	1	Was screwing up filter-press, wrenched muscles of left shoulder
Sept. 5	ditto	ditto	Foot slipped	Thomas Oakley	Married, 26 yrs.	Injured shoulder	—	1	While pushing trucks of ingots, foot slipped, and he fell and injured shoulder
Sept. 11	Bryce Bros.	Weldborough	Fall of earth	J. Wm. Bryce	Married, 47 yrs.	Bruised shoulder and leg	—	1	Was sluicing when fall of earth occurred, causing bruises to shoulder and to calf of leg
Sept. 14	Electrolytic Zinc Co.	Risdon	Slipped	Wm. P. C. Wagner	Married, 52 yrs.	Strained right knee	—	1	While pushing truck of metal, slipped and strained right knee
Sept. 15	Storey's Creek Mine	Avoca	Derailed truck	F. Bourke	Single, 25 yrs.	Internal injuries	—	1	While pushing loaded truck round curve, it became derailed, struck man causing internal injuries
Sept. 18	Electrolytic Zinc Co.	Risdon	Slipped on platform	Walter Barker	Single, 25 yrs.	Injured muscles of back	—	1	Attending to silver precipitate when he slipped from platform, and in attempting to regain his balance, injured back
Sept. 22	ditto	ditto	Stepped into hot calcine	F. John Mitchell	Single, 26 yrs.	Burns to leg	—	1	Stepped into hot calcine on top of roasting furnace, and burnt back of leg
Sept. 27	ditto	ditto	Timber struck back	William Jacques	Married, 48 yrs.	Injured back	—	1	While working in excavation, workman above threw timber striking Jacque's back
Oct. 15	ditto	ditto	Truck jammed foot	Wm. John Barker	Single 36 yrs.	Jammed foot	—	1	Was unhitching horse from truck when latter became derailed and jammed foot
Oct. 17	Briseis Mining Co.	Derby	Strained arm from weight	George McArdell	Married, 54 yrs.	Powerless arm from strain	—	1	Was moving heavy nozzle-gun when he strained arm, rendering it powerless
Oct. 20	Electrolytic Zinc Co.	Risdon	Rail and turntable crushed foot	A. E. W. Gresson	Married, 51 yrs.	Crushed foot	—	1	Caught and crushed foot between turntable and rail
Oct. 28	ditto	ditto	Wheel and rail jammed foot	J. F. Watt	Married, 42 yrs.	Crushed foot	—	1	While braking truck downhill, foot got caught between wheel and rail, crushing it
Nov. 3	ditto	ditto	Rope twisted ankle	R. G. Truelove	Single 28 yrs.	Sprained ankle	—	1	Stepped on coil of rope and sprained right ankle
Nov. 11	ditto	ditto	Stripping zinc	Alfred Rogers	Married, 35 yrs.	Strained muscles of chest	—	1	Was stripping zinc from cathodes, when he strained the muscles of chest
Nov. 20	ditto	ditto	Drove pick through hand	G. W. Christie	Single, 22 yrs.	Injured hand	—	1	While using shovel to remove earth, point of pick was driven through hand by workmate
Dec. 2	ditto	ditto	Lifting truck	Walter Norman	Married, 42 yrs.	Strained muscles of back	—	1	Was lifting truck onto rails, when he strained the muscles of his back

5 cm

Diagram showing the ratio of Fatal Accidents in Mines in Tasmania.

Rate per 1000 men employed

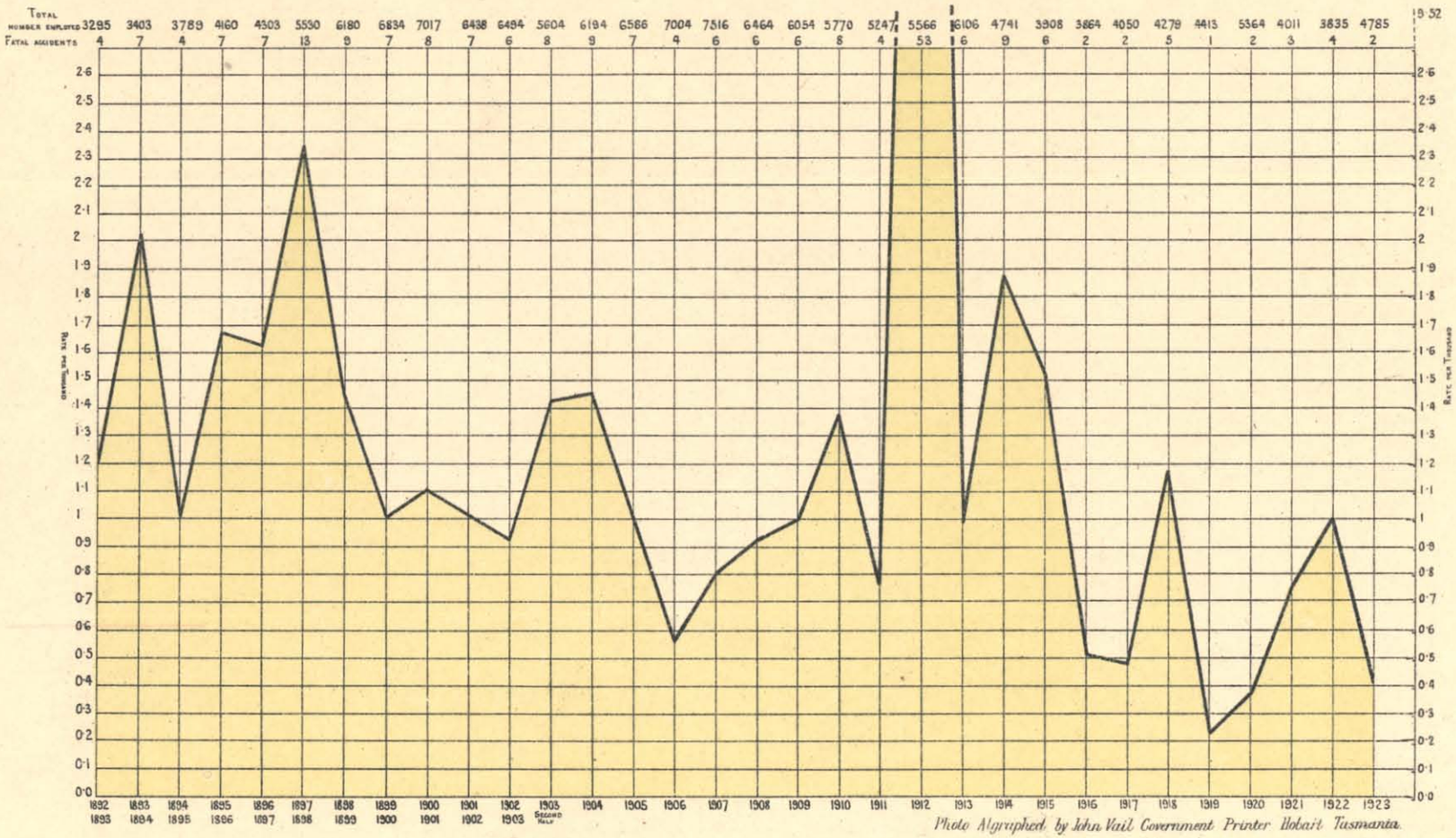

Photo Algraphed by John Vail Government Printer Hobart Tasmania.

Mr. Inspector VAUDEAU (Burnie) reports:—

I have the honour to submit the following report upon the work of inspection and administration of the various Acts delegated to this office for the year ending 31st December, 1923.

As from the beginning of the year portion of Mr. Inspector Curtain's district was allotted to me, and a small portion of mine given to Mr. Inspector Williams.

Accidents.—The tabulated list attached contains an account of the various accidents which occurred during the year. As will be seen, one of these was responsible for the death of the person. This man was engaged cutting coal, it being his second shift. The jury brought in the following verdict:—"That the said ——— accidently came to his death, and not otherwise."

I recorded in the Mine Record-book on my first visit to the mine in January that in my opinion it would tend to greater safety if the bottom, under the coal, was brushed instead of the roof. This accident would not have happened had that advice been taken. However, the present manager agrees with me, and is laying out his work to do so as soon as possible. Owing to the nature of the roof at the mine, close attention will be necessary to avoid accidents.

Of the non-fatal accidents, six occurred on the surface and two underground. The injuries received and the causes are fully detailed in the list, so there is no need to enumerate them here. Apart from the second one on the list, an exercise of reasonable care would have averted the results recorded.

It is the usual practice for managers to report all accidents which happen to this office. There has been eighteen other accidents reported. The time lost from work being as follows:—Four men, two days; three men, three days, two men, four days; two men, five days; one man, seven days; three men, 10 days; one man, 12 days; and two men, 13 days. These are not recorded in the tabulated list, as the loss of 14 working days constitutes a serious and recordable accident under the Act. Ten of these accidents happened underground and eight on the surface.

Considering the amount of dangerous and affected ground that I have had to get brought down during my visits of inspection, fortunately the record is a good one underground.

Another accident occurred in my district on the Emu Bay Railway, where they were breaking ground to fill in a wash-a-way, but the work was not under the administration of this office. The accident happened owing to a premature explosion while charging a hole. Particulars were forwarded to the Chief Inspector. From inquiries made the accident seemed to have been caused through carelessness.

Ventilation.—Considerable improvement has been effected, but at one mine there is room for much better conditions. A drive is being driven on the course of the lode-channel so as to link up with an adit level, the purpose being to have this as a second exit, and to improve ventilation as well as prospect this end of the mine; but the deliberate way in which this work has been retarded has been very annoying. However, the management has been given to understand that if this work is not expedited, that artificial methods will be insisted on. The power granted to this Department by new regulations just brought into force will help considerably in this direction where needed.

Settlements of Ground.—At one mine there was a slight subsidence owing to a "vugh" being struck, which was full of water. It disarranged the timbers somewhat in the stopes, and the men were withdrawn for a few days until the "creep" stopped. The remainder of the ore was then extracted safely.

At another mine some rich oxidised ore had been mined under dense pyrites. This pyrites came down into the oxidised ore, and wherever it was exposed got warm, and then started to burn, necessitating the sealing off of the area being worked. At last, owing to the timber in so many of these areas giving way, and to the oxidisation of the ore, the whole body above gradually settled down. It has been decided to remove the top portion of the ore-body by "open-cut" methods, leaving the remainder of the rich ore to be lifted afterwards. This should be the most economical way to handle the ore, and will certainly be far more healthy than the old method, which was strongly objected to by this office.

At another mine, where it had been the practice for years to take out the full length of the ore-body with timbers with a flat roof against the floor of the stope above, it was recommended that the last four "floors" be taken out in sections, bulking the centre of stope and working on the retreat system. This I advised owing to extensive settlements in previous method. This advice was disregarded for a time, and until the centre showed considerable pressure in the level above, the centre of the stope being taken out higher than that recommended, when it was adopted. If it had been carried out as asked for I feel sure that the ore could have been taken out more safely and economically, but much more care will be necessary now.

Change-houses.—A few indirect complaints were heard. One of these was found to be well founded, and the management immediately made good and promised to continue to do so. At other places some were altered and brought up to the necessary requirements. Improvement is still looked for in a few instances, but on the whole there is a decided improvement.

Shelter-sheds and Crib-houses.—One big company had made no provision for this apart from that afforded by covering the roofs of the boiler-house and blacksmith's shop. It was found that men were standing up eating their cribs while the firing was going on in these two places. This was strongly objected to by this office, and after a good deal of trouble the company put up a very decent place, suitable for the men to have their crib and shelter in. It is hoped to get a much better response in this direction now that new Regulation 21 has been brought into force.

Health and Sanitation.—Every endeavour was made to see that the conditions governing this were given the necessary attention. In reference to the latter, conditions improved, if anything.

From reports one hears I am afraid there is still a good deal of "dry-boring" going on, and the shifting of dry and dusty material, but it is very seldom I am allowed to see it. On one occasion the management was away, and I got down to a lower level without being seen, where I met the shift boss. I asked him to go with me. In one of the stopes we heard men boring with rock-machine. This boss rushed ahead of me, but I quickly followed, and found him giving the men warning to put water on. Information was laid against him and the two men boring dry. One of these men cleared out; the other two were fined (see list). The manager of this mine has rendered me a good deal of assistance, and wished to dismiss the boss, but I thought it would do more good to take legal action against him.

At one mine the trucking and travelling conditions on two levels were very bad, and it was not until every reasonable request had been ignored and legal action threatened that the desired conditions were obtained.

Explosives and Magazines.—Seven new magazines were licensed and one was discontinued.

Considerable attention has been given to the handling and storing of explosives. In many instances I have been very much assisted, but carelessness in underground storage is still noticed, at odd times necessitating the destruction of small lots owing to saturation through absorption of moisture. I only heard of one complaint in reference to the quality of some gelignite, but it had all been used up, so I could not examine it. One mine, which has been shut down for a few years, has about 100 cases on hand, which is not suitable for underground use, and I am afraid will have to be destroyed owing to deterioration. Frequent tests were made of safety-fuse in use, and was found satisfactory. The landing of explosives at Burnie and Devonport were supervised as occasion demanded.

The conditions in connection with the landing and forwarding of these at the latter were far from satisfactory. An alteration to the whole system was recommended and adopted.

At one mine the manager and six men were convicted and fined in connection with the careless handling of explosives. At another place the manager reported a miner for not returning explosives to the place of storage underground. The man was fined (see list below).

Several persons were found to be selling explosives without having permits under "The Explosives Act, 1916." One hundred fresh permits have been applied for to this office.

Machinery.—On the whole, I have had very little to complain about, and in most instances have found ready response to remedying any defects noticed.

Inflammable Liquid Storage.—Deplorable conditions were found to exist regarding a reasonable compliance with "The Inflammable Liquid Act, 1920," in some towns. Two persons built new depots and altered from registered premises to licensed stores under the Act. Forty-seven new premises were registered, and seven new depots were licensed.

In many instances a complete ignorance of the Act was noticed; but in others it was being ignored. It will take considerable time to get a reasonable compliance with the Act, as the amount of time that can be given to this work is limited. Seven prosecutions have been instituted and three more are pending. The intention of the office being to warn the public, every reasonable effort is taken to get people to comply before legal action is taken, the desire being to get a reasonable degree of safety and not prosecutions.

Assistance has been asked for from the Police Department, and I am pleased to record that in several instances I have had ready response to my requests.

List of Prosecutions Taken under the "Mines and Works Regulation Act."—

Contravention.	Result.
General Rule 13.—Failure to use an appliance for the prevention of dust during rock-drilling operation. Section 23.—Failure in not enforcing General Rule 13.	Miner: Convicted, fined 10s., and ordered to pay costs amounting to £2 9s. Total, £2 19s. Shift Boss: Convicted, fined £1 10s., and ordered to pay costs amounting to £3 9s. Total, £4 19s.
General Rule 20, III.—Failure regarding safe keeping of explosives underground. General Rule 20, VII.—Failure to return explosives to the place of storage underground. Ditto	Manager: Convicted, and ordered to pay £1 10s. costs. Six Miners: Convicted; each fined 5s., and ordered to pay costs between them amounting to 6s. each. Miner: Convicted, fined £2, and ordered to pay £1 16s. costs.

Taken under "The Inflammable Liquid Act, 1920."

Contravention.	Result.
Section 10.—Keeping other than in licensed store or in registered premises.	Convicted, fined £5 and costs 6s. 6d.
	Convicted, fined £2 and costs 6s. 6d.
	Convicted, fined £2 and costs £1 16s. 6d.
	Convicted, fined £2 and costs £1 11s. 6d.
	Convicted, fined £1 and costs £1 10s. 6d.
	Convicted, fined £5 and costs £1 0s. 6d.
	Convicted, fined £5 and costs £1 0s. 6d.

General.—The various mines and works in my district have been inspected as the importance of the operations called for. Several mines have started and some reopened again, and with the additional value prevailing for tin ores and that being paid for other metals, apart from copper, am expecting a very busy time during 1924.

Several recommendations have been suggested regarding better working conditions and safety methods. invariably my wishes are granted, but some are still content to go on with any slip-shod methods, which, in the long run, are not economical or congenial in most instances.

I would like to here express my appreciation to the various managers, officers, and workmen who have given me their co-operation in the endeavour to get reasonable conditions and safety.

Owing to the difficulty of obtaining efficient labour, it would be thought that the mine-owners would wake up to the necessity of making the working conditions the very best possible, so as to again encourage the best labour to take to mining, as was so when wages were so much higher, proportionally, than they are at present. Many, instead of doing this, are only complaining and wish to let things go, and, in my opinion, are only helping to ruin the industry.

LIST of Accidents in Inspector Vaudeau's District for the Year 1923.

Fatal 1; Non-fatal 9.

Date of Accident.	Name of Mine or Works.	Locality.	Cause of Accident.	Name of Sufferer.	Married or Single, and Age.	Nature of Injuries.	Killed.	Injured.	Particulars and Remarks.
1923. Mar. 3	Magnet Silver Mine	Magnet	Slipped on tramline	Robert Burglass	Married, 37 yrs.	Sprained ankle	—	1	The man was stepping down off a loading platform, on to the tramline, when his foot slipped off the rail, spraining his ankle.
Mar. 15	North Mt. Farrell S. L. Mine	Tullah	Cage struck chairs in shaft	Joseph Cassey	Single, 20 yrs.	Jarred left leg & shock	—	1	The man, with others, was being lowered down shaft at the start of day shift. Three loads had been sent down in this cage, all going to No. 6 & 7 levels. On going down fourth trip the cage bumped into the "chairs" at No. 5 Level and hung it up, causing the injuries to Cassey. It was thought that perhaps the pin was not put in to hold chairs back securely, and it worked out and let the chairs in a little so as to catch, though I could not make them do so on testing same some time previous to and after the accident. Lost 21 days.
April 4	Waratah Tin Sluicing Co.	South Bischoff	Slipped on tramline	Charles Fulford	Married, 47 yrs.	Small bone in right hand broken	—	1	The man was trucking and slipped, falling on his hand. Lost 14 days exactly.
April 28	Mt. Bischoff Tin Mine	Waratah	Piece of rock fell on finger	John Taggart	Married, 25 yrs.	Cut small finger of right hand	—	1	While cleaning off sole-piece, so as to stand leg, a piece of rock fell out of the shoulder of drive on to his finger, cutting into the knuckle nearly severing the finger Lost 30 days.
May 15	Tasmanian Cement Pty. Ltd.	Railton	Slipped whilst trucking	Max O'Keefe	Married, 25 yrs.	Wound on right leg	—	1	Whilst trucking cement slipped and fell off trestling on to a spar. From inquiries made it was purely an accident.
June 23	ditto	ditto	Hit with a shovel	John Dalton	Married, 43 yrs.	Cut arm	—	1	Another man who was shovelling alongside Dalton hit him with his shovel. Septic poisoning set in and man lost over 14 working days.
Sept. 1	Round Hill Mining Co.	Cethana	Slipped on Lagging	ThomasMcCoy	Married, 56 yrs.	Injured knee	—	1	While mullocking up slope, slipped on lagging and injured knee.

LIST of Accidents in Inspector Vaudeau's District for the Year 1923—continued.

Date of Accident.	Name of Mine or Works.	Locality.	Cause of Accident.	Name of Sufferer.	Married or Single, and Age.	Nature of Injuries.	Fatal.	Injured.	Particulars.
1923. Oct. 25	Round Hill S. L. Mine	Cethana	Slipped on piece of 4x2 inch hardwood	Leonard Godwin	Single, 21 yrs.	Fractured rib	—	1	The man was hurrying to throw belt on to loose pulley of concentrating "card" table and slipped on piece of 4 x 2 inch hardwood and fell. He worked two days after the accident, did not report it immediately, thinking it would be all right. He, however, had to go to doctor on Nov. 6th, who said he had broken a rib and ordered him to rest for a while. He lost 18 days.
Dec. 3	Preolenna Coal Mine	Preolenna	Fall of ground	John Carey	Married, 63 yrs.	Both arms much bruised. Cut over eye Seven ribs broken. The left side of chest full of blood	1	—	Carey had been instructed by the Deputy to work down some affected ground from the roof and make it safe. He worked some ground down and considered it safe and started to cut coal again. He had been engaged at this but a few minutes when some of the roof came away on top of him. He was taken into the Spencer Hospital, Wynyard, where he died at 6·30 a.m. the next day. The doctor stated in his opinion death was due to shock and from internal bleeding and the extreme and severe character of the injuries received.
Dec. 11	ditto	ditto	Bar slipped	Thomas Naylor	Single, 17 yrs.	Split finger	—	1	Naylor was assisting to lift a 12ft. bar off "skip," the bar slipped and jammed his finger. He lost 22 days from work.

Mr. Inspector Williams (Queenstown) reports:—

I have the honour to submit the following report upon the work of inspection and administration of the provisions of "The Mines and Works Regulation Act, 1915," "The Explosives Act, 1916," and "The Inflammable Liquid Act, 1920," within the Lyell and Zeehan Inspection Division for the year ended on the 31st December, 1923.

Consequent upon a departmental reorganisation, Zeehan mining areas were attached to the inspection division previously covered by this office, and the added work was entered upon at the commencement of the period under review. Merited frequency of inspections of the principal mines was much affected by the alteration, and the same desirable degree of surveillance of working conditions and familiarity with applied practices was not possible. Liberal compliance with the machinery of the "Mines and Works Regulation Act" was not manifest, and it cannot be recorded that there was expeditious and sustained effort to produce and maintain commendable working conditions for those who are necessarily dependent for a livelihood upon the operation of the mines and works. Mean knowledge of the requirements of the Act, desires to evade its provisions or take advantage of any weakness in its literal interpretation, and displays of personal antagonism when improved conditions are sought have been encountered, but serve no useful purpose beyond reflecting discredit upon those responsoble for the operation of the mines and works. Equitable working conditions indicate care and consideration for the health and safety of employees, are economically advantageous to the operators, produce contentment amongst employees in lieu of justified dissatisfaction that has obtained in several directions, are of mutual benefit to all concerned and are worthy of a maximum effort by any management. The year closed with much to be accomplished in the production and control of improved conditions at mines and works.

Accidents.—Twenty-three accidents, entailing a like number of casualties, were recorded under the provisions of Section 26 of the "Mines and Works Regulation Act." There were one fatal and 22 non-fatal accidents, as against one of the former and 11 of the latter accidents, recorded during the previous year. Although the extension of the inspection division produced an increase of 55·5 per cent. in the number of men employed, the casualty ratio is much higher than that for the previous year, but corresponds with that for 1921.

The fatal accident occurred on the surface at a mine. Deceased and others were employed on the formation of a new tram-siding, the gradient of which is 1 in 21. Two bottom trucks of material were delivered to the siding for ballasting purposes. One truck was pushed to near the top of the gradient and presumably secured by placing a stone chock against each of the two down-wheels. The second truck was being pushed up the gradient when the first crashed into it, caused it to tilt upwards, knock deceased to the ground, and pin him under the bow of the bed-frame, inflicting injuries to which he succumbed three days later. The day was extremely boisterous, and it was opined that the high winds caused the truck to move sufficiently to release the stone chocks. In view of the boisterous weather, a heavy gradient, no brakes on the trucks, and a partly-ballasted line, it was apparent that an error of judgment was committed in respect to the method adopted to secure the first truck. However, at the ensuing coronial inquest the jury found that death was due to injuries accidentally received.

Of the non-fatal accidents, 10 occurred underground and 12 occurred on the surface, 11 of which latter number were associated with operations at metallurgical works. Subsequent investigations indicated that, with reasonable care or proper precautions by those concerned, or consistent vigilance for the prevention of accidents by those responsible for the control of operations, in at least 54·54 per cent. of the cases the results recorded would have been averted.

Serious injuries were sustained in the case of four accidents, three of which were due to falls of ground.

In one case a miner ventured dangerously close to roof known to be disturbed by blasting operations, was struck by portion of a quantity of ground which fell away from the affected area, and sustained a compound comminuted fracture of the right leg.

A miner was engaged boring a pop-hole in an isolated lump of ore when a small quantity of ground fell from the roof, struck him, and inflicted a fracture of the pelvis. In sympathy with precautions attested to have been taken, the accident was instanced as a case of misadventure.

The third serious accident was associated with incredible and conflicting circumstances. A miner was present in a stope during blasting operations some 25 feet away. Concussion from the blasting caused a quantity of ground to fall from the roof, pass through an uncovered set in which he was standing, strike him, and inflict grievous bodily injuries. The set had been covered with bulk logs for safety, but these logs were robbed for another purpose a few hours prior to the accident. Had this decking not been removed the accident would have been averted, as it was apparent that the decking was sufficiently strong to support the small quantity of ground which fell. Under ordinary circumstances it would be unsafe to remain so close to blasting operations, but, contrary to the evidence of all others concerned in the working of the stoping area, the injured person denied that he deliberately remained in the stope, denied that he was given ample warning of the blasting, and denied that he was concerned in the removal of the decking from the set through which the ground fell.

A miner sustained a compound fracture of the left leg while rilling ore into a pass. Broken ore from blasting operations had accumulated over the pass, the miner had formed a cavity through the ore to the pass, and was rilling the ore into the pass when a large slab slipped from the top of the cavity and jammed his leg, with the result mentioned. Those responsible for the control of operations permitted the practice of forming a cavity in accumulated ore to obtain at a pass without ensuring added precautions for safety, although serious accidents had resulted from a similar procedure previously. The only advantage of the procedure, at the cost of an accident, was that the miner would have increased his output of ore on that shift. There were open passes nearby into which the ore could have been placed until this particular pass was made available in a safe manner. Regulation 18 was originally inserted in the Act to cover cases of this nature, but upon examination it was found to be not legally applicable. An amendment of the regulation is a necessity.

When ascending a steeply-inclined rise after blasting operations, a stull, upon which he was standing, slipped away and caused a miner to fall 30 feet and sustain a lacerated back. The miner had tested the stull with a pick, and deemed it secure before climbing on to it

The remainder of the accidents were not of serious moment, and these, together with the causes and injuries sustained, are summarised in the tabulated list accompanying this report.

Three accidents of a serious nature occurred at mines and works, but are not included in the tabulated list. In one case a person sustained a severe injury to the left hand when attempting to replace a belt on the driven pulley of a conveyor while the motor was running. This accident was accepted and registered by the Machinery Department. In the second case an employee was proceeding home after the conclusion of the shift, and while still on the mine lease was caused to fall by a gust of wind, and fractured his arm. The third accident occurred on the Lyell Company's main haulage. A person not employed by the company proceeded to descend the haulage on the rake of trucks when a surge of slack rope from the engineroom caused the trucks to pass over the brow at an accelerated speed and to be jerked violently when the slack rope was absorbed. The person concerned was thrown forward on to a truck, and sustained a fractured leg.

Settlements of Ground.—Several settlements of ground occurred during the year, and again emphasised the extreme care that is necessary with respect to structural and other weaknesses associated with ore-bodies. Fortunately no person was injured, but these happenings constitute a grave danger to the safety of operations, and, although movements of ground are likely under certain conditions, there should be no hesitancy to adopt maximum precautions where weaknesses are apparent. Serious regard for weaknesses and modifications of methods of working as demanded by those weaknesses would result in a reduction in the number of settlements, particularly at one mine where such occurrences have been unnecessarily prevalent. Effort has been made to secure the regular adoption of precautionary measures or to obtain modifications of policies of working in the presence of lines of zones of weakness, but the management has not responded in a manner suggestive of a desire to exercise every precaution in the maintenance of safe conditions.

One occurrence involved the collapse of a stope. The ore-body was being mined on the rill system with square-set timbering. Weaknesses in the method of timbering and of taking out the ground were emphasised, but the counsel tendered was ignored, with the obvious result. In the case of a second extensive settlement of ground, it was emphasised that the best interests of safety could be served only by mining the area on square-set timber, but the recommendation was ignored. At a large open-cut workings continued references were made to certain wall-weaknesses and the probability of a fall of ground, but no action was taken and a fall eventuated. At a small mine the operator was required to timber a tunnel being driven in a secondary lode-formation, but failed to do so, and the tunnel collapsed, as anticipated.

No good purpose is served by ignoring recommendations made during the course of inspections, as settlements of ground of the kind witnessed are neither economical nor safe, and there is always the possibility of serious personal injury attending the occurrences.

Health and Sanitation.—Much consideration was again directed to matters governing health and sanitation, and although every reasonable effort was made to encourage the production and maintenance of improved conditions, much has yet to be accomplished in respect to the suppression and control of nuisances due to dust and fumes at works. Innovations in treatment processes at a copper-reduction works resulted in deplorable working conditions owing to an excessive dispersion of dust and fumes. When confronted with the position, the management agreed to remove all objectionable dust and fumes, and although some alleviation of conditoins ensued, such had not been corrected at the close of the year.

Further instances were recorded of persons having to inspire underground atmospheres laden with fumes and dust from blasting operations. Vigorous effort was made to have this condition regularly corrected, and met with a material response in as much as blasting operations were more rigidly controlled, and resulted in an appreciable improvement of underground conditions at one mine.

Three persons were prosecuted for failing to use appliances for the prevention of dust during rock-drilling operations, while several instances of insufficient precautions to allay dust were countered with cautionary measures. The question of dusty atmospheres in underground workings received more careful investigation than hitherto. An institution of closer investigations by this office was followed by similar measures by the management at the principal mines, and this should ensure a production and maintenance of the best possible conditions.

No noteworthy innovations were made in the ventilating systems, and natural ventilation was the rule at the various mines. Filtration of hot vitiated air from old workings, and due principally to oxidation of pyrites in the absence of a compensating air-circulation, produced excessive temperatures in three instances at a mine, but these were of temporary duration, as early surface connections corrected the conditions. Otherwise the thermometrical requirements of the Act were not exceeded. Flame-extinction tests and gas analysis disclosed several irregularities in the prescribed standard of air purity at some of the mines in the area added to the inspection division. Under certain natural conditions exudations of carbon dioxide from carbonate zones were pronounced, and as ventilating systems were inadequate to counterbalance the condition, air deficiency resulted, increasing costs upon operations, inflicting discomfort upon employees, and causing dissatisfaction generally. In several instances orders were made restricting the employment of persons in places where such conditions were encountered. Although the matter has been given due prominence, the economic importance of good ventilation has not been realised in practice.

Bathing and changing accommodation, crib places, and latrine arrangements at the principal mines and works were not different from those of the previous year. Failure of the heating arrangements to effectually dry clothes, low temperatures, and overcrowding caused exception to be taken to the changing-house at a principal mine. Eventually it was agreed to enlarge upon and remodel the arrangements, but this work had not been commenced at the close of the year. At the mines in the area added to the inspection district all employees travelled to the surface as occasion demanded, consequently no necessity arose for underground crib places and latrine arrangements, but the surface arrangements and the bathing and changing accommodation at these mines are of mean order and much below a desirable standard. States of impecuniosity were allowed to obtain as a barrier to the immediate production of equitable arrangements.

Facilities for rendering first-aid were equal to former standards. The absence of persons qualified to render first-aid at many mines in the area added to the inspection division was very pronounced. Collaterally with the establishment of a first-aid class in that centre, the principal mines were circularised, but only in one case was a material response made. Such lack of interest in a matter of this nature is to be deplored.

Prosecutions.—Legal proceedings were instituted against six persons for breaches of the "Mines and Works Regulation Act." Three cases, two of which were reported by the manager, concerned the allaying of dust from rock-drilling operations, two related to an unauthorised person taking charge of a winding-engine by which persons were lowered in a shaft, and in the sixth case a person was prosecuted for riding in a cage with material. The contravention and result are shown in the following tabulation: —

Contravention.	Result.
General Rule 13 of the Schedule.—Failure to use, when necessary, an appliance for the prevention of dust during rock-drilling operations.	Miner: Convicted, fined £2, and ordered to pay costs amounting to 9s.
	Miner: Convicted, fined £2, and ordered to pay costs amounting to 9s.
	Miner: Convicted, fined £2, and ordered to pay costs amounting to 8s.
General Rule 37 of the Schedule.—Riding in a cage with material.	Sanitary Attendant: Convicted, fined 10s., and ordered to pay costs amounting to 9s.
Section 31 of the Act.—Taking charge of a winding-engine by which persons were lowered in a shaft and not being the holder of the prescribed certificate.	Stationary Enginedriver: Convicted and ordered to pay costs amounting to 8s.
Section 23 of the Act.—Failure to enforce the provisions of Section 31 of the Act.	Manager: Convicted and ordered to pay costs amounting to 10s.

Machinery.—Due regard was directed to the efficient maintenance of ropes, cages, and attendant appliances. At the principal mines these matters were reasonably well cared for, but at the mines in the area added to the inspection division several irregularities were encountered, and the requirements of the Act in respect to machinery were not so well observed.

Two winding and four windlass ropes were condemned and ordered to be replaced with new ones, defective sections were required to be removed from four ropes, and several new ropes were installed to replace those in use before condemnation of the latter by this office became necessary.

Explosives.—Administration of the provisions of the "Explosives Act" and Division IV. of the schedule to the "Mines and Works Regulation Act" relating to explosives was not slighted.

Nitro-compounds of South African and Australian manufacture were used, and no complaint was made to this office in respect to the quality thereof. Several small quantities of compound were ordered to be destroyed owing to advanced deliquescence of the oxygen supplier or other deterioration due to local irregularities in storage. Improper handling and storage of explosives was more rife at the smaller mines, but a correction of irregularities was demanded, and improved conditions are expected in the future. In one instance several plugs of gelignite were found scattered along the floor of a drive, and apparently had been there for some time, although the drive was used as a travelling-way.

Two explosive accidents were recorded during the year. In one case a person was spalling a rock in an open-cut workings when there was an explosion, and he sustained peppered abrasions of a minor nature. Investigations discredited the detonator theory, and attributed the cause to a stray fragment of nitro-compound from an indeterminable source.

Two boys, aged six and seven years, had obtained a detonator, and, encouraged by the elder, the younger struck it with a tomahawk, causing it to explode and inflict injuries to his face and left eye. Subsequent removal of the eye was necessary. Through childish ignorance of the danger of explosives, and through carelessness of adults in allowing explosives to be accessible to children, these accidents occur.

A magaizne attendant was found to be habitually crimping detonators within ·094 of the fulminate filling. Timely intervention prevented what must have resulted in a serious accident eventually.

Landing of imported explosives at the port of Strahan was supervised as occasion demanded.

Inflammable Liquids.—No new depots were established, and reasonable conditions of storage obtained at registered premises. Four instances of evasion to establish or register premises came under observation, and are to be dealt with during the coming year. Otherwise a reasonable compliance with the provisions of the "Inflammable Liquid Act" was made.

PARTICULARS of Registered Accidents which occurred in the Lyell and Zeehan Inspection Districts during the Year 1923.

Fatal 1; Non-fatal 22; Total 23.

Date.	Name of Mine or Works.	Locality.	Cause of Accident.	Name of Sufferer.	Married or Single, and Age.	Nature of Injuries.	Killed.	Injured.	Particulars.
1923.									
Feb. 19	North Lyell Mine	North Lyell	Fall of ground	Montague J. R. Turnbull	Married, 40 yrs.	Compound fracture of right leg	—	1	He ventured dangerously close to roof, which was known to have been disturbed by blasting operations, and was struck on the leg by portion of a quantity of ground which fell from the affected area
Feb. 28	ditto	ditto	Fell off ladder	Anthony Fadiga	Single, 37 yrs.	Contused feet	—	1	He was descending a ladderway with a handsaw in one hand, when he slipped, and dropped about 15 feet down the ladderway.
Mar. 8	Mt. Lyell Co.'s Works	Queenstown	Tripped over rope	Charles Pitt	Married, 45 yrs.	Injured knee, with synovitis	—	1	He tripped over a light wire rope, and fell about 4 feet on to brick and timber debris
Mar. 14	ditto	ditto	Run of hot flue dust	Alexander H. Parnham	Married, 39 yrs.	Burnt arms	—	1	Whilst cleaning out the main flue at the blast furnace plant, he was struck by a run of hot flue dust
Mar. 17	Mt. Lyell Mine	Gormanston	Fall of ground	Henry A. Sonners	Widower, 31 yrs.	Fractured leg, arm, and nose. Crushed hand and general contusions Right leg, and three right fingers amputated.	—	1	Concussion from blasting operations nearby caused a fall of ground which struck him while he was in an open set from which the decking had been deliberately removed. The set had been decked previously with the sole object of safety. Sonners should not have been in the locality of the blasting, and, although his mates assert to the contrary, he maintained that he was not given ample warning of the blasting, that he did not deliberately linger in the locality, and that he was not concerned in the removal of the decking from the set through which the ground fell.
Mar. 22	Mt. Lyell Co.'s Works	Queenstown	Caught on ascending lift	Charles H. Nightingale	Single, 19 yrs.	Bruised hip and shoulder.	—	1	While attempting to get off an ascending lift, a bag in his hand caught on the lift and caused him to fall several feet on to the floor below
Mar. 29	ditto	ditto	Bar of copper dropped on his foot	William M. Vaughan	Single, 27 yrs	Fractured toe.	—	1	While moving bars of blister copper from a heap at the moulding machine, a bar dropped about 2 inches on to his right foot
April 18	No. 6 Argent Mine	Zeehan	Pushed truck over tip end	John C. Whelan	Married, 40 yrs.	Cut over the eye, and bruises	—	1	While trucking tailings from the mill, he allowed the truck to pass over the tip end, and fell with it a distance of 4 feet. Although of a minor nature, the injuries aggravated a disease from which he was suffering, and caused him to be incapacitated for more than 14 days

Particulars of Registered Accidents which occurred in the Lyell and Zeehan Inspection Districts—continued.

Date.	Name of Mine or Works.	Locality.	Cause of Accident.	Name of Sufferer.	Married or Single, and Age.	Nature of Injuries.	Killed.	Injured.	Particulars.
June 9	North Lyell Mine	North Lyell	Slab of ore slipped on to his leg	Thomas J. Pursell	Married, 40 yrs.	Compound fracture of left leg	—	1	Broken ore from blasting operations had accumulated over a pass, and while rilling this ore into the pass, a slab of ore slipped away and jammed his leg against the side of the cavity formed through the broken ore to the pass
June 10	Mt. Lyell Company's Works	Queenstown	Lump of pyrites fell from charge cart	Jack E. Piggott	Married, 38 yrs.	Fractured toe	—	1	While loading a charge cart at the storage bins at the blast furnace plant, a lump of pyrites dropped from the cart on to his foot
Aug. 1	North Lyell Mine	North Lyell	Fall of ground	Charles F. Legge	Married, 36 yrs.	Fractured pelvis	—	1	While engaged boring a pop hole in a lump of ore, a small quantity of ground fell from the roof of the stope and struck him
Aug. 9	Electrolytic Zinc Company's Works	Zeehan	Slipped and fell	Patrick Barry	Married, 39 yrs.	Bruised leg, with septicemia	—	1	When crossing over a retaining wall, he slipped and fell on to debris
Aug. 28	North Lyell Mine	North Lyell	Truck canted back	Arthur Thomas	Single, 35 yrs.	Contused leg	—	1	While tipping a truck of mullock he stepped into a hole in the roadway, and the truck canted back on to his leg
Sept. 3	ditto	ditto	Bumped against truck	Edward H. Biggins	Single, 45 yrs.	Lacerated nose	—	1	While drawing empty trucks along an underground roadway with a restive horse, he was forced to get out of the way, and in so doing bumped against a nearby truck of ore
Sept. 21	ditto	ditto	Struck by a truck	Edgar S. Anderson	Widower, 55 yrs.	Fatal	1	—	In company with others he was engaged pushing two trucks of ballast up a gradient of 1 in 21. One truck was pushed to the top and chocked with stones. The second truck was being pushed up when the first came away and crashed into the second truck, which struck and pinned him to the roadway, inflicting injuries to which he succumbed three days later
Sept. 21	Electrolytic Zinc Co.'s Works	Zeehan	Nail penetrated his hand	Albert A. Middap	Married, 51 yrs.	Cellulitis	—	1	When carrying second-hand timber, a projecting nail penetrated his left hand, and caused cellulitis
Oct. 3	North Lyell Mine	North Lyell	Truck jammed his leg	Percy T. Grainger	Single, 32 yrs.	Contused leg	—	1	While caging trucks of ore he placed a truck too close to the ascending cage, with a result that the cage caught the end of the truck, caused it to tip up and jam his leg on the platsheet
Oct. 29	Mt. Lyell Co.'s Works	Queenstown	Stepped on fan blade	Charles J. Myler	Married, 38 yrs.	Bruised shoulders	—	1	When leaving the converter flue at the conclusion of the shift, he attempted to get through the fan, which was under repairs. He placed one knee on a blade of the fan, with a result that the fan, revolved, dropped him into the chamber, and jammed him against the wall
Oct. 31	ditto	ditto	Fingers jammed by launder plate	Malcolm McConnell	Single, 58 yrs.	Burst fingers	—	1	He was assisting to place metal launder sections in a wooden frame when one of the former slipped, and jammed his fingers against the frame
Nov. 17	Electrolytic Zinc Company's Works	Zeehan	Machinery fell sideways on to his foot	Andrew Lambert	Married, 40 yrs.	Crushed foot	—	1	He was assisting to move a piece of machinery when it fell sideways on to his foot
Nov. 23	Mt. Lyell Co.'s Works	Queenstown	Truck moved on to his foot	Robert Kean	Married, 45 yrs.	Injured ankle	—	1	He was engaged pulling trucks with a horse, and while attempting to disconnect the draw chain from a moving truck, his foot was caught under a low part of the truck frame
Dec. 12	North Lyell Mine	North Lyell	Rise stull slipped away	John Foley	Single, 20 yrs.	Lacerated back	—	1	He was ascending a rise after blasting operations when a stull upon which he was standing slipped away and dropped him 20 feet down the rise
Dec. 13	Mt. Lyell Co.'s Works	Queenstown	Charge cart tipped up at chute	Gordon Hill	Single, 17 yrs.	Lacerated right forearm	—	1	He was filling a charge cart at an ore bin when a lump of ore struck the end of the cart, caused it to tip backwards, and jam his forearm against the chute lip

REPORT OF THE CHIEF INSPECTOR OF MAGAZINES AND EXPLOSIVES.

Hobart, Tasmania, 30th April, 1924.

SIR,

I HAVE the honour to submit my annual report in connection with the Explosives and Inflammable Liquids Act for the year 1922.

The imports for the year were

	lbs.
Monobel	7,750
Gelignite	156,700
Blasting gelatine	21,450
Gelatine dynamite	1,750
Ligdyn	10,500
Powder	11,675
Detonators	115,000

The quality of the explosives imported was very satisfactory, but it was found necessary to destroy several small quantities owing to absorption due to improper storage. During the year there were two accidents due to explosives. In one case a person employed spalling a rock in the open-cut caused an explosion, from which he received slight abrasions. The accident appears to have been due to a small portion of the explosive adhering to the rock, which, when struck by the spalling-hammer, exploded. Two boys, aged six and seven respectively, obtained a detonator. The younger struck it with a tomahawk, causing it to explode, inflicting severe injuries to the face and left eye, and later necessitated the removal of the eye. The frequent occurrence of this later class of accident called for some action to obviate recurrences. After fully going into the matter it was found that the most satisfactory method would be for the children to be educated in the schools, and for this purpose a large number of dummy detonators have been supplied by the explosives firms free of charge, and these have been forwarded to the Director of Education for distribution.

The importation of inflamable liquids have shown a very considerable increase during the year, and it has been necessary to devote a large amount of time in conection with its safe storage and conveyance. The practice of the public being allowed on the wharves during unloading operations still continues, and is one which is likely to cause serious accident and fire. It is found that most of the persons who smoke while visiting these wharves do so in ignorance of the danger. The Marine Board posted notices drawing attention to the danger, and as these are not having the desired effect, it would appear that the only safe method is to prohibit all persons—except those employed in the workng of the ship—from having access to the wharf.

Revenue.—

	£	s.	d.
Magazine licences, 52	52	0	0
Licences to store, 53	61	0	0
Permits to sell, 326	81	10	0
Permits to import, 10	20	0	0
Permits to convey, 42	10	0	0
Registered premises, 172	43	0	0
	£268	0	0
Magazine rents	181	11	3
Total revenue	£449	11	3

I have, &c.,

J. O. HUDSON,
Chief Inspector of Magazines and Explosives

W. A. PRETYMAN, Esq.,
Secretary for Mines, Hobart.

JOHN VAIL,
GOVERNMENT PRINTER, TASMANIA.