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APPENDICES TO THE MINES STATEMENT—*continued.*

SESSION II.
1918.
NEW ZEALAND.

MINES STATEMENT

BY THE HON. W. D. S. MACDONALD, MINISTER OF MINES.

MR. SPEAKER,—

I have the honour to present to Parliament the Mines Statement for 1917–18.

After taking into consideration the great disadvantages under which mining has been carried on during this the fourth year of the war the production of minerals has, I think, been fairly well maintained, although there has to be recorded a decline in total value. This decline is chiefly due to shortage of labour by the voluntary enlistment of miners, and to the fact that many of the smaller mines and dredges have discontinued operations owing to the increased cost of everything required in the production of gold, while the value of the gold produced has remained stationary.

The value of minerals exported and of the coal-output for 1917 amounted approximately to two millions and a half.

MINERAL-PRODUCTION.

The following table shows the quantity and value of a portion of our mineral export during the years 1916 and 1917, also the quantity of native coal consumed in the Dominion during the same periods. I regret that I cannot go into the matter more in detail, but the Imperial authorities are of opinion that during the period of the war it is inadvisable to give exact information regarding the import and export of gold, silver, &c., and hence the reason for the curtailment of the information usually supplied.

Product.	Year ended 31st December, 1916.		Year ended 31st December, 1917.	
	Quantity.	Value.	Quantity.	Value.
		£		£
Tungsten-ore	266 tons	49,070	161 tons	28,972
Miscellaneous minerals	7,335 "	14,614	2,357 "	6,844
New Zealand coal exported	328,183 "	326,553	221,125 "	236,063
New Zealand coal used in New Zealand	1,928,952 "	964,476	1,847,294 "	923,647
Kauri-gum	5,456 "	339,882	4,594 "	291,917
Coke	33 "	57	119 "	240

COAL-MINING.

The output of coal during 1917 amounted to 2,068,419 tons, as compared with 2,257,135 tons during 1916, being a decrease of 188,716 tons.

The following is a comparative statement of the coal and lignite raised during the years 1915, 1916, and 1917 :—

Inspection District.	Output for 1916.	Output for 1917.	Decrease, 1917.	Output for 1915.	Increase between Years 1916 and 1915.
	Tons.	Ton .	Tons.	Tons.	Tons.
Northern	486,114	470,638	15,476	460,415	25,699
West Coast	1,295,635	1,146,778	148,857	1,278,994	16,641
Southern (Canterbury, Otago, and Southland)	475,386	451,003	24,383	469,215	6,171
Totals	**2,257,135**	**2,068,419**	**188,716**	**2,208,624**	**48,511**

New collieries have been laid down by the Taupiri Coal-mines (Limited) at Awaroa, near Rotowaro Station, on the Huntly-Pukemiro Railway; also by the Mount Torlesse Collieries (Limited), near Avoca, on the Christchurch-Arthur's Pass Railway. Both these collieries will supply brown coal of superior quality. In the Wairio district, Southland, several new coal-mining leases have been taken up to work portions of the extensive area of brown coal known to occur in that locality.

The comparative tonnage of the various classes of coal for the years 1916 and 1917 is summarized as follows :—

Class.	Output for 1917.	Output for 1916.	Increase or Decrease for 1917.
	Tons.	Tons.	Tons.
Bituminous and semi-bituminous ..	1,247,989	1,422,074	*Decrease* 174,085
Brown coal	629,174	653,898	,, 24,724
Lignite	191,256	181,163	*Increase* 10,093
Totals	**2,068,419**	**2,257,135**	**Decrease 188,716**

The decline in the coal-production was due to the reduction in the number of coal-miners owing to voluntary enlistment, also to the restriction of output at most of the principal mines during the first four months of the year. So serious was this that the average output for each person employed underground declined from 750 tons during 1916 to 715 tons during 1917.

The quantity of coal imported into the Dominion during 1917 was 291,597 tons, as against 293,956 tons during 1916.

I find on investigation that the working-conditions as regards output of quite a number of coal-mining leases granted by the Crown are not being duly observed. In some cases, indeed, there is not, and never has been, any output at all, the leases being apparently held purely for speculative purposes. This is a state of affairs that cannot possibly be allowed to continue, especially at a time like the present, when there is such a scarcity of coal on the market. I am therefore calling upon all defaulting lessees to forthwith comply with the terms of their leases, failing which it will be necessary to cancel them; and several have been cancelled already.

TUNGSTEN-ORE (SCHEELITE).

The quantity and value of scheelite concentrate obtained during 1917 was 199 tons 8 cwt., value £37,863, as compared with 258 tons, value £47,374, during 1916.

The quantity exported during 1917 was 161 tons, value £28,972, being 38 tons, value £8,891, less than that produced, this difference between production and export being due to the holding of output for an increase in price by some producers.

The price paid by the Imperial Government, which has commandeered all tungsten-ore produced in the Empire, has recently been raised to a price per unit which is more than double the pre-war market price.

During the approaching summer a careful geological examination will be made of the scheelite-mining district in Otago.

PETROLEUM.

Drilling for petroleum has been carried on in Taranaki, Hawke's Bay, and Westland. The principal operations were those of the Taranaki Oil-wells (Limited), situated at Moturoa and Waitara; six boreholes have been drilled at the former place and two at the latter, the greatest depth attained being 4,040 ft., at Moturoa. This company gained the Government bonus of £7,500 for the production of the first 1,000,000 gallons of marketable crude oil, and £1,250 for the first 250,000 gallons of refined oil.

The deepest oil-prospecting bore in the Dominion is that of the Taranaki Oil Lands Company (Limited), at Moturoa, where a depth of 5,140 ft. has been attained, and drilling operations are still being continued.

The petroleum industry of New Zealand has not so far proved profitable, the yields of oil hitherto obtained being too small to cover expenses. To encourage the industry the Government has paid by way of bonus, loans, or subsidy over £20,000, and is still assisting.

IRON.

For many years past attempts have been made to smelt the beach magnetic ironsand which occurs in millions of tons near New Plymouth, and at the present time the New Zealand Iron-ore Smelting and Manufacturing Company is engaged in constructing, near the Breakwater at Moturoa, a blast furnace and works necessary for the production of pig iron. This company has for several years been engaged upon experimental operations with the ironsand by the Heskett process, and has already produced a quantity of pig. The expenditure by the company, I understand, exceeds £30,000, and their enterprise is deserving of success.

Nothing has yet been done to develop the large deposits of limonite at Parapara, held under lease from the Government by the Parapara Iron Company and Mr. T. A. Turnbull.

QUICKSILVER.

The Whangarei Cinnabar-mining Company, having developed its mine, installed a furnace, and has obtained therefrom 4,125 lb. of quicksilver as the result of treating 198 tons of ore. The quicksilver, I understand, was sold in Auckland at from 5s. to 7s. per pound. A considerable reserve of ore has been proved.

In addition to this company two parties of miners are prospecting for cinnabar in the same locality.

For the purpose of encouraging production the Government during August, 1917, offered a bonus of 4d. per pound on the production of the first 100,000 lb. of good marketable retorted quicksilver, but no claim has yet been made.

KAURI-GUM.

The quantity of kauri-gum exported during 1917 amounted to 4,594 tons, value £291,917, as compared with 5,456 tons, value £339,882, during 1916; the total quantity and value of this resin exported to the end of 1917 being 353,873 tons and £18,167,939 respectively. The decline in output is largely due to the closing by war of the European market.

PHOSPHATE.

The only operations in connection with the quarrying of phosphate were those of the Ewing Phosphate Company at Clarendon, Otago, which produced during the year 5,050 tons, the total output of this company being 107,522 tons. The total output from other phosphate-quarries in the Clarendon-Milburn district to the end of 1917 was about 5,470 tons.

PERSONS ENGAGED IN MINING.

The following table shows the number of miners in each inspection district and the branch of mining in which they were engaged:—

Classification.	Inspection District.			Totals.		
	Northern.	West Coast.	Southern.	1917.	1916.	Increase or Decrease.
Gold, silver, and tungsten ore	1,416	925	655	2,996	3,703	*Decrease* 707
Coal	843	2,186	954	3,983	3,988	,, 5
Cinnabar	16	..	..	16	10	*Increase* 6
Totals	**2,275**	**3,111**	**1,609**	**6,995**	**7,701**	**Decrease 706**

During the period of the present war the number of metal-miners has declined by 1,468, and coal-miners by 471. To the 26th April, 1917, no fewer than 1,616 miners of all classes had voluntarily enlisted in the New Zealand Expeditionary Forces, miners being exempt from compulsory service. The stoppage of many small alluvial gold-mining claims and some gold-dredges owing to increased prices of materials used is also a contributing cause of the decline in the number of miners employed.

MINING ACCIDENTS.

In or about coal-mines during 1917 the proportion of deaths was exactly 1 per 1,000 persons employed, and 1·93 per 1,000,000 tons raised. On two occasions only during the history of coal-mining in New Zealand has the annual proportion been less. The figures also compare favourably with those obtaining in Great Britain, which generally stands ahead of all other countries as regards the low proportion of fatal colliery accidents. In the North Island collieries no fatal accident occurred during the year, and in the collieries of Canterbury, Otago, and Southland only one has occurred for over five years—a remarkable record, proving the wisdom of the safety provisions included in our mining statutes.

In metal-mines the proportion of fatal accidents per 1,000 persons employed was 2·03, being 0·39 less than during the previous year.

GEOLOGICAL SURVEY.

Officers of the Geological Survey staff visited a large number of localities in order to make examinations of coal, limestone, and other mineral deposits. A detailed survey of the Mokau and north Taranaki coalfield was begun, and it is expected that the survey of the area selected for examination will be completed during the next field season.

Three palæontological bulletins were published during the year. One of these dealt with the Cretaceous faunas of Marlborough and northern Canterbury, and was the work of Mr. Henry Woods, of Cambridge University. Another, which had as its subject the Older Mesozoic floras of New Zealand, was written by Dr. E. A. Newell Arber, also of Cambridge University. The work done by these eminent specialists will be of service in promoting geological research in New Zealand. The other publications issued during the year include bulletins on the geology of the Tuapeka and Oamaru districts, one by Dr. P. Marshall and the other by Professor J. Park, and a list of Tertiary Mollusca. The report on the limestone and phosphate deposits of the Dominion mentioned in my last statement has been prepared, and is now in the Printer's hands.

STATE COLLIERIES.

The output from the State collieries during the late financial year was 246,273 tons, of which the Liverpool Colliery produced 128,196 tons, as against 133,013 tons during the previous year, and Point Elizabeth Colliery 118,077 tons, as against 132,769 tons during the previous year. The business resulted in a profit of £24,467, as compared with £18,521 during the previous year. The State Coal-mines Account

is now substantially in credit, and it will shortly be practicable to pay off a portion of the debenture capital. The average price realized for State coal during the twelve months was £1 2s. 4d. per ton, as compared with 19s. 4·76d. during the preceding year, but the retail rate to householders has not been increased.

The gross capital expenditure on the State coal-mines up to the 31st March last amounted to £359,730, and no less than £208,400 of this amount has now been written off out of profits for depreciation, &c., being nearly 58 per cent. of the total capital embarked. The present book value of our assets is less than £150,000, but the actual value is largely in excess of that sum. It is extremely pleasing to be in a position to invite attention to these very favourable figures, especially in view of the fact that the coal sold to householders through the State depots is charged at a much lower rate than is usually obtained for other coals of similar character.

It is also very gratifying to be able to state that during the past six years there has been no fatal accident at any State colliery, the health and safety of the employees being the first consideration of the management.

Owing to the approaching exhaustion of the present Point Elizabeth Mine it has become necessary, if we are to retain the large business that we have built up, to look around for another suitable colliery to take its place.

An area of coal-bearing land in the Waikato district has recently been brought under my notice, and an option has been obtained over it. The land is now being carefully bored and otherwise tested for coal, and if the reports of the departmental experts are favourable, arrangements will be made to obtain a lease of the area for an extended period.

A valuable extension of the Point Elizabeth coal-measure has, however, recently been proved in the low coastal hills to the north of the Point Elizabeth Colliery, towards Nine-mile Creek. Boring is still in progress in this area, but sufficient evidence has already been obtained to justify the statement that a workable coal-seam of superior quality and easy of access has been proved, and that the area exceeds 200 acres.

The coal-seam, which is probably identical with that mined at Point Elizabeth, varies in thickness up to 22 ft. A branch railway from near Runanga of about three miles in length would connect the mine with the Government railway system.

SCHOOLS OF MINES.

The expenditure by the Department on the seven schools of mines amounted last year to £4,553. Some of the schools, I fear, have ceased to justify the Government expenditure thereon, due doubtless to the decline of mining in certain centres. In other districts the schools serve a good purpose in preparing candidates for Government certificates of competency under the Mining and Coal-mines Acts.

SUBSIDIZED PROSPECTING.

During the year ended 31st March, 1918, nine approved prospecting parties were granted subsidies amounting to £1,933, of which £882 was expended during the year. In addition to this, £518 granted during previous years was expended by fifteen other parties. Upon these operations sixty-seven persons were engaged intermittently during the year. The results disclosed were in some cases very encouraging, resulting in one instance in the installation of an up-to-date dredging plant, and in another to the formation of a sluicing company which is already expending considerable capital.

In addition to subsidized prospecting parties, financial aid towards prospecting deep levels which was given during the previous year to two West Coast companies produced encouraging results, especially in the case of the North Blackwater Mine.

ROADS AND TRACKS.

The expenditure on roads and tracks by subsidies and direct grants during the year was £6,911. The amount would have been much larger had more labour been available.

GOVERNMENT WATER-RACES.

The Waimea-Kumara and Mount Ida water-races supplied sixty-three miners with water for alluvial gold-mining, by which gold to the approximate value of £15,075 was obtained. The cash received for water sold amounted to £2,430, and the expenditure on the upkeep and management of the races was £3,221.

COAL-MINERS' RELIEF FUND.

The following is a statement of the accounts of the fund during the last two financial years :—

	Year ended 31st March, 1917.	Year ended 31st March, 1918.
	£	£
Contributions	.. 1,980	1,655
Allowance on account of accidents, &c.	.. 1,427	1,193
Balance carried forward	.. 8,172	8,980

It is gratifying to observe that the available funds are gradually increasing.

STONE-QUARRIES.

The provisions of the Stone-quarries Act, 1910, are now being enforced. Unfortunately there is no provision in the Act for returns of output by quarry-owners, so the statistics available are incomplete. The Inspectors have, however, been able to collect some returns which show that during 1917 at least 150 quarries, employing 1,000 persons, were in operation, and these produced an output of not less than 1,040,000 tons of stone.

During the year two persons lost their lives by quarry accidents.

ABANDONMENT OF UNCONSTRUCTED AND DISUSED WATER-RACES.

With the decline of alluvial gold-mining in some parts of the South Island a number of water-races held under mining privileges are no longer in operation, and have become practically abandoned. In some cases such water rights are of value for irrigation or other industrial purposes. I have therefore taken steps to have the registers purged of unused titles, so that the rights may revert to the Crown. Reports have been obtained from Inspectors of Mines upon most of the water-races which appear in the Wardens' Court registers, and in some cases proceedings have been taken under the Mining Act for striking such races off the registers. A considerable amount of work has been involved in these investigations, and progress has been slow ; but, notwithstanding this, good work is being done towards purging the registers of obsolete titles. The number cancelled already exceeds one hundred.

TABLES AND REPORTS.

The usual statistical tables and departmental reports are appended.

TABLES TO ACCOMPANY THE MINES STATEMENT.

No. 1.

TABLE SHOWING THE QUANTITY AND VALUE OF MINERALS, EXCEPT GOLD AND SILVER, ENTERED FOR EXPORTATION DURING THE YEARS ENDED THE 31ST DECEMBER, 1916 AND 1917, AND THE TOTAL VALUE SINCE THE 1ST JANUARY, 1853. THE COAL-OUTPUT IS ALSO INCLUDED.

Name of Metal or Mineral.	For Year ended the 31st December, 1917.		For Year ended the 31st December, 1916.		Total from the 1st January, 1853, to the 31st December, 1917.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Mineral produce, including kauri-gum—	Tons.	£	Tons.	£	Tons.	£
Copper-ore	6	163	..	..	1,504	19,372
Chrome-ore	..	..	..	..	5,869	38,002
Antimony-ore	..	..	..	..	3,768	54,941
Manganese-ore	..	..	..	..	19,364	61,905
Hæmatite ore	..	..	..	..	77	469
Tungsten-ore	161	28,972	266	49,070	1,994	230,522
Sulphur (crude)	..	2	..	..	4,927	13,241
Mixed minerals*	2,351	6,679	7,335	14,614	53,673	231,556
Coal (New Zealand) exported	221,125	236,063	328,183	326,553	4,712,240	4,429,442
Coke exported	119	240	33	57	16,683	25,366
Coal, output of mines in Dominion (less exports)	1,847,294	923,647	1,928,952	964,476	41,446,350	20,631,364
Oil-shale	..	..	..	..	14,444	7,236
Kauri-gum	4,594	291,917	5,456	339,882	353,873	18,167,939
Total quantity and value of minerals other than gold and silver	2,075,650	1,487,683	2,270,225	1,694,652	46,634,766	43,911,355

* Including lime, 32 tons; pumice-sand, 2,161 tons; pumice-stone, 136 tons; and stone, 19 tons.

No. 2.

TABLE SHOWING THE INCREASE OR DECREASE IN THE ANNUAL PRODUCTION OF COAL AND OIL-SHALE IN THE DOMINION, AND THE QUANTITY OF COAL IMPORTED SINCE 1878.

Year.	Coal and Shale raised in the Dominion.		Coal imported.		
	Tons.	Yearly Increase or Decrease.	Tons.	Increase over Preceding Year.	Decrease below Preceding Year.
Prior to 1878	709,931	..	..	..	..
1878	162,218	..	174,148	..	..
1879	231,218	*Inc.* 69,000	158,076	..	16,072
1880	299,923	„ 68,705	123,298	..	33,778
1881	337,262	„ 37,339	129,962	6,664	..
1882	378,272	„ 41,010	129,582	..	380
1883	421,764	„ 43,492	123,540	..	6,042
1884	480,831	„ 59,069	148,444	24,904	..
1885	511,063	„ 30,232	130,202	..	18,242
1886	534,353	„ 23,290	119,873	..	10,329
1887	558,620	„ 24,267	107,230	..	12,643
1888	613,895	„ 55,275	101,341	..	5,889
1889	586,445	*Dec.* 27,450	128,063	26,722	..
1890	637,397	*Inc.* 50,952	110,939	..	17,124
1891	668,794	„ 31,397	125,318	14,379	..
1892	673,315	„ 4,521	125,453	135	..
1893	691,548	„ 18,233	117,444	..	8,009
1894	719,546	„ 27,998	112,961	..	4,483
1895	726,654	„ 7,108	108,198	..	4,763
1896	792,851	„ 66,197	101,756	..	6,442
1897	840,713	„ 47,862	110,907	9,151	..
1898	907,033	„ 66,320	115,427	4,520	..
1899	975,234	„ 68,201	99,655	..	15,772
1900	1,093,990	„ 118,756	124,033	24,378	..
1901	1,239,686	„ 145,696	149,764	25,371	..
1902	1,365,040	„ 125,354	127,853	..	21,911
1903	1,420,229	„ 55,189	163,923	36,070	..
1904	1,537,838	„ 117,609	147,196	..	16,727
1905	1,585,756	„ 47,918	169,046	21,850	..
1906	1,729,536	„ 143,780	207,567	38,521	..
1907	1,831,009	„ 101,473	220,749	13,182	..
1908	1,860,975	„ 29,966	287,808	67,059	..
1909	1,911,247	„ 50,272	258,185	..	29,623
1910	2,197,362	„ 286,115	232,378	..	25,807
1911	2,066,073	*Dec.* 131,289	188,068	..	44,310
1912	2,177,615	*Inc.* 111,542	364,359	176,291	..
1913	1,888,005	*Dec.* 289,610	468,940	104,581	..
1914	2,275,614	*Inc.* 387,609	518,070	49,130	..
1915	2,208,624	*Dec.* 66,990	353,471	..	164,599
1916	2,257,135	*Inc.* 48,511	293,956	..	59,515
1917	2,068,419	*Dec.* 188,716	291,597	..	2,359

No. 3.

TABLE SHOWING THE OUTPUT OF COAL FROM THE VARIOUS COALFIELDS, AND THE COMPARATIVE INCREASE AND DECREASE, FOR THE YEARS 1916 AND 1917, TOGETHER WITH THE TOTAL APPROXIMATE QUANTITY OF COAL PRODUCED SINCE THE MINES WERE OPENED.

Name of Coalfield.	Output.		Increase.	Decrease.	Approximate Total Output up to 31st December, 1917.
	1917.	1916.			
	Tons.	Tons.	Tons.	Tons.	Tons.
North Auckland	101,320	126,506	..	25,186	3,613,954
Waikato (including Mokau) ..	369,318	359,608	9,710	..	4,929,983
Nelson	19,616	26,147	..	6,531	328,287
Buller	652,183	714,015	..	61,832	15,053,254
Inangahua	14,766	11,402	3,364	..	279,275
Grey	460,213	544,071	..	83,858	9,170,671
Canterbury	18,063	19,465	..	1,402	736,660
Otago	274,306	281,552	..	7,246	9,127,443
Southland	158,634	174,369	..	15,735	2,919,063
Totals	**2,068,419**	2,257,135	13,074	201,790*	**46,158,590**

* Net decrease, 188,716 tons.

No. 4.

TABLE SHOWING THE OUTPUT OF DIFFERENT CLASSES OF COAL.

Class of Coal.	Output.		Increase.	Decrease.	Approximate Total Output to the 31st December, 1917.
	1917.	1916.			
	Tons.	Tons.	Tons.	Tons.	Tons.
Bituminous and semi-bituminous	1,247,989	1,422,074	..	174,085	30,048,697
Brown	629,174	653,898	..	24,724	13,774,384
Lignite	191,256	181,163	10,093	..	2,335,509
Totals	**2,068,419**	2,257,135	10,093	198,809*	**46,158,590**

* Net decrease, 188,716 tons.

No. 5.

TABLE SHOWING THE TOTAL QUANTITY AND VALUE OF COAL IMPORTED INTO AND EXPORTED FROM NEW ZEALAND FROM AND TO EACH COUNTRY DURING THE YEAR ENDED 31ST DECEMBER, 1917.

Country imported from or exported to.	Imports.		Exports.*	
	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£
United Kingdom	..	..	102,970	117,414
India	22,614	13,196	..	..
Straits Settlements	..	..	2,700	3,839
South African Union	4,864	2,809	..	..
Canada, via West Coast	..	..	5,532	5,532
Australia	252,116	189,798	32,073	33,563
Fiji	..	..	12,672	11,871
Gilbert and Ellice Islands	..	..	1,000	1,550
Japan	6,968	5,303	500	750
Egypt	..	..	206	226
Portuguese East Africa	5,035	3,046	..	..
Chile	..	..	994	1,390
Panama	..	..	300	367
U.S.A., via East Coast	..	..	2,114	3,240
U.S.A., via West Coast	..	..	13,529	12,866
German Samoa	..	..	2,068	2,082
Guam	..	..	46,087	43,092
Hawaii	..	..	11	20
Society Islands	..	..	2,134	2,180
Tonga	..	..	1,548	1,569
Tuamotu Archipelago	..	..	2,405	2,405
Totals	291,597	214,152	228,843†	243,956

* Bunkers and cargo, and coal mined in other countries as well as in New Zealand. † Of this total 7,718 tons, value £7,893, was not New Zealand produce.

No. 6.

NUMBER OF PERSONS ORDINARILY EMPLOYED IN MINING OTHER THAN COAL DURING THE YEAR ENDED 31ST DECEMBER, 1917.

County or Borough.	Number of Persons ordinarily employed at				Total.	
	Gold-quartz Mines.	Gold Alluvial Mines.	Gold-dredges.	Mines other than Gold and Coal.	1917.	1916.
NORTHERN INSPECTION DISTRICT.						
County and Borough of Thames ..	117	..	..	..	117	153
County of Ohinemuri	291	..	..	..	291	359
,, Coromandel	19	..	..	..	19	72
,, Piako	5	..	..	..	5	3
Borough of Waihi	971	..	..	..	971	1,099
Tauranga district	10	..	..	..	10	3
Puhipuhi district	..	..	..	16	16	5
Great Barrier Island	3	..	..	..	3	4
WEST COAST INSPECTION DISTRICT.						
County of Marlborough	66	7	..	..	73	100
,, Waimea	..	..	..	..	..	10
,, Collingwood	8	4	..	..	12	11
,, Murchison	..	42	..	..	42	53
,, Buller	2	33	..	..	35	37
,, Inangahua	485	6	37	..	528	634
,, Grey	..	66	10	..	76	100
,, Westland	..	113	37	..	150	177
Borough of Ross	7	2	..	..	9	18
,, Hokitika	..	..	..	..	..	4
SOUTHERN INSPECTION DISTRICT.						
County of Taieri	4	1	..	12	17	7
,, Tuapeka	5	112	2	2	121	198
,, Vincent	4	42	105	..	151	193
,, Maniototo	..	51	7	..	58	63
,, Waihemo	31	..	..	11	42	53
,, Waitaki	..	16	..	..	16	17
,, Lake	2	31	..	63	96	110
,, Wallace	..	32	..	..	32	47
,, Bruce	..	..	3	..	3	7
,, Southland	..	60	59	..	119	173
Stewart Island	..	..	..	..	..	3
Totals	2,030	618	260	104	3,012	3,713

Summary of Persons ordinarily employed in or about New Zealand Mines during 1917 and 1916.

——	1917.	1916.	Increase or Decrease.
Gold, silver and gold, and scheelite	2,908	3,614	Dec. 706
Other metalliferous mines, including scheelite ...	104	99	Inc. 5
Coal-mines	3,983	3,988	Dec. 5
Totals	6,995	7,701	Dec. 706

No. 7.

STATEMENT OF AFFAIRS OF MINING COMPANIES, AS PUBLISHED IN ACCORDANCE WITH THE COMPANIES ACT, 1908.

Name of Company.	Date of Registration.	Subscribed Capital.	Amount of Capital actually paid up.	Value of Scrip given to Shareholders on which no Cash paid.	Number of Shares allotted.	Amount paid per Share.	Arrears of Calls.	Number of Shareholders at present.	Number of Men employed.	Quantity and Value of Gold and Silver produced since Registration		Total Expenditure since Registration.	Total Amount of Dividends paid.	Amount of Debts owing by Company.
										Quantity.	Value.			
AUCKLAND DISTRICT.														
		£	£	£		£ s. d.	£			Oz.	£	£	£	£
Alluvial Claims (Limited)	24/10/16	2,500	1,480	600	50	50 0 0	..	19	3	..	..	1,558	..	53
Botha Gold-mines (Limited)	16/10/16	3,750	719	1,250	7,500	0 0 6	..	65	2	..	..	687	..	3
Cinnabar-mines of New Zealand	19/12/13	6,500	996	4,063	13,000	0 8 9	629	26	..	..	..	1,064	..	1,079
Gallant Gold-mining Company (Limited) ..	20/10/15	525	524	2,125	21,210	0 2 6	3	47	..	..	..	546	..	19
Golden Belt Gold-mining Company (Limited) ..	22/12/11	23,451	7,512	17,027	117,255	0 4 0	..	115	19	14,908	16,272	18,796	..	899
Good Hope Gold-mining Company (No Liability)	10/11/10	12,975	1,982	1,622	129,746	0 0 7	..	69	..	99	277	2,553	..	4
Great Northern Waihi Gold-mining Company (Limited)	13/8/14	17,000	5,433	6,000	88,000	..	28	132	1	..	..	4,193	..	..
Hauraki Reefs (Limited)	28/4/10	17,500	11,682	5,083	175,000	0 1 8	18	290	..	..	9,176	20,831	..	15
Komata Reefs Gold-mining Company (Limited)..	16/10/00	40,000	..	..	215,593	0 1 0	..	375	..	441,579	372,313	329,555	7,467	..
Kuranui Gold-mining Company (No Liability) ..	5/6/14	21,750	1,294	..	87,000	0 0 3	..	56	3	..	22	1,526	..	20
Maoriland Mines (Limited)	4/8/13	440	440	..	105,800	0 0 1	..	98	..	..	2,620	3,611	..	..
New Waitaia Gold-mining Company (Limited) ..	25/2/09	15,000	8,113	2,500	150,000	0 1 5	..	133	1	6,483	24,026	22,512	1,875	12
New Zealand Crown Mines (Limited)	13/3/14	39,407	11,348	..	116,529	0 4 0	305	163	4	9,320	12,430	27,025	..	12
North Prince of Wales Consolidated Gold-mining Company (No Liability)	23/3/12	3,019	4,099	1,250	24,150	0 2 3	..	12	..	..	..	3,462	..	571
Occidental Consolidated Gold-mining Company (No Liability)	3/8/09	5,500	5,246	..	107,938	0 1 0	..	138	5	4,649	13,659	18,748	1,349	..
Ohinemuri Gold and Silver Mines (Limited) ..	1/6/14	66,849	6,314	55,000	133,698	0 5 6	143	142	4	..	..	5,930	..	30
Old Hauraki Gold-mines (Limited)	3/8/07	18,003	11,252	..	180,030	0 1 3	..	272	..	6,844	20,346	28,545	2,625	98
Rising Sun Gold-mining Company (Limited) ..	1/10/08	16,555	11,125	2,229	110,368	0 2 2	..	162	4	9,948	19,599	28,704	2,759	500
Saxon Gold-mining Company (Limited) ..	2/12/07	35,000	20,138	13,333	200,000	0 2 0⅝	136	111	1	113	306	20,780	..	10
Sylvia Reefs (Limited)	13/4/17	10,779	3,572	..	107,787	0 0 8	21	156	25	1,760	1,457	6,864	..	3,772
Tairua Broken Hills Gold-mining Company (Limited)	1/5/16	6,000	3,556	..	60,000	0 1 3	110	65	1	236	373	3,812	..	339
United Gold-mine (Limited)	17/7/15	17,242	6,620	10,000	17,242	1 0 0	..	47	6	..	..	7,267	..	1,242
Waihi Extended Gold-mining Company (Limited)	12/8/95	149,967	58,243	5,498	149,967	0 10 2½	262	122	12	2	4	59,817	..	712
Waihi-Paeroa Gold-extraction Company (Limited)	4/3/10	125,000	65,000	60,000	125,000	1 0 0	..	150	67	43,600	251,455	319,714	12,499	1,615
Waiotahi Gold-mining Company (Limited) ..	28/7/71	18,000	16,000	..	240,000	0 1 4	..	570	4	..	678,941	281,564	400,800	7
Waitangi Consolidated Gold-mining Company (No Liability)	23/10/08	147,833	27,214	1,000	170,800	..	..	65	17	..	3,480	43,726	..	7,041
Waitawheta Gold-mining Company (No Liability)	22/7/14	10,156	458	4,849	96,982	0 0 1½	148	57	1	..	..	873	..	1
Whangarei Cinnabar (Limited)	9/7/15	6,230	4,586	1,623	24,920	0 5 0	9	96	12	1,500 lb.*	375	2,469	..	397
Zeehan Consolidated (Limited)	23/10/10	15,000	3,060	3,700	150,000	.. 0 0 6½	107	14	..	..	..	3,060	..	..

* Quicksilver.

STATEMENT OF AFFAIRS OF MINING COMPANIES, AS PUBLISHED IN ACCORDANCE WITH THE COMPANIES ACT, 1908—*continued.*

Name of Company.	Date of Registration.	Subscribed Capital.	Amount of Capital actually paid up.	Value of Scrip given to Shareholders on which no Cash paid.	Number of Shares allotted.	Amount paid per Share.	Arrears of Calls.	Number of Shareholders at present.	Number of Men employed.	Quantity and Value of Gold and Silver produced since Registration.		Total Expenditure since Registration.	Total Amount of Dividends paid.	Amount of Debts owing by Company.
										Quantity.	Value.			
NELSON DISTRICT (INCLUDING WEST COAST).														
		£	£	£		£ s. d.	£			Oz.	£	£	£	£
Addison's Gold-mining Company (Limited) ..	28/5/15	45,000	10,000	35,000	45,000	1 0 0	..	40	3	22	84	14,086	..	134
Blackwater South Gold-mining Company (Limited)	2/11/14	6,601	5,814	22,500	13,203	0 9 6	143	110	..	..	..	5,719	..	140
Boatman's Consolidated Gold-mines (Limited) ..	10/8/15	28,982	18,210	22,000	29,982	0 15 6	1,801	277	18	..	..	23,278	..	5,068
Dominion Consolidated Developing Company (Limited)	18/1/11	15,000	7,000	8,000	15,000	1 0 0	..	47	50	11,487	42,579	95,363	3,750	686
Five-mile Beach Gold-extraction Company (Limited)	16/6/13	16,305	727	7,000	16,305	1 0 0	..	75	..	..	..	6,274	..	2,541
Kapitea Goldfields (Limited)	–/7/16	3,750	3,720	6,250	10,000	1 0 0	30	46	13	793	3,882	7,824	500	315
Mount Greenland Gold-quartz Mining Company (Limited)	21/11/14	5,000	4,448	855	10,000	0 10 0	..	63	7	739	2,882	4,280	250	120
Murray Creek Gold-mining Company (Limited) ..	30/5/11	50,000	44,065	2,000	50,000	1 0 0	227	132	85	10,988	47,357	95,226	..	350
New Big River Gold-mining Company (Limited)	19/8/07	6,000	600	..	24,000	0 0 6	..	62	43	62,852	254,938	153,895	98,400	2,073
New Keep-it-Dark Mines (Limited)	26/2/17	17,018	9,643	32,983	50,000	0 17 0	939	195	40	923	3,466	12,320	..	10,610
North Blackwater Development Syndicate (Limited)	19/11/15	25,640	17,860	1,000	2,564	10 0 0	..	31	20	..	..	21,445	..	230
Worksop Gold-dredging Company (Limited) ..	20/3/07	12,000	10,500	1,500	12,000	1 0 0	..	89	13	25,766	100,228	25,766	100,228	1,659
OTAGO DISTRICT (INCLUDING SOUTHLAND).														
Deep Stream Gold-mining Company (Limited) ..	19/11/06	2,500	500	2,000	2,500	1 0 0	..	7	3	2,528	9,713	9,428	2,000	298
Dredges (Limited)	28/4/17	10,000	5,000	..	10,000	0 10 0	88	12	..	..	..	4,698	..	204
Earnscleugh Gold-dredging Company (Limited) ..	15/7/01	8	8	10,992	11,000	1 0 0	1	17	20	55,300	212,321	185,555	30,250	722
Electric Gold-dredging Company (Limited) ..	2/9/99	26,000	..	26,000	26,000	1 0 0	..	262	30	62,240	240,681	117,168	132,593	25
Gabriel's Gully Sluicing Company (Limited) ..	2/5/07	600	180	..	600	0 6 0	..	9	18	10,177	39,347	34,063	10,055	210
Golden Crescent Sluicing Company (Limited) ..	26/11/98	3,500	3,500	..	3,500	1 0 0	..	22	7	9,577	37,320	28,301	11,725	216
Havelock Sluicing Company (Limited)	3/3/08	4,000	3,400	600	4,000	1 0 0	..	12	5	7,428	28,497	22,604	10,100	1,522
Island Block Gold-dredging and Sluicing Company (Limited)	26/2/00	24,030	12,030	12,000	25,000	1 0 0	..	111	4	8,092	31,540	42,143	2,403	1,201
Ladysmith Gold-dredging Company (Limited) ..	19/4/00	12,000	3,964	3,000	14,500	0 10 0	..	79	7	12,843	49,493	37,750	16,376	45
Lawrence Sluicing Company (Limited)	26/11/98	3,500	3,500	..	3,500	1 0 0	..	23	8	567	2,198	3,398	..	74
Lower Nevis Dredging Company (Limited) ..	29/9/06	600	600	600	1,200	1 0 0	..	7	5	6,343	24,375	22,742	2,970	206
Manila Gravel and Gold-dredging Company (Limited)	24/9/13	50,000	5,893	13,954	32,241	0 4 0	205	61	..	..	..	27,769	..	2,718
Mareburn Gold and Scheelite Mining Company (Limited)	18/4/14	6,000	5,947	..	6,000	1 0 0	53	8	9	389	1,398	6,896	..	207
Muddy Terrace Sluicing Company (Limited) ..	4/10/06	14,400	14,400	5,550	19,950	1 0 0	..	126	15	11,411	45,356	75,481	..	16,162
Naseby Dredging and Hydraulic Sluicing Company (Limited)	16/10/97	5,000	2,288	2,000	5,000	0 15 9	..	23	3	5,140	19,800	19,242	4,750	245
New Alexandra Gold-dredging Company (Limited)	16/2/16	1,325	1,326	..	1,325	1 0 0	..	13	9	603	2,305	2,243	..	880
New Crewe Gold-dredging Company (Limited) ..	2/11/16	1,000	500	..	1,000	0 10 0	..	19	..	..	..	481	..	15
New Golden Run Dredging (Limited)	21/11/07	8,000	8,000	..	8,000	1 0 0	..	20	1	8,030	31,074	34,233	3,200	2,500

No. 7—*continued.*

STATEMENT OF AFFAIRS OF MINING COMPANIES, AS PUBLISHED IN ACCORDANCE WITH THE COMPANIES ACT, 1908—*continued.*

Name of Company.	Date of Registration.	Subscribed Capital.	Amount of Capital actually paid up.	Value of Scrip given to Shareholders on which no Cash paid.	Number of Shares allotted.	Amount paid per Share.	Arrears of Calls.	Number of Shareholders at present.	Number of Men employed.	Quantity and Value of Gold and Silver produced since Registration.		Total Expenditure since Registration.	Total Amount of Dividends paid.	Amount of Debts owing by Company.
										Quantity.	Value.			
OTAGO DISTRICT (INCLUDING SOUTHLAND)—*continued.*														
		£	£	£		£ s. d.	£			Oz.	£	£	£	£
Ngapara Gold-dredging Company (Limited) ..	9/9/11	..	..	2,400	3,000	0 16 0	..	10	9	6,730	125,828	21,708	4,425	238
Nokomai Hydraulic Sluicing Company (Limited)	26/3/98	24,000	7,000	17,000	24,000	1 0 0	..	68	27	44,825	167,556	124,094	49,884	412
Olrig Dredging Company (Limited)	12/10/16	2,000	..	2,000	2,000	..	..	70	8	386	1,465	2,405	300	1,046
Ourawera Gold-mining Company (Limited) ..	23/5/95	3,000	3,000	..	3,000	1 0 0	..	17	8	14,199	56,618	45,718	14,815	..
Phœnix Water-race Company (Limited) (Regd.)	12/10/67	1,500	1,500	..	1,000	1 10 0	..	19	1	..	..	1,424	9,438	16
Pukepouri Gold-mining Company (Limited) ..	22/1/14	2,500	2,257	..	2,500	1 0 0	244	24	..	22	87	3,581	..	1,086
Pukerangi Gold and Scheelite (Limited) ..	15/8/17	15,000	1,344	5,000	30,000	0 9 0	156	26	12	1½ tons*	229	1,684	..	1,630
Rise-and-Shine Gold-dredging Company (Limited)	24/2/00	10,000	9,746	2,000	12,000	1 0 0	12	157	19	48,035	186,442	143,064	53,100	840
Rising Sun Gold-dredging Company (Limited) ..	16/2/01	8,000	5,500	2,500	8,000	1 0 0	..	79	10	24,102	93,281	71,058	24,000	416
Round Hill Mining Company (Limited) ..	30/7/02	28,245	6,753	21,492	5,649	5 0 0	..	180	16	41,645	178,665	174,436	12,287	1,600
Sailor's Gully (Waitahuna) Gold-mining Company (Limited)	3/6/96	8,400	200	8,200	8,400	1 0 0	..	24	7	6,175	..	..	..	..
Scandinavian Water-race Company (Limited) ..	10/12/07	7	..	9,750	9,757	1 0 0	..	20	5	7,319	27,869	30,457	..	7,044
Skipper's Sluicing Company (Limited) ..	20/11/11	3,450	345	3,105	3,450	1 0 0	..	30	2	1,300	5,007	5,166	..	213
Stoneburn Mining Company (Limited) ..	2/2/14	4,000	4,000	..	4,000	1 0 0	..	12	8	243	850	4,444	..	849
Success Gold-dredging Company (Limited) ..	25/5/10	10,000	8,000	2,000	10,000	1 0 0	..	127	11	10,713	42,171	44,162	5,000	485
Tallaburn Hydraulic Sluicing Company (Limited)	3/12/04	1,200	1,200	..	12	..	..	9	2	1,689	6,501	..	1,380	344
Teviot-Molyneux Gold-mining Company (Limited)	24/12/09	35,000	25,000	10,000	35,000	1 0 0	..	23	10	494	1,905	47,208	..	31,793
Undaunted Tinkers Gold-mining Company (Limited)	6/9/17	20,007	644	15,000	20,007	0 16 0	363	48	8	131	504	3,638	..	3,823
United M. and E. Water-race Company (Regd.)..	(8/4/72) (23/4/72)	7,600	7,600	..	152	50 0 0	..	8	3	16,647	64,157	70,596	3,078	406
Vinegar Hill Hydraulic Sluicing Company (Limited)	23/9/00	6,000	6,000	..	6,000	1 0 0	..	13	3	3,975	15,267	14,146	..	274
Waikaka Deep Lead Gold-dredging Company (Limited)	16/6/13	6,000	6,000	..	6,000	1 0 0	..	13	1	3,130	12,520	20,852	300	2,833
FOREIGN MINING COMPANIES.														
Hohonu Diamond Terrace Gold-mining and Water-race Company	8/6/14	..	3,644	..	..	..	570	..	5	494	1,938	12,188	..	400

* Scheelite.

APPENDICES TO THE MINES STATEMENT.

APPENDIX A.

REPORTS RELATING TO METALLIFEROUS MINES AND STONE-QUARRIES.

The Inspecting Engineer of Mines to the Under-Secretary of Mines.

Sir, — Wellington, 6th June, 1918.

I have the honour to present my annual report on metalliferous mines, together with annexures and statistical information, for the year ended 31st December, 1917.

In accordance with the usual practice, the tables showing expenditure on roads, bridges, tracks, prospecting operations, &c., are for the period covered by the financial year—viz., from the 1st April, 1917, to the 31st March, 1918.

The reports, &c., are divided into the following sections:—

I. Production of Minerals.

II. Persons employed.

III. Accidents.

IV. Gold-mining.
- (1.) Quartz-mining.
- (2.) Dredge Mining.
- (3.) Alluvial Mining.

V. Minerals other than Gold.

VI. Stone-quarries.
- (1.) Quarry Inspection and Statistics.
- (2.) Accidents.
- (3.) Portland-cement Manufacture at Golden Bay

VII. State Aid to Mining.
- (1.) Subsidized Prospecting.
- (2.) Government Prospecting-drills.
- (3.) Subsidized Roads on Goldfields.
- (4.) Government Water-races.

VIII. Schools of Mines.

Annexures,—
- (A.) Summary of Reports by Inspectors of Mines
- (B.) Reports of Water-race Managers.

I. PRODUCTION OF MINERALS.

The following statement shows the value of the exports (other than gold and silver) from metal-mines, quarries, and kauri-gum fields from the 1st January, 1853, to the 31st December, 1917:—

Classification.	1916.	1917.	Increase or Decrease.	Total from the 1st January, 1853, to the 31st December, 1917.
	£	£	£	£
Tungsten-ore	49,070	28,972	Dec. 20,098	230,522
Other minerals	14,614	6,847	" 7,767	419,489
Kauri-gum...	339,882	291,917	" 47,965	18,167,939
Totals	**403,566**	**327,736**	**Dec. 75,830**	**18,817,950**

II. PERSONS EMPLOYED.

The following statement shows the number of persons ordinarily employed in or about the metalliferous mines of the Dominion during the year:—

Classification.	Inspection District.			Total, 1917.
	Northern.	West Coast.	Southern.	
Gold, silver, and tungsten	1,416	925	655	2,996
Cinnabar	16	...	...	16
Totals for 1917	1,432	925	655	**3,012**
Totals for 1916	1,698	1,144	871	3,713

During the period of the present war—viz., 1914 to 1917 inclusive—the number of metal-miners employed has declined 1,468, and coal-miners 471. Included in the New Zealand Expeditionary Forces up to the 26th April, 1917, were 1,616 miners of all classes.

III. ACCIDENTS.

The following is a summary of persons killed or seriously injured in metalliferous mines during 1917:—

Inspection District.	Explosives.		Falls of Ground.		In Shafts.		Miscellaneous Underground.		Surface.		About Dredges.		Total.	
	Killed.	Seriously Injured.	Killed.	Seriously Injured.	Killed.	Seriously Injured.	Killed.	Seriously Injured.	Killed.	Seriously Injured.	Killed.	Seriously Injured.	Killed.	Seriously Injured.
Northern	1	...	1	...	1	2	...	1	2	1	...	...	5	4
West Coast	...	...	1	1	...	...	...	...	...	...	...	...	1	1
Southern	...	...	...	...	...	...	...	...	...	...	1	...	1	...
Totals	**1**	...	**2**	**1**	**1**	**2**	...	**1**	**2**	**1**	**1**	...	**7**	**5**

Being at the rate of 2·03 fatalities per 1,000 persons employed.

None of the seven fatal accidents were due to any breach of the law by mine-owners or management. Two fatalities were caused by defects in mechanical appliances. The actual cause of one blasting and one cage accident was never proved. The two fatalities from falls of ground were of the class which are considered unavoidable, the individual judgment of the miner being a variable equation. Some experienced and careful miners at times take risks; unforeseen falls will always occur in mining operations

The following is a brief description of fatal accidents in connection with metalliferous mining operations during 1917 :—

Date.	Name and Situation of Mine.	Name, Age, and Occupation of Person killed.	Cause of Accident, Nature of Injuries, and Remarks.
22 Feb. ..	Waihi Grand Junction Mine, Waihi ..	William Evan Crompton (40), shift boss..	With the chamberman he assisted a miner, C. Naylor, who had been slightly injured, into the cage at No. 6 level. The cage had no gate, but had a hinged bar at each end 4 ft. from the floor; but there is no evidence that such bars were put up. Also it was provided with chains attached to its interior sides, which could be clasped round the waists of persons travelling. There was no evidence to show if deceased made use of such chains on this occasion. The chamberman entered the cage and signalled to ascend. During the ascent, for no accountable reason the deceased fell out of the cage and was instantaneously killed. The chamberman was subsequently prosecuted by Mr. M. Paul, Inspector of Mines, for a breach of Regulation 94 (12) under the Mining Act, which specifies that every cage shall be provided with suitable gates or other approved barriers when persons are riding, the chamberman having, under section 8 (*c*) of the Mining Amendment Act, 1914, control of the chamber and the regulation of the descent and ascent of persons in the shaft. The charge was dismissed, no direct evidence being obtainable as to whether deceased had used the safety chains. The Warden, however, ruled that the braceman and chamberman were jointly in control of the shaft and signalling, and were responsible for the use of safety appliances in connection with cages. The Inspector has since notified all mine-managers that all cages used for raising or lowering men shall have fixed gates opening only inwards.
18 April ..	Bull's Battery, Thames	William John Ward (44), part-owner of battery	With his two partners he had repaired a berdan driving-belt, after which he ascended to a platform parallel to the driving-shaft, where he sat down, his legs hanging below the platform. One of the partners below had just finished coupling the belt when it went out of his hands and caught around the foot of deceased, causing him to be revolved round the driving-shaft for about five minutes before the machinery was stopped. It is believed that the accident was due to the belt catching on a bolt-end standing out from the pulley, and being wound up round the shaft. The injuries received by deceased, and from which he died about three hours later, consisted of a very bad crush of the left leg, necessitating amputation, with consequent loss of blood and shock.
4 July ..	Rise-and-Shine Gold-dredge, Cromwell ..	William John Ritchie (46), dredgemaster..	To disconnect a chain of buckets on a ladder, a wire rope was led to a pulley attached by a shackle to a $\frac{3}{4}$ in. eyebolt in the deck 29 ft. in front of the winch, and then on to the surge-drum of the winch. He was standing by that drum to take in the slack rope as the strain came on, when the eyebolt broke, the pulley-shackle and part of the bolt flew back and struck deceased, fracturing his skull. He died three days later. It was found that the eyebolt had a bad flaw. The deceased was responsible for the quality of the plant used, and controlled the operations.
13 July ..	Waihi Grand Junction Mine, Waihi ..	James McConnell (33), miner	With his mate James Stubbing he was sinking a winze below No. 7 level on the Royal lode; a depth of 22 ft. had been attained, six holes had been drilled which deceased charged with gelignite, having fuses 5 ft. in length attached. Stubbing then pulled the bucket containing unused gelignite up to the brace of the winze; deceased then spitted the holes with gelignite and lighted them with a candle, after which he ascended the ladder to the collar of the winze, when the first hole went off, severely injuring him. Stubbing reached down and caught deceased by the hands and raised him to the level, along which he carried him to a place of safety. At the subsequent inquest the jury found that a premature explosion occurred owing, they believed, to defective fuse, and recommended electric firing in winzes and rises in future. They highly commended James Stubbing for his bravery in risking his life to rescue deceased. Subsequent tests of that consignment of fuse were made by Inspector of Mines M. Paul, who found it to be in good condition. Some of the gelignite, however, he found to be defective; and if such had been used for spitting, deceased may have been delayed and may unconsciously have spent more time than he was aware of endeavouring to light the gelignite-spitting. The Inspector has since notified mine-managers that to avoid similar accidents, until stocks of reliable time-fuses can be procured, instructions be given to men working in rises and winzes that all fuses be cut at least 6 ft. in length, and that instead of spitting with gelignite a small piece of candle should be placed under the fuse and allowed to burn through.

Date.	Name and Situation of Mine.	Name, Age, and Occupation of Person killed.	Cause of Accident, Nature of Injuries, and Remarks.
28 July ..	Progress Mine, Reefton	Thomas Henry Robbins (34), miner ..	He was one of a contract stoping party on the Pioneer block over No. 10 level. With his mate he had worked down sufficient rock to enable them to stand a set of timber on the hanging-wall side of the lode. Believing that no loose rock was left hanging, they proceeded to shovel away the broken rock, when several pieces of quartz, weighing in all about 2½ cwt., fell from the back at the hanging-wall, one piece weighing about 1 cwt. falling on deceased. The stope was well timbered up to the face, the only ground open being the space for the set at which deceased was working. If they had used a few poles to support the back while they cleaned up in readiness for erecting the set they might have averted the accident. There was plenty of suitable timber in the stope for the purpose. The back was close to them, and they could have sounded it without difficulty.
11 Sept. ..	Waihi-Paeroa Gold-extraction Company ..	Peter Lincir (39), elevatorman	He was employed at an elevator used to raise tailing from the river-punts to the extraction works. The elevator is controlled by an electrically driven winch on a platform above the river. He had lowered the elevator from the platform, and it is surmised was attending to the grease-cups when his clothes caught in the driving-shaft of the winch and that he was drawn into the machine. He was found in an expiring condition, having a fractured skull and other severe injuries. On the shaft are three collar-studs, two of which project 1 in. The men employed were warned not to fill the grease-cups when the machinery was in motion. The Coroner's verdict was that the accident was due to deceased being entangled on the shaft of a winch, there being no evidence to show how he became so. A rider was added recommending that all projecting coupling-bolts on shafts in exposed positions shall be properly covered. At the time of the accident there was no provision in the Mining Act or regulations making this compulsory.
17 Oct. ..	Waihi Mine, Waihi	John McPherson (44), miner	After shot-firing, the deceased, an experienced miner, was barring loose quartz from the hanging-wall above No. 12 level when a piece of quartz weighing about 50 lb. fell, striking him on the head, fracturing his skull and almost instantaneously killing him. The stope was worked on the shrinkage system; the height from the ground to the back at the scene of the accident was 7½ ft.; the stope was well filled.

IV. GOLD-MINES.

The following statement shows the dividends declared, number of persons employed, and number of gold-mines and dredges :—

	Dividends paid, 1917. (By Registered Companies only.)	Number of Persons ordinarily employed.	Number of Working Quartz and Alluvial Mines and Dredges.
	£		
Quartz-mining	203,069	2,030	82
Dredge mining	4,800	260	35
Alluvial mining	5,710	618	198
Totals, 1917	**213,579**	**2,908**	**315**
Totals, 1916	208,089	3,614	368

(1.) Quartz-mining

The following is a statement showing the tons of ore treated, and the amount of dividends paid by quartz-mining companies in each of the inspection districts during the years 1916 and 1917 :—

Inspection District.	Statute Tons of Ore treated.		Dividends paid. (By Registered Companies only.)	
	1917.	1916.	1917.	1916.
			£	£
Northern	298,396	318,456	195,619	158,566
West Coast	105,539	121,066	7,450	26,499
Southern	5,381	2,840	...	...
Totals	**409,316**	442,362	**203,069**	185,065

The following is a statement of the quartz treated, dividends declared, and the number of persons employed by the principal gold-quartz mining companies during 1917 :—

Name of Company.	Quantity of Quartz treated during 1917.	Dividends paid.		Number of Persons ordinarily employed.
		1917.	Total to End of December, 1917.	
	Statute Tons.	£	£	
Northern District—				
Waihi Gold-mining Company (Limited)	171,198	99,181	5,139,695	601
Waihi Grand Junction Gold-mining Company (Limited) ..	103,687	38,438	228,626	353
Talisman Consolidated (Limited)	16,007	51,750	1,099,222	150
Waihi-Paeroa Gold-extraction Company*	..	6,250	18,750	62
West Coast District—				
Wealth of Nations	17,133	..	..	79
Blackwater Mines (Limited)	34,417	..	162,494	120
New Big River Gold-mining Company (Limited)	5,201	7,200	98,400	43
Progress Mines of New Zealand	19,840	..	326,562	95
Murray Creek Gold-mining Company	9,728	..	21,727	75
Other quartz-mines throughout New Zealand	32,105	250	..	452
Totals, 1917	**409,316**	**203,069**	..	**2,030**

* 147,700 tons of re-treated tailings not included in total, having been included when the ore was previously crushed and treated at the mines.

During the year the most interesting developments in connection with the quartz-mining industry were carried out by the North Blackwater Development Syndicate under the direction of Mr. David Ziman, and at Te Puke by Muir's Gold-reefs (Limited), a new company.

At North Blackwater, in the winding-shaft at a depth of 1,350 ft., a crosscut was projected to the main lode operated successfully by the adjoining Blackwater Mines (Limited), which up to the end of 1917 had obtained, from 358,678 statute tons of ore treated, bullion to the value of £732,600, and had distributed in dividends £162,494.

In its crosscut the North Blackwater Syndicate intersected three lodes carrying visible gold, one of these being the main Blackwater lode. Permanent winding and air-compressing machinery is now being installed at this mine. It is interesting to note that at both this and the Blackwater Mine successful prospecting and underground development was carried out with the assistance of Government subsidies.

Accompanied by Inspector M. Paul during February of the present year I inspected the mining operations on the freehold of Mr. G. Muir, near Te Puke. The recent development upon the newly discovered Muir lode has been carried out a few chains to the east of the main lode formerly developed unprofitably by the Te Puke Gold-reefs (Limited), and reported upon by Mr. J. A. Bartrum in the seventh annual report of the Geological Survey.

The lode system near Te Puke resembles somewhat that at Waihi; branching and interlacing quartz lodes occur in fissures due to contraction of the bedded andesite; the ore-bodies vary considerably in width and course. With the exception, however, of the main lode, which is outside the boundaries of Muir's Gold-reefs (Limited), there is no comparison in magnitude between Waihi and Te Puke lodes. In appearance the oxidized quartz from the upper levels of the Waihi Mine also resembles considerably that at present being mined at Te Puke, being in parts sinterous, flinty, laminated, or banded.

Upon the Muir lode at the time of my inspection the following development had been carried out:

About 93 ft. below the crest of Fleming's Hill on its eastern side a level known as the "upper level" had been driven from an adit by Mr. Muir for a distance of 360 ft. along the lode, varying between 4 ft. 6 in. and 5 ft. in width, bearing approximately north and south, underlying 85° east. Samples of ore properly taken by Inspector Paul along the whole course of this level upon analysis proved payable, containing an average assay value of about £3 per ton. Assuming the ore to ascend for 60 ft. above this level in undiminished width, there is available for stoping a block containing 7,160 statute tons.

To the north of the upper level, and about 200 ft. below the same, the Muir lode has been intersected by an adit; at the point of intersection the lode is only 10 in. in width, but 10 ft. southward it increased to 2 ft. 4 in., and at 47 ft. (the face on the occasion of my inspection) it was 3 ft. wide. Samples taken at these points were of lower value than in the upper level.

The lode is crossed by a small fault, causing slight displacement at the northern face of the upper level; towards this fault the southern face of the bottom level is approaching.

In addition to the Muir lode a small branch lode and some "droppers" have been proved in the upper level to contain rich ore in small quantity.

Outside the boundary of Muir's Gold-reefs (Limited), a short distance to the west of the Muir lode, the main lode formerly developed by the Te Puke Gold-reefs (Limited) has been recently further developed at the top level by a footwall drive about 200 ft. in length. Samples taken by Inspector Paul across both north and south faces of this footwall drive averaged in value £3 10s. 11d. on the western face, and 5s. 1d. on the eastern face. This lode is stated to be 50 ft. wide at the upper level, but declines in width at lower levels driven several years ago. The quartz has in the past been found too low-grade to be payable.

The company is now installing a 10-head stamp battery, tube mill, and cyanide infiltration plant near the entrance to the adit of the bottom level. The underground development by this company was also assisted by a Government subsidy.

Reports on working quartz-mines by the district Inspectors of Mines are contained in Annexure A accompanying this report.

(2.) Dredge Mining.

This class of gold-mining is rapidly declining, only thirty-five dredges being in commission during 1917, whereas in 1906 there were 167 active dredges. During the year thirteen dredges ceased operations and two dredges previously idle were put into commission.

Near Rimu, on the Hokitika River, the Rimu No. 1 Dredging Company commenced dredging early in April, and by the 31st December had handled 117,000 cubic yards of material (chiefly large boulders). The area dredged was 3¾ acres, and the average depth about 20 ft., but some of the gold may be lost among the large boulders (too large for the dredge-buckets to deal with) assembled on the bottom. It is proposed to procure a more powerful dredge of American type to deal with the very heavy ground on this claim.

At the Arahura River the Westland Prospecting Syndicate has successfully proved by Keystone drill an extensive area of workable dredging-ground averaging 27 ft. in depth. The Worksop No. 2 dredge has been purchased by the syndicate for use upon this area, and is now being removed thereto.

(3.) Alluvial Mining.

There has been a considerable decline in the production of bullion from alluvial mines during the period of the war.

Reports on working alluvial claims by the district Inspectors of Mines are contained in Annexure A accompanying this report.

Water-power for Mining Purposes.—Water-power is extensively used for hydraulic mining, also to a smaller extent for hydro-electric transmissions and for water-motors installed to drive mining machinery.

During 1917 water was used for sluicing auriferous alluvium at 198 claims, employing 618 persons, in Otago, Southland, and on the West Coast. The quantity of water utilized per claim varies up to about 40 cubic feet per second. Most of the sources of water-supply are privately owned, but on the West Coast and in Central Otago the Government has constructed, and now maintains, very extensive water-races for the use of miners.

On the West Coast the Waimea–Kumara Government water-races, in length about forty-five miles, have a capacity of 220 cubic feet per second; the cost of construction has been approximately £250,000, the value of gold obtained by use of the water being about £1,400,000.

In Central Otago the Mount Ida Government water-races, in length about twenty-two miles, have a capacity of 51 cubic feet per second; the cost of these races to the Government has been about £80,000. The water is generally sold from Government races at a charge of 2½d. per sluice-head per hour. Of recent years the cash received for water sold has been less than the cost of the upkeep of the races. During 1917 sixty-three miners were employed on claims using Government water, and gold to the value of £15,075 was obtained therefrom.*

Power from water-motors is used in the Reefton district at the Progress Mines for milling and ore-reduction, and in Central Otago on three gold-dredges.

There are three hydro-electric mining transmissions. On the Waikato River the Waihi Gold-mining Company has installed a 9,000-horse-power plant at Horahora Falls, near Cambridge, a distance of fifty miles from the mines and reduction works at Waihi and Waikino; the transmission pressure is 50,000 volts. The power is used for winding, air-compressors, reduction works, lighting, and other purposes. The company has the right to supply local authorities *en route* with power for public distribution.

At Kanieri Forks, near Hokitika, there is a hydro-electric power-station, formerly the property of Ross Goldfields (Limited), but recently purchased by the Kanieri Forks Power Company. The water-supply is carried by races from Lake Kanieri; from the peltons 675 horse-power is obtainable. The transmission pressure is 24,000 volts.

From the Fraser River, near Alexandra, Otago, water is taken by the Earnscleugh Gold-mining Company for hydro-electric power for its gold-dredges, 300 electrical horse-power being utilized.

V. MINERALS OTHER THAN GOLD.

Tungsten-ore.

The quantity of tungsten-ore exported during the year amounted to 161 tons, valued at £28,972, as compared with 266 tons, valued at £49,070, in 1916. The following statement shows the quantity and value of ore exported:—

Year.	Quantity.	Value.	Year.	Quantity.	Value.
	Tons.	£		Tons.	£
1899	32	2,788	1910	143	15,070
1900	54	2,635	1911	138	11,853
1901	2	83	1912	135	13,347
1902	39	1,200	1913	221	22,933
1903	42	1,439	1914	204	21,498
1904	17	791	1915	194	27,784
1905	28	1,848	1916	266	49,070
1906	55	3,407	1917	161	28,972
1907	137	15,486			
1908	68	6,055	Totals ..	**1,994**	**230,522**
1909	58	4,263			

The quantity of tungsten-ore concentrate obtained during the year was 199 tons (value £37,863) as the result of treating 19,655 tons of scheelite-bearing quartz, from which gold to the value of £8,098 was also obtained.

During the years 1914–17 inclusive, covering the period of the war, the value of scheelite concentrate produced exceeded that exported by £9,527. The price paid per unit of tungstic acid in the shipment has recently been raised from £2 15s. to £3 8s., being double the market price ruling immediately prior to the outbreak of war.

During the past year no new development of importance has occurred in this industry, although a considerable number of prospectors have been searching for scheelite-bearing lodes in Marlborough, Otago, and Southland.

* For further information regarding Government water-races see Section VII (4) of this report.

Table showing the Quantity of Quartz crushed and Scheelite Concentrate obtained for the Year ended 31st December, 1917.

Name of Company or Claimholder.	Locality of Mining Operations.	Quartz crushed.	Scheelite Concentrates obtained.	Value.
Otago and Southland—		Tons.	Tons. cwt. qr. lb.	£ s. d.
Golden Point Gold and Scheelite Company	Macrae's, Waihemo County	643	15 4 2 15	2,837 7 3
Deep Dell Consolidated Gold and Scheelite Company	Ditto	17	2 18 1 25	541 14 8
William B. McGregor	,, ...	7	2 3 1 7	409 17 8
Andrew Phelan	,, ...	..	1 6 0 24	261 18 2
F. A. Smith	,, ...	7	1 0 2 1	196 5 2
Fraser and Gaytan	,, ...	20	4 13 3 7	923 4 0
Philip Donoghue	,, ...	..	0 7 2 5	78 3 9
Patrick Donoghue	,, ...	..	0 4 3 16	46 17 9
Cockerell and Innes	,, ...	22	2 9 0 24	486 7 3
Donaldson Bros. and Ellis ..	,, ...	10	2 2 2 27	418 2 11
A. A. Cockerell	,, ...	5	1 1 3 23	143 18 7
Stoneburn Mining Company ..	Stoneburn, Waihemo County	1,078	3 2 3 22	541 14 2
William Gregg and party ..	Ditto	194	1 0 1 26	125 10 9
Mareburn Mining Company ..	Hyde, Taieri County..	3,196	7 15 2 26	1,443 11 7
H. S. Molineaux	The Reefs, Taieri County	150	2 14 1 25	479 3 6
A. C. Buckland	Ditto	2	0 4 2 24	44 8 6
Pukerangi Mining Company ..	Pukerangi, Taieri County	70	1 10 1 14	286 8 0
G. Bertenshaw	Waipori, Tuapeka County	..	1 14 0 18	338 12 9
George Scurr	Glenorchy, Lake County	..	1 0 3 18	174 19 9
Paulin and Tripp	Ditto	60	20 9 1 4	4,050 2 0
H. Birley and party	,, ...	..	5 10 0 4	970 8 5
Thomas Scurr	,, ...	..	2 12 0 19	414 0 6
Grant and Sinclair	,, ...	..	0 12 2 10	114 13 6
Huntly Groves	,, ...	..	0 10 2 9	104 10 11
Glenorchy Scheelite Company ..	,, ...	1,107	85 6 3 10	16,924 1 0
		6,588	167 18 2 11	32,356 2 6
Marlborough—				
Dominion Consolidated Company	Wakamarina ..	13,067	28 0 0 0	5,005 0 0
J. M. Cadigan	,, ..	Tailings	3 10 0 0	502 0 0
Totals	..	19,655	199 8 2 11	37,863 2 6

Several of the above mines produced a certain amount of gold in addition.

Reports on the quartz-scheelite mines by the District Inspectors of Mines are contained in Annexure A accompanying this report.

Iron.

Near the Breakwater, New Plymouth, the New Zealand Iron-ore Smelting Company (Limited), which was formed for working the beach ironsand, commenced smelting during the latter part of 1917, but the results not then being entirely satisfactory operations were suspended to enable alterations to be made to the plant. During September of the present year smelting was resumed, and an improved pig iron was obtained in grades varying from grey to white. The process of manufacture adopted is that of Messrs. J. Heskett and Fraser, and the recent operations were carried out under the direction of Mr. V. W. Aubel, A.I.M.E. The following is a brief description of the process of manufacture:—

The ironsand from the beach is dried and magnetically concentrated. It is then mixed with 10 per cent. of its weight of coking-coal, and the mixture is ground in a Fuller mill. From this mill the mixture is elevated to an eggette machine, which turns out eggettes without any binder being added. These eggettes are gently roasted in a small vertical oven. It is considered important not to heat too strongly at this stage. The furnace-charge consists of 2,000 lb. eggettes (with a considerable proportion of fines) containing 50 per cent. of iron, 2,000 lb. Westport coke, 700 lb. limestone (from Napier), and 300 lb. road-metal (andesite). When the furnace is working well this charge is given every hour or less, and takes about fifteen hours to go through. The hotblast has a temperature of

about 1,000° F., and has a pressure at the blower of 20 oz. and at the tuyeres of 16 oz. The height of the blast-furnace is 46 ft. 3 in. over all. The diameter at the top is 6 ft., at the boshes 9 ft., and at the hearth 4 ft. Air heated by waste gases is utilized for a hotblast. This furnace has a water-jacket and water-cooled tuyeres.

The following is an analysis of the ironsand after magnetic concentration:—

Silica (SiO_2)	5·40
Alumina (Al_2O_3)	1·53
Lime (CaO)	1·81
Magnesia (MgO)	2·80
Phosphoric anhydride*	0·69
Titanium dioxide (TiO_2)	10·45
†Ferrous oxide (FeO)	28·71
†Ferric oxide (Fe_2O_3)	48·61
	100·00

Petroleum.

No development of commercial value occurred during the year as the result of oil-prospecting operations, and none of the existing bores yielded oil in payable quantity.

Taranaki Oil-wells (Limited): During the year no drilling was carried out by this company, operations being confined to relining No. 2 bore with 8 in. casing to a depth of 3,045 ft., and No. 5 bore with 8 in. casing to a depth of 1,500 ft., the total depth of No. 5 bore on the 23rd May, 1918, being 2,950 ft.

The Taranaki Oil Lands Acquisition and Development Company (Limited) has been engaged deepening its Blenheim bore at Moturoa, which on the 24th May, 1918, had attained a depth of 5,130 ft., this being the deepest bore in the locality. This hole is lined with 5 in. casing. The stratum penetrated is Tertiary blue marine clay (papa). At a depth of 2,200 ft. a small flow of petroleum was obtained and stored.

Consolidated Oilfields of Taranaki (Limited): The Huiroa bore of this company, situated fifteen miles from Stratford, was stopped at a depth of 4,921 ft., no oil having been proved. At a depth of 4,900 ft. the bottom length of casing became detached: this was never recovered.

Kutuku Oilfields Syndicate: This company's Kaimata bore, situated near Greymouth, was stopped when a depth of 1,335 ft. had been attained, the stratum being then considered unfavourable. In this hole marl, sandstone, and conglomerate were penetrated, the bottom of the hole being in quartz conglomerate. Previous holes by this company reached primary rock.

Sulphur.

Tauhara North No. 1 Block, near Taupo, owned by a number of Natives, and containing valuable deposits of native sulphur (referred to in my last annual report), has been prohibited by the Government against private alienations; and the Native Land Purchase Board, having decided to purchase the block, has already acquired about one-fifth of the total interests.

At Rotorua, from Section 3 of the Sanatorium Reserve, situated near the Postmaster bath on the southern shore of the lake, Messrs. Kempthorne, Prosser, and Co. (New Zealand Drug Company) during the year obtained 1,120 tons of crude sulphur, and paid a royalty of 15s. per ton thereon in accordance with their lease from the Tourist and Health Department. The total quantity of crude sulphur obtained by this company from that ground to the end of 1917 amounted to 4,841 tons. The sulphur is used at chemical-works owned by them. A few Maoris are engaged digging the sulphur from fumaroles; it is then carted by drays to Rotorua Station for transport by rail. The crude sulphur is of medium grade, but is very cheaply obtained.

Cinnabar.

The Inspector of Mines for the North Auckland District, Mr. Boyd Bennie, reports favourably (see Annexure A accompanying this report) upon the operations of the Whangarei Cinnabar-mining Company. This company having installed a furnace at its mine, has successfully treated two trial parcels of ore with the following results: 1917—68 tons of ore yielded 1,500 lb. of mercury; 1918—130 tons of ore yielded 2,625 lb. of mercury. This mercury sold at 5s. and 7s. per pound respectively f.o.b., Auckland. Inspector Bennie estimates that there are 3,000 tons of ore in sight for stoping. Cinnabar-prospecting operations have also been carried out in the locality by Messrs. McLeod Bros., and at the Joffre Mine by Messrs. Collins Bros. The number of persons employed at the North Auckland cinnabar-mines is sixteen.

For the purpose of encouraging the cinnabar-mining industry the Government on the 1st August, 1917, published in the *New Zealand Gazette* a notice that a bonus of 4d. per pound would be paid on the production of the first 100,000 lb. of good marketable retorted quicksilver, free from impurities, from any mine in New Zealand on the following conditions: (1.) That at least one-half of the quantity is produced on or before the 31st March, 1920, and the remaining half on or before the 31st March, 1921. (2.) The first instalment of the bonus will be paid when 50,000 lb. of quicksilver has been produced as stipulated to the satisfaction of an officer to be appointed by the Minister of Mines, and on whose certificate alone the bonus will be paid. (3.) In the event of more than one person producing the required quantities of quicksilver before the dates named, inquiry will be made by the officer above referred to, when, if it is found that each applicant is equally entitled to a bonus, the amount will be divided in proportion to the quantities produced by each applicant, but in no case shall any bonus be paid until at least 50,000 lb. of quicksilver has been produced in the aggregate.

* Equivalent to phosphorus, 0·30 per cent. † Equivalent to metallic iron, 56·36 per cent.

Kauri-gum.

The quantity of kauri-gum exported during 1917 amounted to 4,594 tons, value £291,917, as compared with 5,456 tons, value £339,882, during 1916. The total quantity and value of this fossil resin exported to the end of 1917 were 353,873 tons and £18,167,939 respectively.

Dredging for gum on the swamp land of North Auckland having proved successful, an Otago gold-dredge, the "Duke of Gordon," was dismantled for removal to the gumfields.

Phosphate.

The only operations in connection with the quarrying of phosphate were those of the Ewing Phosphate Company at Clarendon, Otago, which produced during the year 5,050 tons. The total output for this company from 1902, the year of its initiation, to the end of 1917 is 107,522 tons. The total output from other phosphate-quarries in the Clarendon–Milburn district to the end of 1917 is approximately 5,470 tons.

Platinum.

In the published lists of the minerals of New Zealand platinum is stated to occur in several places, associated generally with gold in gravel. It is only from Southland, however, that there is any record of platinum being obtained and exported profitably.

The Customs Department has not kept any separate record of the quantity and value of platinum entered for exportation, the value of this metal exported being included in a general total of exports by parcel-post, by which means platinum has generally been despatched from the Dominion. In Southland native platinum occurs in auriferous wash, and is distributed on the beaches and coastal terraces from Blue Cliffs, west of Invercargill, to Longbeach, Waikawa River, east of Invercargill, over a distance of about ninety-two miles. It is probable that the platiniferous sands of Southland have been derived from serpentine or other olivine-bearing rocks, which are known to occur in fiordland. In Russia and in Lapland platinum has been found in a matrix of serpentine (altered peridotite).

Native platinum has been obtained in payable quantities from claims at Cameron Creek, Groveburn, Orepuki, Pahi, Round Hill, Steel Head, Bushy Point, Waipapa, Otara Beach, Twelve-mile Beach, and Waikawa. The coarsest and heaviest samples have been obtained from west of the Waiau River, that obtained east of Otara being extremely fine. Direct from the gold-saving mats at the alluvial workings at the Waikoau River, Rowallen, as high a proportion as 1 oz. platinum to 3 oz. gold has been obtained.

The platinum is collected by miners as a residue, after amalgamation, of alluvial gold, and is reduced by further washing to about a 50-per-cent. concentrate, the remainder of the concentrate being chiefly iridosmine (osmiridium).

During the earlier and more prosperous era of gold-mining alluvial miners did not save the platinum, as the banks would not give more than a few shillings per ounce for mat concentrates of platinum and osmium-iridium; consequently by far the greater proportion collected on the gold-saving matting at alluvial claims was thrown away. As years passed the price increased; about 1907 it reached £6 per ounce for new refined platinum; during 1917 it was quoted on the London metal-market at £14 10s. per ounce. Prior to 1898 the Round Hill Gold-mining Company at Orepuki obtained 29 oz. platinum.

The principal exporters of platinum are the Invercargill branch of the National Bank of New Zealand and Mr. John Kingsland, of Invercargill, who together have during the past ten years exported on an average 30 oz. platinum (when refined) per annum. Between 1907 and 1916, inclusive, the former exported 106 oz. platinum, the net price realized being £600; Mr. Kingsland during the past ten years has exported about 300 oz. of approximately 50-per-cent. concentrate for a net return of £908. The richest parcel of platinum purchased and washed by Mr. Kingsland contained 67 per cent. platinum, and was obtained from a 7 oz. parcel from west of the Waiau River.

The following are the results of assays of concentrates taken direct from the gold-saving mats of Smith's Claim, Round Hill: No. 1 sample—Gold per ton of concentrate, 55 oz.; platinum per ton of concentrate, 72 oz. No. 2 sample—Gold per ton of concentrate, 15 oz.; platinum per ton of concentrate, 51·5 oz.

The following is the result of an assay by Mr. A. Z. Clarke, of Melbourne, of a sample of concentrate from rich wash from the Otara claim, submitted by Mr. Kingsland: Osmiridium, 15 dwt. 7 gr. per ton; platinum, 7 dwt. 14 gr. per ton; gold, 4 dwt. 22 gr. per ton; monazite, 2·07 per cent.; thorina, 0·67 per cent.

VI. STONE-QUARRIES.

(1.) Quarry Inspection and Statistics.

The inspection of stone-quarries and those places which come under the operation of the Stone-quarries Act, 1910, is now carried out entirely by Inspectors of Mines, who are also Inspectors of Stone-quarries in their respective districts. It having been found in some cases that a laxity existed by the management in carrying out the safety provisions of the Act and regulations, strict compliance is now insisted upon by the Inspectors. There is, unfortunately, no provision under the Act for returns of output and other statistics by quarry-owners; the statistics available and here published are therefore somewhat incomplete.

Table showing the Number of Quarries under the Stone-quarries Act, 1910, also the Number of Persons ordinarily employed thereat, and the Annual Output of Crude Stone.

Provincial District.	Name and Address of Government Inspector of Stone-quarries.	Number of Working Quarries under the Act.	Number of Persons ordinarily employed.	Output of Crude Stone during 1917.						
				Stone or Gravel for Macadamizing or Ballast.	Stone for Harbour-works.	Building-stone.	Limestone for Agriculture.	Limestone for Cement or Mortar.	Phosphate for Agriculture.	For other Purposes.
				Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Auckland ..	James Newton, Mines Dept., Auckland	50	386	367,876	69,795	..	4,746	95,187	..	..
	M. Paul, Mines Dept., Waihi (Hauraki Mining District only)	10	52	36,407	..	..	..	..	..	..
Hawke's Bay	James Newton, Mines Dept., Auckland	6	59	7,784	13,222	1,970	..	6,240	..	..
Taranaki ..	..	24	62	31,430	..	..	..	..	..	..
Wellington ..	..	15	102	36,999	..	..	..	7,250	..	..
Marlborough	J. F. Downey, Mines Dept., Reefton	2	5	..	..	..	312	..	..	..
Nelson		5	68	2,400	28,254	1,200	700	25,278	..	..
Westland		2	7	5,184	..	..	..	..	..	..
Canterbury	E. R. Green and A. Whitley, Mines Dept., Dunedin	14	101	66,668	51,574	2,531	2,644	3,765	..	3,124
Otago		17	103	57,672	17,316	208	36,501	16,870	5,050	..
Southland		6	55	7,841	..	140	24,958	127	..	..
Totals ..	..	151	1,000	620,261	180,161	6,409	69,861	154,717	5,050	3,124

(2.) Quarry Accidents.

The following is a summary of persons killed or seriously injured during 1917 at stone-quarries and places within the operation of the Stone-quarries Act:—

Cause of Accident.	Number of Accidents.		Number of Sufferers.	
	Fatal.	Serious.	Killed.	Seriously Injured.
Explosives	..	1	..	1
Falls of ground	1	1	1	1
Falling from face, or during ascent or descent	1	..	1	..
Miscellaneous	..	1	..	1
Totals	2	3	2	3

The following is a brief description of fatal accidents in connection with quarrying operations under the Stone-quarries Act during 1917:—

Date.	Name and Situation of Quarry.	Name, Age, and Occupation of Person killed.	Cause of Accident, Nature of Injuries, and Remarks.
8 Mar.	Wanganui Harbour Board quarry, Kaiwhaike	George Marvin (46), quarryman	He had finished stripping, and commenced to descend via the rock-face, which was provided with a life-line and with steps cut at the top and bottom of the face. This was considered to be a fairly safe travelling-way, although another travelling-way considered safer was mostly used. He was seen to fall off the track over a ledge, and rolled down the side of the hill for a distance of about 500 ft., breaking his neck. There was no evidence as to what caused him to fall. It is surmised that either he did not use the rope or was overcome by giddiness. Had there been a permanent ladderway from one bench to another this accident might not have happened, but the construction and maintenance of such a ladderway would have been difficult. The Inspector of Stone-quarries has since notified the quarry-manager that in future any means of access to the upper bench must be in such a position and made so secure that no similar accident can happen.
1 Sept.	Otamatea County quarry, at Hukutore, via Te Kopuru	Alexander Drummond (56), quarryman	Deceased, an experienced quarryman, was working by himself on a ledge 25 ft. or 30 ft. up the quarry-face. Excessive rain had rendered the face dangerous. He was undermining with a crowbar the sandstone rock, instead of working it down from the top, a safer method. Suddenly a fall of about 30 or 40 tons of stone occurred, striking deceased and carrying him down to the ground. He died the same day, as the result of the very severe injuries sustained. Deceased was solely to blame for the occurrence. The Coroner's verdict imputed no blame to any one.

(3.) Portland-cement Manufacture.

The quarrying of material for the manufacture of Portland cement, together with the mechanical and chemical processes necessary to produce the finished article, is becoming an important industry in New Zealand, quarries and works of considerable magnitude being established at Whangarei (north Auckland), Golden Bay (Nelson), and Milburn (Otago).

At Tarakohe, Golden Bay, the extensive quarries and works of the Golden Bay Portland Cement Company (Limited) are situated. For the purpose of obtaining information regarding the operations at Tarakohe I have inspected the works, the following being a report upon the quarries and process of manufacture, with the result attained :—

Synopsis of Manufacture from Raw Material to Portland Cement.

QUARRIES (MECHANICAL PROCESS).

The limestone and marl quarries are favourably situated in proximity a few chains inland from the wharf, on the northern slope of a hill.

The limestone has been classed by Dr. J. M. Bell as Miocene (Oamaru Series) in Bulletin 3 of the Geological Survey of New Zealand ; the overlying marlstone (calcareous claystone) quarried is of similar geological age.

The quarries are worked in benched faces, the overburden being stripped preparatory to quarrying. At the limestone-quarry the face has a maximum height of about 90 ft. The marl-quarry is of lesser height. This raw material is broken down by blasting, gelignite and blasting-powder being used.

The following are the average valuations of limestone and marl from the quarry as obtained by Mr. Sydney F. Strudwicke, works chemist to the company :—

	Percentage Carbonate of Lime.
Sample No. 1—Quarry-floor	95·4
„ 2—About 5 ft. above floor	93·0
„ 3—Average height from quarry-floor 5 ft. to 15 ft.	89·4
„ 4 „ „ 15 ft. to 25 ft.	90·2
„ 5 „ „ 25 ft. to 45 ft.	91·0
„ 6 „ „ 45 ft. to 70 ft.	94·8
„ 7 „ „ 70 ft. to 80 ft.	96·2
„ 8 „ „ 80 ft. to 90 ft. or more	95·9
„ 9 „ „ over 100 ft.	96·8
„ 10—Average of remainder to extreme top of deposits, say about 125 ft. height	97·8

Various layers of limestone shown above are roughly classified according to their exterior appearance in the various strata of the limestone-deposits. The stone becomes richer as the top of the deposit is approached.

Typical Complete Analysis of Limestone, being Average Value of Stone for 25 ft. above Quarry-floor (Samples 1 to 4 inclusive).

	Per Cent.
Moisture	0·24
Carbonic anhydride	40·10
Silica and insoluble	5·88
Alumina	1·05
Peroxide of iron (estimated as ferric only)	0·32
Lime	51·08
Magnesia	0·85
Sulphuric anhydride	Traces
Alkalis and undetermined	0·48
Total carbonate of lime, 91·20 per cent.	100·00

General Sample of Blue Marl used in Cement-manufacture.

	Per Cent.
Moisture	9·63
CO_2 and combined water	18·25
Silica	36·44
Alumina	8·49
Iron-oxide (as peroxide only)	5·76
Lime	18·44
Magnesia	0·80
Sulphuric anhydride	None
Alkalis and undetermined	2·19
Carbonate of lime, 32·93 per cent.	100·00

It has been laid down* that a Portland-cement mixture when ready for burning should contain about 75 per cent. of lime carbonate ($CaCO_3$), and about 20 per cent. silica (SiO_2), alumina (Al_2O_3), and iron-oxide (Fe_2O_3) together, the remaining 5 per cent. containing only magnesia, sulphur, and alkalies that may be present. Good commercial cement should have the following limits of these ingredients : Silica, 20 to 25 per cent. ; alumina, 4 to 8 per cent. ; oxide of iron, 2 to 5 per cent. ; lime, 60 to 67 per cent. ; magnesia, 0 to 2 per cent. ; sulphuric anhydride, 0 to 2 per cent.

The raw material is carried by gravitation tramway to the factory adjacent to the wharf.

CRUSHING, GRINDING, AND MIXING OF RAW MATERIALS (MECHANICAL PROCESS).

The second step is the thorough crushing, grinding, and mixing of the raw materials to such a fineness that 90 to 95 per cent. of the mixture will pass through a sieve having 32,400 apertures per square inch. The marl is crushed down to about 2 in. by a Hadfield's "Stag" jaw crusher ; limestone is crushed to the same gauge by Newell's No. 8 gyratory crusher, having a capacity of 100 cubic yards

* "The Portland Cement Industry," by W A Brown (Crosby Lockwood), p. 9.

per eight hours (this crusher has been in use for six years). The crushed material is then elevated into hoppers, from whence it is carried by conveyor, for calcination and removal of the water present, to a rotary drier, being a slowly revolving cylinder 45 ft. in length by 4 ft. 6 in. diameter, having a furnace at one end and a chimney-stack at the other. The limestone and marl are dried separately. The temperature in the drier is about 500° C.

The material is then elevated into two funnel-shaped storage hoppers, from which it is drawn off and mixed (by weighing) into trucks, the proportions being—marl 20 to 25 per cent., the balance limestone. It then passes for preliminary grinding to a Newell's "Lion" ball mill, where it is reduced to a grade of $\frac{5}{8}$ in. (there is considerable wear on the grinding-plates and screen), from whence it is fed for finer grinding to two Fuller-Lehigh pulverizing-mills, which reduce it to the fineness previously stated.

THE BURNING OF THE RAW MATERIALS TO INCIPIENT FUSION (CHEMICAL PROCESS).

The third step is the rotary kiln, where the chemical combination of the lime with the silica and alumina of the clay takes place, producing Portland-cement clinker. The rotary kiln in use is 125 ft. in length by 8 ft. diameter; it is revolved by geared wheels about once per 60 to 75 seconds; it is lined with Brunner firebrick (which lining lasts about twelve months). The kiln is inclined about 1 in 25, so that material fed into one end will move by gravity to the discharge end. Fine West Coast bituminous coaldust, 95 per cent. of which is ground by tube mill from slack to a fineness of 100 by 100 mesh, is blown from a tube into the lower end of the revolving kiln; a proportion of about 28 to 38 per cent. of coal in weight to that of the manufactured cement is used. The clinker is discharged from a hooded open end, through which the coal-feed pipe passes; this hood closes the end of the kiln. The temperature in the kiln is about 1,200° C.

This intense flame is projected on the raw material. As the material travels down the kiln chemical changes, brought about by the terrific heat, take place, viz.: (1.) Dissociation of combined water and loss of organic matter in the clay; (2) dissociation of sulphates and alkalis; (3) dissociation of carbonates; (4) chemical combination (incipient fusion) of silica, alumina, and lime in the hot zone of the kiln.

COOLING AND GRINDING THE CLINKER (MECHANICAL PROCESS).

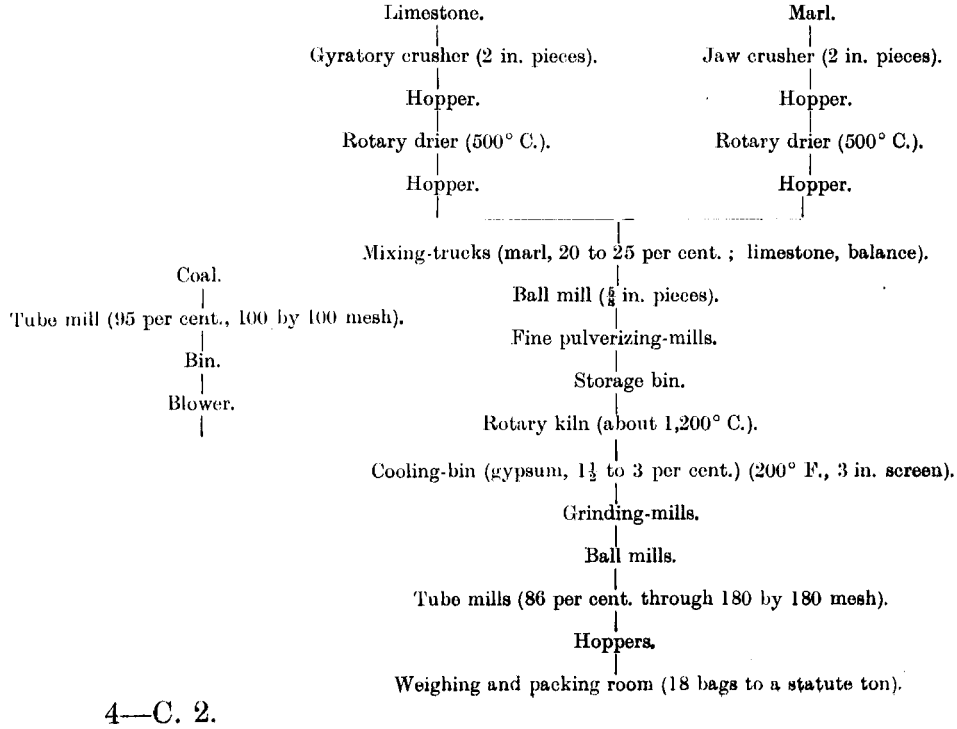
The fourth and final step is the cooling and grinding of the clinker. The clinker in grade to pass through a 3 in. screen is conveyed from the kiln to a storage dump, during which transport it is cooled to about 200° F. Gypsum (from Australia), in proportion of $1\frac{1}{2}$ to 3 per cent. according to requirements, is now added to regulate the setting of the cement. The final step of grinding the clinker is now entered upon. The machinery and power required for this are very closely the same as that required for grinding the hard raw materials for the same output, the clinker being much harder to pulverize, although for every ton of cement clinker 1·5 tons of raw materials are required. After passing through the preliminary grinding-mills and ball mills the article is finished by being ground in tube mills, 86 per cent. being to a fineness of 180 by 180 mesh, or 32,400 apertures to a square inch. The tube mills resemble those in operation on our goldfields; they are lined with flint bricks, and flint pebbles are used therein. Electrical power (alternating current) generated upon the works is used for the whole process.

THE FINISHED ARTICLE.

The finished article is then elevated into hoppers, and automatically weighed and bagged; the bags are sewn by hand. The bags contain $123\frac{1}{4}$ lb. of cement, being 18 bags per ton.

For the shipment of their product the company has constructed at Tarakohe a substantial ferro-concrete wharf, at which vessels carrying 1,400 tons or more have been loaded. This wharf is situated about five miles east of the Waitapu (Takaka) Wharf.

OUTLINE OF PROCESS.



Tests of Golden Bay Cement.

The following are selected test results showing the tensile and compressive strength of the finished article, by Sydney F. Strudwicke, works chemist, obtained at the works laboratory:

Nature of Tests according to British Standard Specification.	Packed First Week of September, 1914.	Packed in June, 1915.	Supplied to Public Works, Wellington and Blenheim, 28th September, 1915.	Packed September, 1916.
Fineness—				
Residue on 180 sieve ..	16·0 per cent.	14·0 per cent.	12·0 per cent.	12·0 per cent.
Residue on 76 sieve	0·8 „	0·6 „	0·4 „	0·4 „
Setting-time—				
Initial set	4 hours	4 hours	2½ hours	3 hours.
Final set	7½ „	6 „	5 „	5 „
Soundness				
Boiling-water tests	All perfect	All perfect	All perfect	All perfect
Expansion by Le chatelier ..	2 millimetres	2 millimetres	1½ millimetres	1½ millimetres.
Specific gravity	3·105	3·137	3·106	3·121
Tensile strength neat cement—	Lb. per sq. in.	Lb. per sq. in.	Lb. per sq. in	Lb. per sq. in.
After 1 day	333	304	405	384
„ 7 days	640	733	777	657
„ 28 days	656	803	801	751
„ 3 months	732	812	814	797
„ 6 months	Not made	840	839	Not made.
„ 1 year	..	Not made	845	..

COMPRESSIVE STRENGTH TESTS OF GOLDEN BAY CEMENT BY NEW SOUTH WALES PUBLIC WORKS DEPARTMENT.

Sand is that used as standard by Public Works Department, New South Wales, obtained from Nepean River, and sifted through a sieve of 400 meshes and retained on a sieve of 900 meshes per square inch.

Nature of Tests.	Standard required.	Results N.S.W. Public Works Department.
Compressive strength (cubes 50 sq. cm.; face about 2·75 in.; cement 1 part, standard sand 3 parts)	Lb. per sq. in.	Lb. per sq. in.
After 1 day in air and 27 days in cold water	2,250	4,170
After 1 day in air, 6 days in cold water, and a further 21 days in air	3,570	4,840

General.

The Golden Bay Cement Company (Limited) has a nominal capital of £60,000 in 60,000 shares of £1 each, of which 2,400 fully paid up were issued, and 57,600 contributing shares now fully called up, in addition to which the company has issued £25,000 in debentures. The estimated value of the quarries in the balance-sheet is £5,791, and of the works £78,938. During the year ended 30th June, 1916, £5,744 was distributed in dividends. The output stage was arrived at during September, 1911.

The output of Portland cement for 1916 was about 22,000 tons; the maximum capacity of the plant is about 30,000 tons. The manufactory is worked full time—*i.e.*, three shifts per day for seven days per week. The quarries are worked one shift per day during six days per week. Ninety men on the average are employed at the quarries and works. The managing engineer at the works is Mr. J. A. J. McLaren (first-class certificate under the Mining Act), and the works chemist Mr. Sydney F. Strudwicke, to both of whom I am greatly indebted for much of the information contained in this report.

VII. STATE AID TO MINING.

(1.) Subsidized Prospecting.

During the year ended 31st March, 1918, nine approved prospecting parties were granted subsidies amounting to £1,933 5s., of which £882 8s. 8d. was expended during that period. In addition to this, £518 8s. 8d. granted during previous years was expended by fifteen parties during the past financial year.

The following statement shows the total expenditure during the year ended 31st March, 1918:—

	£	s.	d.
Tauranga County	125	0	0
Thames County	60	0	0
Ohinemuri County	25	0	0
Pelorus Road District	15	0	0
Wairau Road District	37	10	0
Inangahua County	53	11	8
Buller County	70	0	0
Westland County	686	8	6
Prospecting associations, &c.	328	7	2
Total	£1,400	17	4

The following is a statement showing the number of subsidized prospectors, the amount of subsidy granted and paid, also the character and result of such prospecting operations from the 1st April, 1917, to the 31st March, 1918:—

Name of Prospecting Party.	Number of Prospectors.	Locality of Operations.	Amount of Subsidy granted.	Amount of Subsidy expended.	Distance driven.	Nature of Claim.	Character of Operations.	Remarks.
Northern Inspection District.				£ s. d.	Ft.			
Tierney and Regan	2	Mahakirau	£1,000, at £2 subsidy for £1 subscribed	373 0 0	360	Quartz	Surface prospecting	Nothing payable discovered; work suspended.
Waitangi Gold-mining Company	6	Thames	£166 13s. 4d., 6s. 8d. per foot	60 0 0	180	,,	Driving	Driving on large lode. Ore saved and treated, value 11s. 3d. per ton.
Hauraki Reefs Company	4	Coromandel	£150, at 10s. per foot	Nil	..	,,	,,	No work done.
W. M. Walnutt and party	2	Waitekauri	£37 10s., at 7s. 6d. per foot	,,	..	,,	Sinking	Work in progress; no results.
George Muir	4	Te Puke	£125, at 5s. per foot	125 0 0	500	,,	Driving	Two lodes intersected; payable assay values.
Success Development Syndicate (May Bell Claim)	3	Waitekauri	£25, at 5s. per foot	25 0 0	100	,,	,,	Driving still in progress; results nil.
West Coast Inspection District.			£ s. d.					
Alluvial Claims (Limited)	6	..	520 0 0	..	..	..	..	..
Alford and party	..	Wakamarina	..	30 0 0	90	Quartz	Driving	Crosscuts to intersect scheelite-bearing lode; lode when met very small.
Alpine Consols	2	Lyell	200 0 0	70 0 0	210	,,	,,	Crosscutting old Tyr Connel tunnel and driving on lode-line at a lower level. Good stone picked up and driven on.
Blackman Bros.	2	Stafford	..	40 5 6	537	Alluvial	,,	Nothing of value located.
Deep Creek Gold-mining Syndicate	..	Wakamarina	..	16 13 4	50	Quartz	,,	Driving on scheelite-bearing vein.
Duffy and Pennington	2	Reefton	..	33 6 8	100	,,	,,	Driving on quartz vein; said to show good values.
Etheredge and party	..	Ross	..	3 0 0	15	Alluvial	,,	..
Fiddes and Jordan	2	Ahaura	50 0 0	..	..	Prospecting	,,	General prospecting in Paparoa Range. Several quartz veins reported to be located, but values low.
Howatt and Hyndmann	2	Hokitika	42 10 0	..	..	..	..	..
J. J. McIntosh	12	,,	162 5 0	162 5 0	..	Alluvial	Sinking	About twenty-five shafts sunk; considerable area of pay-ground proved.
John Jack and party	2	Haw Haw	..	27 10 0	250	,,	Driving	..
Jackson's Creek Scheelite Syndicate	..	Wairau	..	37 10 0	150	Quartz	,,	..
Kotuku Oilfields Syndicate	..	Kotuku	100 0 0	83 15 0	..	..	Boring	From 1,000 ft. to 1,335 ft. in oil-well at Kaimata; no oil struck.
Kulsen and Havill	2	Kanieri	..	45 10 0	..	Alluvial	Sinking	263 ft. of shaft-sinking; fair values got.
McCormack and party	1	Rimu	..	18 18 0	126	,,	Driving	Driving on alluvial; results unsatisfactory.
Pfahlert and party	2	Kanieri	50 0 0	..	97	,,	,,	Prospecting at Kanieri Forks; results said to be good. Water-race now being constructed to ground.
Westland Gold-prospecting Syndicate	12	,,	500 0 0	235 5 0	..	Prospecting	...	Continuation of work carried on by J. J. McIntosh as already mentioned. Twenty-six shafts sunk; also about one hundred bores put down at Arahura with payable results.
Webster and party	1	Rimu	80 0 0	50 8 0	336	Alluvial	Driving	No payable results.
Southern Inspection District.								
R. Symes and party	2	Bald Hill Flat	£110 and £60	110 0 0	..	Quartz	Surface prospecting and trenching	Work in progress; loose auriferous quartz found.
Otago Central Gold-mines	6	Bannockburn	243 6 8	57 0 0	171	,,	Driving	Work in progress; driving to test Carrick reefs at low level.

(2.) Government Prospecting-drills.

The following is a statement showing the result of operations by Government prospecting-drills hired by various parties during 1917:—

Type of Drill hired.	Name of Drill Superintendent	Number of Holes drilled.	By whom hired.	Mineral sought for.	Total Depth drilled.	Character of Country pierced.	Average Cost per Foot drilled, including Transport.	Remarks and Results.
					Ft.		s. d.	
Diamond drill (oil-driven)	W. H. Warburton	1	Point Elizabeth State Colliery ..	Coal ..	625	Conglomerate, sandstones, clays, and shaly mudstone	5 1	No coal found.
Ditto	,	1	Waikaia Oil-shale Development Company	Oil-shale ..	85	Gravels, carbonaceous sand, and clay beds	7 4	2 ft. 3 in. oil-shale at 46 ft. 9 in.; 4 ft. oil-shale at 52 ft. 3 in.
,, ...	,,	1	Ditto	,, ..	135	Ditto	9 7	No oil-shale found.
,, ...	,,	1	,, ...	,, ..	146	,, ...	9 3	,,
,, ...	,,	1	,, ...	,, ..	121	,, ...	3 8	,,
,, ...	,,	1	,, ...	,, ..	89	,, ...	4 0	9 in. oil-shale at 70 ft.; 6 ft. oil-shale at 78 ft.
Keystone placer drills (3)	G. E. D. Seale ..	26	Hokitika Syndicate (Limited) ..	Alluvial gold	1,144	Tight river-bed gravel	10 0	Fairly satisfactory.
Ditto	,, ..	70	Westland Gold-prospecting Company (Limited)	,,	1,840	Fairly tight river-bed gravel ..	3 4 (approx.)	Very satisfactory.

(3.) Subsidized Roads on Goldfields.

The following schedule shows the amounts expended by subsidies and direct grants out of the Public Works Fund, vote "Roads on Goldfields," in the different counties, &c., during the year ended 31st March, 1918:

	Direct Grants. £ s. d.	Subsidies. £ s. d.
Coromandel County	14 0 0	..
Thames County	758 18 9	..
Ohinemuri County	213 3 6	..
Pelorus Road District	133 0 0	..
Collingwood County	90 0 0	105 0 0
Buller County	1,688 10 9	116 13 4
Inangahua County	1,499 16 11	..
Murchison County	326 5 6	..
Westland County	204 17 5	..
Grey County	694 16 1	..
Geraldine County	..	300 0 0
Vincent County	..	30 5 4
Maniototo County	242 0 0	..
Lake County	217 13 7	..
Wallace County	..	194 10 3
Southland County	250 0 0	50 0 0
Totals	£6,115 4 6	£796 8 11

(4.) Government Water-races.

The Waimea-Kumara and Mount Ida water-races, which render possible hydraulic mining in the Kumara district, Westland, and the Naseby district, Central Otago, have during 1917 supplied sixty-three miners with water for sluicing, by which gold to the approximate value of £15,075 was obtained. The cash received for water sold amounted to £2,430, and the expenditure on the upkeep of the races was £3,221. These races are therefore not self-supporting, and no allowance for interest on capital expenditure or depreciation has been made.

VIII. SCHOOLS OF MINES.

The following table shows the expenditure by the Government on schools of mines during 1917-18:—

	£ s. d.
Subsidies towards erection and maintenance	1,806 3 0
Chemicals and apparatus	28 12 3
Salaries of teachers, travelling-expenses, &c.	2,718 11 11
Total	£4,553 7 2

The following is a summary of the result of the Government Schools of Mines annual examinations, 1917:—

Name of School.	Number of Students presenting themselves at the Annual Government Examination, 1917.		Number of Papers submitted at the Examination.		Average Number of Marks awarded per Paper.
	On any of the Six exclusively Mining Subjects.*	On any Subject.	Senior.	Junior.	
Karangahake	2	16	20	4	64·83
Waihi	2	30	39	4	57·14
Thames	2	42	65	1	54·09
Westport	5	21	32	2	52·17
Reefton	6	17	30	..	45·60
Huntly	2	9	7	5	43·83
Coromandel	..	12	23	1	39·50
Totals	19	147	216	17	52·36

* The six exclusively mining subjects are mineralogy, metallurgy, mining, ventilation, pumping and winding, and geology.

I have, &c.,
Frank Reed,
Inspecting Engineer of Mines.

ANNEXURE A.

SUMMARY OF REPORTS BY INSPECTORS OF MINES.

Northern Inspection District (Mr. M. Paul, Inspector of Mines).

Quartz-mining.

Waihi Gold-mining Company (Limited).— The following are the particulars of the principal development works carried out in this mine during the year:—

No. 12 level (1,447½ ft. below the collar of No. 4 shaft): The drive east on the Empire lode at 86 ft. in the north-west crosscut from No. 4 shaft was advanced 67 ft., making a total of 217 ft. From 144 ft. to 178 ft. east the width averaged about 5½ ft., and the assay value varied from £1 8s. 1d. to £5 4s. per ton. From 180 ft. to 193 ft. the drive was continued in country rock, owing to a large cavity in the lode. From 195 ft. to 217 ft. the width was about 6 ft., and the value varied from £1 2s. 4d. to £2 3s. 7d. per ton. No. 4 shaft west crosscut was continued 79 ft., making a total of 665 ft. At 653 ft. 12 ft. of lode was exposed, average value 6s. 10d. per ton. Quartz still showed in the face of the crosscut, which is 150 ft. from No. 2 shaft. No. 4 shaft south-east crosscut, to cut the Royal lode, was driven 15 ft., making a total of 363 ft. The country rock was much fractured, and letting out a large volume of water when work was suspended. The Royal lode should be met in the next 60 ft. or so. Work in this level was suspended in February owing to shortage of men and stores.

No. 11 level (1,301 ft. below collar of No. 5 shaft): From the Empire lode the Pistol north-west crosscut was started at 438 ft. east of the Bath north-west crosscut, and at 137 ft. from the south wall of the lode the north section of the lode was intersected. It was 26 ft. wide, having an average value of £1 4s. 3d. per ton. The lode being driven on to the west, for the first 36 ft. its average value was £1 6s. 10d.; from 36 ft. to 50 ft. the drive was in a horse of country; at 50 ft. west the lode was crosscut, being there divided by a horse of country into two parts, the north branch being 8 ft. wide and averaging 11s. 9d. per ton; the south branch was 3 ft. wide and averaged £2 4s. per ton.

Martha lode: Further work done to the east on the south branch of the Martha lode proved it to split up into small stringers of low value.

No. 10 level: Cow south-east crosscut, started from the Martha lode at 160 ft. east of No. 4 shaft north-west crosscut, has been extended to 136 ft. south-east. A few small leaders of low value were met. The last 26 ft. was in brecciated dacite.

No. 7 level: Martha lode north section, east of No. 6 shaft crosscut, was driven on 150½ ft., making a total of 226 ft. From 115 ft. to 226 ft. there is payable ore 9 ft. wide on the north wall of the lode.

Shafts: No sinking was done during the year.

At every level in this mine men are engaged driving or stoping on the different lodes. A considerable tonnage of high-grade ore is also being won from the arches left in under the levels. In order to enable this ore to be extracted safely, gangways have been driven in solid country in the footwall, parallel to the lode, and at intervals of about 50 ft. short crosscuts are driven into the lode. The square-set method of timbering is employed. A Sirocco ventilating-fan, capacity 32,000 cubic feet per minute, has been installed at No. 5 shaft. Gates opening inwards are attached to each cage.

Waihi Grand Junction Gold-mining Company.—No. 8 level (1,320 ft.): North-west crosscut advanced 70 ft., the total length from main shaft being 140 ft., driven in country rock. South-east crosscut advanced 460 ft., the total length being 635 ft. The Royal lode was intersected at 560 ft., and proved to be 15 ft. in width, of which 5½ ft. on the south wall assayed £2 0s. 10d. per ton. The remainder of this lode is of low grade. The drive west from south-east crosscut was advanced 200 ft.; the first 80 ft. assayed £3 2s. per ton, the remainder £1 0s. 3d. for a width of 5 ft. The drive east of crosscut was advanced 286 ft., the values being low.

The Empire footwall branch lode was cut at 147 ft. The drive west from south-east crosscut was advanced to 285 ft. The following values were obtained: From south-east crosscut to 160 ft. west, over an average width of 16 ft., value £1 14s. 1d.; from 160 ft. to 195 ft., average width 13½ ft., value £3 18s. 1d.; from 195 ft. to 240 ft. west, average width 14½ ft., value £2 10s. 2d.

The east drive advanced from south-east crosscut 587 ft. The following values were obtained for width of drive (5 ft.): From south-east crosscut to 85 ft. east, £4 1s. 4d.; from 85 ft. to 130 ft., 11s. 8d. per ton; from 130 ft. to 585 ft., £1 16s. 2d. Crosscuts at intervals of about 80 ft. have not disclosed any further payable ore.

The main shaft was sunk 11 ft. during the year to a total depth below the shaft-collar of 1,357½ ft.

Stoping is in progress from No. 4 level downwards on the Royal and Empire lodes, but development was suspended owing to shortage of labour.

Waihi Extended Gold-mining Company (Limited).—No. 7 level (1,360 ft.): The south-east crosscut advanced 97 ft. At 44 ft. a small mineralized vein intersected, which by analysis contained traces of gold, silver, and molybdenite. The east crosscut advanced 94 ft. in favourable country.

At 75 ft. above No. 7 level a quartz formation varying from 6 in. to 18 in. in width, containing molybdenite, was intersected and driven upon for 6 ft. The molybdenite occurs somewhat irregularly in spots and ribbon-like veins. Three bulk samples treated at the Waihi School of Mines gave the following results: No. 1—Gold and silver, traces; molybdenum, 0·13 per cent.; value per ton, 13s. No. 2—Gold and silver, traces; molybdenum, 0·30 per cent.; value per ton, £1 11s. No. 3—Gold and silver, traces; molybdenum, 0·45 per cent.; value per ton, £2 5s.

Waihi Reefs Consolidation (Limited).—Favona shaft, No. 3 level (300 ft.): In the west crosscut a lode 20 ft. in width was intersected, but owing to lack of funds it was found necessary to ask for six months' protection, which was granted. Work was recently resumed, five men being employed.

Rising Sun Gold-mining Company, Owharoa.—Work in this mine has been confined to stoping above the low level on lodes varying in width from 6 in. to 3 ft. 6 in., but owing to the hard nature of the quartz and the scarcity of labour, and pending the installation of a rock-drilling plant, work has been temporarily suspended.

Talisman Consolidated (Limited).—No. 16 level (1,130 ft.): Driving north and south has been carried on continuously, and a considerable amount of crosscutting has also been done, the results proving disappointing.

At No. 15 level the south drive was advanced into the Dubbo section, connecting with No. 19 winze from No. 14 level, but failed to reveal anything of value.

New Zealand Crown Mines (Limited).—This mine has been in the hands of tributers, twenty-one men being employed.

Waihi-Paeroa Gold-extraction Company.—During the year this company retreated 147,700 tons of river-sands for bullion valued at £51,300, which enabled the directors to pay a small dividend.

Komata Reefs Gold-mining Company.—Work was confined to prospecting at No. 2 and bottom level.

United Gold-mines (Limited), Maratoto.—The 10-head stamp mill is almost completed. No work was done in the mine during the year.

Bendigo, Hardy's, and Waitawheta Mines, Waiorongomai.—Five men have been employed. Work was confined to prospecting. 200 tons treated produced bullion valued at £158.

Thames Borough.—The only work within the borough boundaries is at the Waiotahi Mine (four men), and a few tribute parties in the Kuranui Caledonian Mine.

Sylvia Reefs (Limited).—This company was reformed in March, 1917; since then work has been confined to developing the Norfolk lode, which averages 9 ft. north and south of the low-level crosscut. In the north end a block 150 ft. in length, and in the south end a block 170 ft. in length, has been opened up on payable ore.

Waitanga Consolidated Gold-mining Company.—During the year 150 ft. has been driven at No. 2 level on the main reef, the average width being 5 ft. A leading stope was advanced 85 ft. 583 tons treated produced £328 8s. 8d.

Mount Zeehan Gold-mining Company, Waiomio.—A considerable amount of development has been done at the different levels of this mine. The lode varies from 2 ft. to 7 ft. in thickness. Several short blocks said to contain payable ore have been opened up. A 10-head stamp mill is in the course of erection, which it is anticipated will be ready to commence crushing before the winter.

Golden Belt Gold-mining Company, Nevesville.—Work was confined to driving and stoping on a lode, which varies from 4 ft. to 12 ft. in width, at No. 1 level. Fourteen men were employed. 284 tons treated produced bullion valued at £1,651 13s. 5d.

Occidental Consolidated Gold-mining Company.—During the year five men were employed driving and stoping at No. 6 level. The results, however, proved disappointing, and this mine is now under protection.

Nonpareil Gold-mining Company.—This mine is owned by Mr. F. Sawyer; a portion is let on tribute. Gold to the value of £1,380 6s. was obtained during the year.

Coromandel.—Mining in this district is confined to a few prospectors. All the principal claims are held under protection.

Barrier Reefs Gold-mining Company, Great Barrier Island.—During the year a lode was intersected at low level, the values being low. A winze is being sunk from the upper level for ventilation, and to further test the lode.

Muir's Gold-reefs Gold-mining Company (Limited), Te Puke.—This mine is situated about eighteen miles south of Tauranga on the eastern fall of the Te Puke Range. About three years ago the freehold of this property was purchased by Mr. G. Muir, who employed an experienced prospector named R. Worth. At No. 1 level 200 ft. was driven upon the footwall of a lode 50 ft. in width, the quartz and country rock being similar in appearance to that of the Martha lode in the Waihi Mine. It is said that assays taken over the distance driven gave an average value of £2 per ton. Whilst this work was in progress loose boulders of quartz were found farther down the spur, which on being assayed proved to contain high values. A crosscut was started, and after driving 170 ft. a 2 ft. leader was intersected, of assay value averaging £5 per ton. This was driven on for 87 ft., when it junctioned with a lode 5 ft. in width, running almost north and south. 40 ft. has been opened up south and 297 ft. north on the latter; values satisfactory. It was then decided to put in a lower level giving 200 ft. of backs. After driving about 800 ft. a lode was intersected, which on my visit (18th February, 1918) had been driven upon 47 ft. south; width in face, 3 ft.; said to be highly payable. An up-to-date 10-head stamp mill and cyanide plant has also been purchased, excavations cut out, and a start made with its erection.

Oil-wells.

Taranaki (New Zealand) Oil-wells (Limited).—No new drilling has been done during the past year, the drilling staff having been employed repairing No. 5 bore and recasing No. 2 bore. No. 5 bore stopped yielding oil during 1916, but No. 2 bore still continues to be intermittently productive. No record has been kept of the yield, which has been small, and can only be ascertained when the storage tanks are gauged. Depth of wells: No. 2 bore, 3,045 ft.; No. 3 bore, 4,019 ft.; No. 5 bore, 2,950 ft.; rotary, 2,494½ ft.

Taranaki Oil Lands Acquisition and Development Company. The Blenheim bore has now attained a depth of 5,021 ft., and it is alleged that a main deposit of oil should be met with shortly. During the past year the company drilled 370 ft., but owing to constant difficulties through the drilling-cable breaking drilling was abandoned in July, pending the arrival of a new rope from London. The company estimates that 10,000 gallons of crude oil was yielded during 1917.

Consolidated Oilfields of Taranaki. Huiroa bore: The depth of this well is 4,921 ft. At 4,900 ft. the bottom length of casing became detached, owing to wearing by tools. The strata is of incohesive nature, necessitating the casing being kept within a few feet of the bottom. Operations are at present suspended.

Fatal Accidents.

22nd February: William Edward Crompton was killed by falling out of cage at the Waihi Grand Junction Mine.

18th April: William John Ward was killed by being caught in belting at Bull's battery, Thames.

13th July: James McConnell was killed by a blasting accident at Waihi Grand Junction Mine.

11th September: Peter Lineir was killed by being caught in the machinery at the Waihi-Paeroa Gold-extraction Company's works, Paeroa.

17th October: John McPherson was killed by fall of stone at Waihi Mine.

Non-fatal Accidents.

2nd April: Albert Toto, skull fractured by being struck with winch-handle whilst working on river-dredge of the Waihi-Paeroa Gold-extraction Company's works.

3rd October: Edward Meagher, back injured by falling down a pass at the New Zealand Crown Mines, Karangahake.

20th October: Mark Ryan, back injured by being struck with bucket whilst sinking a winze in the Waihi Grand Junction Mine.

NORTH AUCKLAND INSPECTION DISTRICT (Mr. BOYD BENNIE, Inspector of Mines).

Whangarei Cinnabar-mining Company.—The mine has been working for some years, and a number of prospecting-shafts have been sunk to depths varying from 30 ft. to 40 ft. This was a useless expenditure of capital, as the ore-body was outcropping on the hillside close to where the present adit level was driven on the lode, which is dipping north-west 1 in 10. The adit has been driven 163 ft., the lode being from 3 ft. to 5 ft. wide. The hanging-wall is well defined, but not so the foot-wall, and in places the lode is a segregation of ore. Crosscuts on the lode have been driven north-east and south-west 59 ft. and 49 ft. respectively, and from the crosscuts stoping on the lode is being done, the lode being 3 ft. wide.

I have had several samples of the ore assayed as follows: Assayed at Thames School of Mines, 21st March, 1914: Sample No. 1—5·1 per cent. of mercury, valued at 2s. 3d. per pound; average value per ton of ore, £12 17s.: sample No. 2—1 per cent. of mercury at similar value; average value per ton of ore, £2 10s. 4d.: making an average value per ton of £7 13s. 8d. Five samples forwarded to the Dominion Laboratory, Wellington, in September, 1916, gave mercury as follows—No. 1, 6·26 per cent.; No. 2, 0·78 per cent.; No. 3, 2·73 per cent.; No. 4, 2·77 per cent.; No. 5, 4·60 per cent.—which is very satisfactory.

I believe there are 3,000 tons of ore ready to be stoped, and the main-drive face is in the ore-body. Seven miners are employed in the mine, three men on the surface, and two men burning charcoal, making a total of twelve men.

The company have erected a furnace at their mine, where two trial parcels of ore were treated as follows:—

(1.) 1917. 68 tons of ore gave mercury valued at £375; 1,500 lb. of mercury sold at 5s. per pound, f.o.b. Auckland, to Messrs. Elliot Bros., of Sydney, N.S.W.

(2.) 1918. 130 tons of ore gave mercury valued at £918 15s; 35 bottles, 75 lb. each, of mercury—2,625 lb.—sold at 7s. per pound, f.o.b. Auckland, to S. V. Nevans Proprietary Company, Auckland.

The prices quoted for the mercury are subject to revision, being the estimated value advanced by the purchaser.

The treatment plant is distant from the mine approximately 400 yards, being connected by a ground-tram. The property appears to be a valuable one, and with careful treatment of the ore should pay reasonable dividends on the capital invested. There has been some trouble with the pastoral-lease holders, through the dual control by the Warden and the Commissioner of Crown Lands, who granted pastoral lease over the mining claim at 6d. to 8d. per acre per annum, while the claim-holders pay 2s. 6d. per acre per annum for the same area.

McLeod Bros.' Alluvial Cinnabar Claim.—Two men have been employed in preparing water-race, dam, &c., to work this deposit. The prospects are very good, granulated cinnabar-ore being recovered from the soil and gravel of an upland swamp. Some samples were assayed and found to be very rich. The area may contain a considerable quantity of valuable ore.

Joffre Mine (Collins Bros. and Co.).—The claim is adjacent to Messrs. McLeod Bros.' claim. There is a cinnabar-ore deposit outcropping on the slope of a valley, and the deposit appears to be lying almost horizontally. Some feet below the outcropping ore-deposit an adit level has been driven for 50 ft., but had not then cut into the ore lode, and the work done gave no indication as to the value or extent of the ore lode. Two men are employed. No other work has been done on the claim.

General.—Although there are several claims held for mining cinnabar in the vicinity, none of the holders have done any work to prove the value of their claims. The Whangarei Cinnabar-mining Company only have systematically prospected their property.

WEST COAST INSPECTION DISTRICT (Mr. J. F. DOWNEY, Inspector of Mines).

Quartz-mining.

MARLBOROUGH.

Dominion Consolidated Mining and Development Company (Limited).—Work has proceeded steadily throughout the year, and developments have been very fair. The most important have been in connection with the Golden Bar property, where the driving of Nos. 1 and 2 adits has opened up a large reef carrying fair values in gold and a certain amount of scheelite. The Empire City Mine, from which the bulk of the scheelite was formerly obtained, has not shown such good development, but will continue to produce for some time yet. Shortage of men has hampered operations considerably, and has been responsible to a great extent for a decreased production for the year. The gold-production was 1,844 oz. 13 dwt., valued at £6,873 7s. 2d., and the scheelite 28 tons, valued at £5,005.

Deep Creek Gold-mining Syndicate.—Very little development work has been carried out on the property, but the erection of a battery has been practically completed, and a good deal of work done in the way of making roads and tramways.

Alford and Party (Mountain Camp).—Developments here have not been satisfactory. The reef was very flat, and in hard country. When picked up by a rise from the bottom level it was very small. Work on the property has practically ceased for the time being.

Cadigan's Treatment Works.—This consists of a small concentrating plant erected by Mr. J. M. Cadigan to recover scheelite from the residues from the Dominion Consolidated Company's battery. The plant seems to be working well. Trials with a primitive plant showed definite saving of scheelite, and the proprietor has now installed a Californian slime-table, from which much better results are expected. Some 3½ tons of scheelite, valued at £520, was recovered to the end of the year.

NELSON.

Colossus Gold-mining Development Company (Limited).—This company has been carrying out prospecting operations in the Wangapeka district, particularly on Blue Creek and Nuggety Creek, with what appear to be encouraging results. On one reef at Blue Creek, known as the O'Malley reef, some 210 ft. of driving was done, and a shoot of pay-ore from 60 ft. to 70 ft. in length is claimed to have been revealed. Another reef has also been located, which the management claims gives colours by crushing and panning. Very little work has, however, been done on it. An average of six men has been employed. There is no other quartz-mining in the Nelson district.

LYELL.

New Alpine Consols Company.—Further work was done on the shoot of stone struck in the extension of the Tyr Connel tunnel, but as the stone was much disturbed at this level it was determined to start a new drive on the reef-line at a depth of 250 ft. below the old tunnel. Good progress was made with this low-level tunnel, and at about 200 ft. in a shoot of stone was met with which at the time of writing had been driven on for some 50 ft., was up to 4 ft. wide, and showed gold. This mine promises well.

CAPLESTON.

Boatman's Consolidated Gold-mining Company (Limited).—The work of sinking the Fiery Cross shaft has been steadily continued, and to the end of the year it had reached a depth of 1,012 ft. It is the intention of the company to continue the shaft to 1,025 ft., then open out at the 1,000 ft. level. Up to the 30th September, 1917, the sum of £21,816 19s. 1d. had been expended by the company. No other mining was done.

REEFTON.

Blackwater Mine.—Development work has been carried on steadily during the year, although the shortage of labour has restricted operations. On the whole developments have been good, the bottom level, No. 8 (1,214 ft.), opening up very well. The level is apparently in much more settled country than either Nos. 6 or 7 levels, and a particularly satisfactory feature in the development was the discovery of two valuable shoots of pay-stone in the south end, which have not been worked at any upper level. The location of these shoots promises a considerably longer life to the mine. The length of the payable stone on this level is now almost as great as at any stage of the mine's development, and the values appear to be living down in a fairly satisfactory way. The stopes over Nos. 5, 6, and 7 levels have also opened up well, and the north ends of these levels may be said to all look well. The returns from the mine still show a decrease, but it is not so great as during 1916, being only £15,844, as compared with £30,000 for the year mentioned. This falling-off has been mainly due to shortage of labour. Throughout the year there has been little more than enough men to man one shift. There seems, however, to be a slight falling-away in values, the average being £1 16s. 5d. for 1917, as against £1 19s. 6d. for 1916.

Blackwater South Mine.—A little further prospecting-work was done here without any development of importance.

Cumberland Mine.—No development work has been done for the year, litigation in connection with the Scotia claim having a good deal to do with the arrest of operations.

Energetic Extended.—Prospecting operations were continued through a considerable part of the year, from two to six men being employed, but nothing of any value was found.

Keep-it-Dark Mine.—Ventilation was re-established, and work resumed. Development work has been confined to No. 8 level, where several blocks of stone have been opened up in the south drive, but the values were not high. These developments were on the west reef, which has always been

low-grade. Some 5,542 tons of quartz were crushed for 922 oz. 19 dwt. of gold, valued at £3,469 16s. 10d. The mine is now in the hands of a Christchurch company.

Murray Creek Mine.—The new plant was completed and crushing was resumed in May, since when 9,728 tons have been treated for gold valued at £21,726 16s. 2d. No dividends were paid. Development work was confined to the continuation of No. 4 level, but was rather disappointing, inasmuch as the drive proved to be in a zone where faulting had somewhat disturbed the reef. This is not expected to seriously affect the future of the mine, as the stone will be picked up again below the level.

New Big River Mine.—Work has progressed steadily. Like all the other mines of the district, the mine has been somewhat hampered by lack of sufficient supply of skilled labour; nevertheless the amount of stone crushed was only about 300 tons less than last year. The value of gold produced was £19,177 17s. 3d., as compared with £19,363. The mine is one of only two which appear on the dividend list for the year for this district. Dividends to the amount of £7,200 were disbursed, making the total dividends paid by the company £98,400. Development work has been practically confined to No. 11 level. Some fairly extensive bodies of stone have been opened up, but faulting has greatly disturbed the reef, making prospecting-work difficult.

North Blackwater Development Syndicate.—The sinking of the Prohibition shaft was continued to 1,360 ft., and at 1,350 ft. a chamber was cut and a crosscut started towards the line of the reef worked in the adjoining Blackwater Mine. In this crosscut a number of parallel reefs have been met with, at least three of them carrying good values. It is believed by the management that the reef worked in the Blackwater Mine has not yet been reached. The developments are thus extremely satisfactory, and on its present appearance the mine promises well as a future gold-producer.

Progress Mine.—Not much development in the way of shaft-sinking or driving has been done, but a large body of stone has been opened up in No. 11 stope. The falling-off in production noticeable during 1916 has continued during the past year, returns falling to 19,840 tons crushed for 5,576 oz. 6 dwt., valued at £22,707 13s. 3d. Shortage of men has been mainly responsible for this. For the great part of the year work has had to be restricted to one shift.

Wealth of Nations and Energetic Mines.—A good deal of development work was carried out, particularly on Nos. 6, 7, and 12 levels, without any important results. There was a decrease of about 7,000 tons crushed as compared with last year, due greatly to shortage of labour. There has also been a decrease in values from an average of £1 10s. 10d. to £1 0s. 10d.

HOKITIKA AND ROSS.

Mount Greenland Company.—Very little development work has been done at this company's mine at Cedar Creek during the year, but stoping was carried on steadily. Owing to the very dry season experienced on the West Coast the battery, which depends on water for power purposes, has been idle for a good part of the time. Some 493 tons of quartz were crushed for 806 oz. 9 dwt., valued at £3,145 19s. A small dividend absorbing £250 was paid. This is the only quartz-mining in this part of the district.

WESTPORT.

Columbia Reef.—Messrs. Bagley Bros.' prospectors have located the cap of a reef which is thought to be the downward continuation of what was known in past times as the Columbia reef, and from which years ago crushings were taken giving highly payable results. All trace of the reef was completely lost in the workings, however, and it was assumed that the stone worked was merely part of a reef which had slipped from higher country. A small company has been formed to test the present discovery. At present there is nothing showing but the cap of the reef, which is considerably broken.

STILLWATER.

Victory Mine.—A small company has been formed to work a gold-antimony lode situated about 1,000 ft. above Stillwater, on the range. A battery is being erected. The outcrop has been opened up at a number of places, but very little prospecting has been done to prove the extent or value of the lode below the surface. The lode is flat, and appears to be considerably split up.

General Remarks on Quartz-mining.

Apart from the mines mentioned, very little prospecting has been done for quartz. Owing to the war and the difficulty of getting men, mining companies have been obliged to refrain as far as possible from everything except essential work, and there are very few men now who voluntarily devote their time to searching for new reefs. The mines have been visited regularly, and all care taken to see that the regulations have been strictly adhered to. Only one fatal accident happened during the year. This occurred at the Progress Mine to a miner named Thomas Robbins, through his being struck by a rock falling from the back. The Coroner returned a verdict of "Accidental death." One miner was prosecuted for dry-boring, but the case was dismissed.

Dredging.

The dredging industry in the district has shown a little improvement for the year, the recovery of gold being valued at £30,325, as against £27,889 last year.

One dredge—the Ahaura River—only worked about six weeks and then closed down; while two new dredges have been put in commission, the Kapitea and the Rimu No. 1. The former won 792 oz. 16 dwt. and the latter 1,782 oz. 10 dwt.

The Rimu No. 1 dredge has not been so productive as was anticipated. It was estimated that, judging by the values shown by the test bores, 100 oz. a week would be recovered. This hope has not

been realized, however, even within measurable distance. The ground, however, has been heavy, and the dredge is light for the work; a lot of time was lost through breakage. The material dredged to the 31st December is stated to be 102,388 cubic yards.

Only two dredges paid dividends during the year—namely, Success (£1,500), and Kapitea (£500).

Alluvial Mining.

MARLBOROUGH.

Very little work has been done in this district, only 8 oz. 17 dwt. having been returned.

COLLINGWOOD.

One claim only, the *Parapara*, produced a little gold. Four men were employed. The total return was only 13 oz. 16 dwt.

HOWARD DIGGINGS.

No fresh finds have been reported, and the number of diggers has been steadily shrinking as the older claims worked out. An average of about forty men was employed during the year. The total yield of gold returned from the various claims is 774 oz. for the year.

MURCHISON.

Only two claims have produced gold in any appreciable quantity during the year—*Hunter's*, at Matakitaki, and *Beilby and Richardson's*, at Horse Terrace.

ADDISON'S FLAT.

Williamsons and party and the *Addison Flat Sluicing Company* are the only two claims that have done any active work. The latter, however, only carried on sluicing operations for a short period.

CHARLESTON.

Work has continued steadily at Messrs. Powell Bros.' *Beach Claim*, eight men being employed, and some 711 oz. of gold were won. This is a big falling-off from last year. Three other small claims, employing seven men in all, were also worked.

GREY VALLEY.

Lake Hochstetter Sluicing Company.—Construction of water-race is still being proceeded with. An average of thirty men was employed. Apart from this very little alluvial work is being done now in the valley.

The *Grey Valley Sluicing Company*, at Goat Terrace, employed three men and recovered 182 oz. *Donnellan Bros.*, Nelson Creek, employed five men. Several other small claims were working, but very little gold was produced.

BARRYTOWN.

The *Barrytown Sluicing Company* has employed an average of thirteen men, and produced 287 oz. of gold.

KUMARA.

The number of men employed has not varied much during the year. Practically the same number of men have been employed around Kumara, Callaghan's, Goldsborough, and Stafford as during 1916.

HOKITIKA.

Brighton Terrace Sluicing Company.—Work has been carried on steadily. The return of gold does not appear, however, to have been as satisfactory as could have been desired. An average of twenty-two men has been employed, and the gold recovered was 293 oz. 15 dwt. The company had a good deal of trouble to contend with. The old Douglas tunnel, which had been used as a tail-race, was found much too low to give the sluiced material sufficient fall, and it became necessary to drive another tail-race into the claim. An alteration of the channel of the Hokitika River interfered greatly with the supply of water, the main stream shifting a considerable distance away and leaving only a very limited quantity of water in the channel at the pumping-station. It became necessary to put in an extra pump to augment the supply from the main channel. It is to be hoped that with the new tail-race in operation, allowing for more rapid work, the company will during 1918 receive the reward that it deserves for its enterprise.

The *Westland Prospecting Syndicate* has carried out very active operations on several areas in the district. At Kanieri Forks the syndicate carried on the work previously started by Mr. H. S. Hungerford, sinking three of the old shafts a farther depth of from 18 ft. to 35 ft., and sinking twenty-six new shafts ranging from 8 ft. to 54 ft. in depth, and totalling 844 ft. of sinking. Some 264 ft. of tunnel were also driven. The prospects, though good in many shafts, did not, however, prove sufficient payable ground to warrant the expenditure of the large sums necessary to bring the water on to it. The syndicate accordingly abandoned the area. It is, however, still actively prospecting by means of the Keystone drill an extensive tract suitable for dredging at the Arahura River. Up to the 22nd December seventy boreholes have been put down, ranging up to 50 ft. in depth and averaging 27 ft. The results have been very satisfactory, and a very considerable area has been proved payable. It will be scarcely possible to put dredges on the ground while the war lasts, but the syndicate intends to provide the necessary plant with as little delay as possible.

REEFTON.

Very little alluvial work has been done in this locality during the year. Several claims have worked, but the results were small. There has, however, been a good deal of active prospecting. An Auckland company known as the Alluvial Claims (Limited) has tested a large number of places about the district by means of boring and shaft-sinking. The results in several of them seem to prove the existence of payable areas. On one of them at Antonio's the cutting of a race is being started immediately, and it is expected that on another at Waitahu a start will be made very shortly at active operations. The company also prospected areas at the Landing, on the Buller and the Inangahua Rivers, at Orwell Creek, Stillwater Creek, Larry's Creek, Maori Gully, and Grey River. Gold was got in a number of these, but the area of pay-ground was in no case sufficient to justify the putting-on of either dredging or sluicing plants. A representative of English capital, Mr. Wray, also prospected some large areas in the district, but was not satisfied with the results.

Fatal Accident.

28th July: Thomas Robbins was killed by a fall of stone at the Progress Mine.

Serious Non-fatal Accident.

19th December: Frederick Reginald Jones sustained fractures in both ankles by a fall in a prospecting-shaft at Larry's Creek.

SOUTHERN INSPECTION DISTRICT (Mr. A. WHITLEY, Inspector of Mines).

Quartz-mining.

GLENORCHY.

Glenorchy Scheelite-mining Company (Limited).—Mount Alfred Mine: No. 1 or battery level is being driven on the main lode north of the junction of the east and west lodes. No. 2 level, 47 ft. above No. 1, has been driven 200 ft. from the surface on the east lode, which varies from 2 ft. to 6 ft. in width and carries high-grade scheelite. At No. 3 level, 25 ft. above No. 2, driving and stoping has been carried out on the east and west lodes. Glenorchy Mine: No. 1A level has been extended to 500 ft. from the surface, and connected with No. 1 level, giving 100 ft. of backs on the lode and opening up a block for stoping. Stoping has been in progress at Nos. 1, 3, and 5 levels, high-grade ore having been won from No. 5 level. Junction Mine: A block of good ore was discovered on the surface in the Bonnie Jean section. This is worked opencast, water being used for stripping off the clay overburden. The output of scheelite concentrates by the company shows an increase of 10 tons over the 1916 return.

The principal producers of scheelite among the small parties of miners engaged in the industry were Paulin and Tripp, Black Peak (20½ tons), and Birley and party, Mount Larkins (5½ tons). Small ore crushing and dressing plants, worked by hand, horse, or water power, have been installed for dressing the scheelite, and a high-grade concentrate is produced.

MACETOWN.

United Goldfields (Limited). This company resumed operations in the latter part of the year. Levels are being driven in the All Nations and Garibaldi sections of the mine to test the reefs 220 ft. and 160 ft. respectively below the upper workings.

MACRAE'S.

Golden Point Gold and Scheelite Company.—Owing to the lodes in the upper levels having been practically worked out, development has been commenced at deeper levels. For this purpose an intermediate level is being driven between the smithy and Donaldson's low levels. Scheelite and gold to the value of £3,061 was produced during the year.

Gold and Tungsten (Mount Highlay).—Operations in this mine have ceased. The battery and tramways were dismantled and sold for removal.

Marcburn Gold and Scheelite Company (Mount Highlay).—From opencast workings on the lode in Block 18, 3,196 tons of ore have been mined, and treated for a return of scheelite and gold valued at £2,037. Work has been carried on continuously throughout the year.

Stoneburn Mining Company.—Operations were carried out during the year on Mouat's and battery lodes. From the level on the battery lode a rise was put through to the surface 100 ft. The lode was small, and did not carry payable ore below the oxidized zone of country, which is characteristic of the lodes in this locality. Most of the ore treated was won from the outcrop of Mouat's lode.

Ten small parties were engaged in scheelite-mining during the year. Of these, Messrs. Gaytan and Fraser were the most successful, producing about 4½ tons of scheelite concentrates. The work done consisted of trenching and sinking shallow shafts on the outcrops of lodes.

THE REEFS.

Pukerangi Mining Company.—This company was formed to develop a scheelite lode which was discovered by Mr. A. Ewart in 1916, at a point about one mile south-west of the Barewood lode. A level was driven 215 ft. to give 90 ft. of backs on the lode, and two rises were put up to the surface. Crosscuts from the level showed the lode to be about 20 ft. wide and carrying scheelite on both walls. An ore crushing and dressing plant was erected, consisting of stone-breaker, screens, jig, and Wilfley table, for treating high-grade ore, and 5-stamp battery for treating low-grade ore and tailing from screens and jig.

The Reefs Syndicate.—This syndicate took over Mr. A. C. Buckland's mine during the year. A crosscut was driven and the Barewood reef intersected 34 ft. below the outcrop. A 5-stamp battery and amalgamating-tables for saving the free gold were installed. 100 tons of ore were crushed for a yield of 30 oz. gold, valued at £116 5s.

Barewood No. 1.—H. S. Molineaux, the owner of this mine, is working a stockwork formation, about 20 ft. wide, in the footwall of the Barewood reef. Scheelite occurs in veins and leaders throughout the formation. The ore is dressed by hand to bring it up to the required standard.

WAIPORI.

Cosmopolitan Mine.—Alfred Rogers and party reopened this mine, which had been abandoned for years. A 5-stamp battery was erected, and 16 tons of ore taken from the reef at the 70 ft. level of the Cosmopolitan shaft yielded by amalgamation process 8 oz. gold, valued at £31 4s. 11d. Assays of battery concentrates showed that they contained high values, and crushing was discontinued until suitable machinery could be installed for saving them. A discovery of wolfram and scheelite was made in the lode outcrop west of the Cosmopolitan shaft. An analysis of a general sample of the wolfram showed it to contain 39 per cent. of tungstic acid, and picked samples analysed as high as 60 per cent.

G. Bertenshaw was the only producer of scheelite in the Waipori district during the year. His workings consist of open cutting and shallow shaft on a small scheelite vein.

BALD HILL FLAT.

White's Reef.—R. T. Symes crushed 130 tons of ore from the stopes below the battery level for a return of 115 oz. 15 dwt. gold, valued at £445 13s.

Excelsior Reef.—Surface prospecting with a view of locating this reef north of Gray's old workings has been carried on by Symes and party without any discovery of importance having been made.

BANNOCKBURN.

Otago Central Consolidated Gold-mines.—This company has acquired the Carrick Company's mine and plant, and is proceeding with the development of the Royal Standard and White Horse reefs at the low level.

Alluvial Mining.

TUAPEKA DISTRICT.

Gabriel's Gully Sluicing Company (Lawrence).—Two elevating plants have been steadily employed treating the tailing-deposit from Blue Spur. The returns show a falling-off in the yield of gold for the year as compared with 1916.

Lawrence Sluicing Company.—This company is working old tailing from Blue Spur at the head of Munro's Gully. Payable returns are being obtained.

Golden Crescent Sluicing Company (Weatherstone's).—Sluicing and elevating auriferous cement from a depth of 100 ft. with payable results.

Waitahuna Claims.—The Havelock and Sailor's Gully Sluicing Companies worked steadily throughout the year. The former company is still on the list of dividend-payers.

Waipori Claims.—Eight parties were working in this locality. Munro and George, Post-office Creek, were the most successful, producing gold to the value of £1,493.

Teviot-Molyneux Gold-mining Company (Roxburgh).—Elevating has been in progress during the year, but numerous stoppages were caused by breakage of elevator castings. Difficulty has also been experienced in obtaining suitable labour to keep the plant in continuous operation. Gold to the value of £1,659 was obtained.

Ladysmith Gold-mining Company (Roxburgh).—This company's operations were not as successful as in former years. The deep ground in this claim cannot be effectively dealt with by the available water-supply.

Coulter and Party (Commissioner's Flat).—The schist bottom in this claim rose 70 ft. to 40 ft. on the west side near the river, and the wash is not as good as that in the deeper ground.

Sluicing claims in this district suffered considerable damage by the heavy rain and floods in May. The water-races, dams, and pipe-lines of the Tuapeka and Tamiti claims were very badly damaged, and owing to the high price of material and difficulty in securing labour to carry out repairs the owners were compelled to suspend operations.

NASEBY.

Dry summer and autumn seasons caused a scarcity of water, and several claims suspended work. Heavy rains in May replenished the supply, and sluicing operations were carried on steadily during the remainder of the year. About twenty small parties of miners find employment in this district.

ST. BATHAN'S.

Scandinavian Water-race Company.—Operations were confined to the Kildare section, where elevating from a depth of 80 ft. was in progress.

Morgan Bros. (Cambrian).—This party is working a seam of quartz drifts that they discovered in the bed of Cambrian's Creek. It is about 10 ft. in width, and is dipping towards the foothills at an angle of 30°. Payable returns are being obtained.

Other claims working in this district are—Vinegar Hill, United M. and E., M. Gannon, and O'Hara and McCarthy. The returns obtained during the year were barely payable.

MATAKANUI.

The Undaunted and Tinkers Gold-mining Companies amalgamated during the year. The whole of the water from the company's races can now be used on one face, and should result in increased returns.

UPPER TAIERI.

Lammermoor Mining Party.—This party purchased the Lammermoor Company's mine and plant, and sluicing operations are carried on when water is available.

Carr and Wilson (Patearoa).—Three men employed. Sluicing and elevating from a depth of 30 ft. for satisfactory returns.

MAEREWHENUA.

Sluicing is still being carried on in this locality. Eight parties of miners were engaged in the industry during the year.

LAKE DISTRICT.

Alluvial mining in this district is gradually declining. Three claims were worked within the Arrow watershed during the year, and eight on the Shotover River. The returns in all cases were small.

NEVIS.

A mild winter and absence of heavy falls of snow resulted in a short sluicing season in this district, consequently there was a falling-off in returns. Seven claims were in operation when water was available.

NOKOMAI.

Nokomai Hydraulic Sluicing Company.—This company's No. 3 elevator was shifted from Nokomai Creek to the lower end of Victoria Gully, where it is operating on payable ground. No. 2 elevator, also operating in Victoria Gully, has been worked steadily throughout the year for satisfactory results.

WAIKAIA.

Muddy Terrace Sluicing Company.—Payable wash 25 ft. in depth was opened up in that part of the terrace known as Short's Hill. Two faces were worked when water was available. Sluicing was also carried on in shallow ground in Maori Gully. Operations were considerably hampered by shortage of water. The yield of gold for the year amounted to 658 oz., valued at £2,649.

ROUND HILL AND OREPUKI.

Round Hill Mining Company.—No. 1 Claim: Sluicing and elevating plant was moved to new ground above the Ourawera Company's claim. New gold-saving tables were erected, water-race extended 65 chains, pipe-line 18 in. diameter and 35 chains in length laid down from race to claim, and a small dam for water-storage erected behind the penstock. No. 2 Claim: An area of about 25 acres has been worked to an average depth of 45 ft. on the west side of the claim. As the faces were getting too far away from the elevator to be worked to advantage the plant was dismantled, and preparations made to open out a new paddock on the east side.

Ourawera Gold-mining Company.—This company's elevating plant in Italian Gully has been in continuous operation during the year, with satisfactory results. Gold to the value of £2,200 was produced, and dividends amounting to £600 paid.

Orepuki Claims.—Fortune and Son, Dawson and Turnbull, and J. H. Sorenson are sluicing away small blocks of ground that had been driven out by miners in the early days of the field. The returns obtained are small.

Dredge-mining.

Twenty-eight dredges were in commission in Otago and Southland during 1917, a decrease in number of seventeen as compared with 1916. Six were dismantled and scrapped—viz., Kohinoor, at Roxburgh; Golden Treasure, and Golden Gate Nos. 1 and 2, at Miller's Flat; Paterson's Freehold No. 1, at Waikaka Valley; Muddy Creek, at Waikaia. The Duke of Gordon at Waikaka Valley was dismantled for removal to Auckland, where it is to be used for dredging kauri-gum.

The Electric Dredging Company had an unprofitable year. No. 2 dredge is to be dismantled, and parts of the machinery used for repairs and renewals to No. 1, which will continue to work in the Kawarau River.

The Rise-and-Shine Company has purchased 50 acres of the Athenæum endowment, on the west side of the Clutha River, above Cromwell. The area if payable throughout will keep the company's two dredges employed for several years.

The rapid decline of the dredging industry during the past two years has been caused chiefly by the high prices ruling for material required for renewal and repairs, increased cost of fuel, and difficulty in obtaining suitable labour. Machines that were profitably worked before the war are unable to pay working-costs under present conditions. The value of gold has remained stationary, while everything employed in its production has increased considerably, in some cases 200 and 300 per cent. Those who are engaged in the industry are finding it exceedingly difficult to continue operations.

Minerals other than Gold.

Tungsten-ore.—The output of scheelite for the year amounted to 168 tons, valued at £32,356. This is a decrease in quantity of 23 tons, and in value of £3,168, as compared with the output for 1916, which was caused by the exhaustion of the ore in the upper levels of the Golden Point Mine, Macrae's, and a decrease in the number of small parties of miners engaged in scheelite-mining throughout the district.

Fatal Accident.

14th July: William Ritchie, dredgemaster on the Rise-and-Shine No. 1 dredge, was killed by a blow on the head from an eye-bolt which broke under a heavy strain.

ANNEXURE B.

EXTRACTS FROM REPORTS OF GOVERNMENT WATER-RACE MANAGERS.

Waimea–Kumara Water-races, Westland (Mr. James Rochford, Manager).

Waimea Water-race.

The cash received for sales of water from this race for the year ended the 31st March, 1918, was £713, and the expenditure on management, gauging, maintenance, and repairs amounted to £737, showing a debit balance of £24 on the year's transactions.

The average number of miners supplied with water during the year was nineteen, a decrease of two on the previous year; and the approximate quantity of gold obtained by them was 1,051 oz., valued at £4,125, a decrease of £427 on that of last year.

The sales of water amounted to £700, an increase of £24 on the previous year. Although the sales showed a slight increase over the previous year they were over £233 less than during the year 1916. This falling-off was mainly due to the scarcity and high price of labour owing to the war, and some of the claims that were paying wages under pre-war conditions have closed down, for a time at least. Two parties Messrs. G. Linklater and H. Morgan—who are at present working were very considerably handicapped during the year owing to their inability to obtain labour to fully man their respective properties, and to this alone can be attributed the fact that the water purchased by them during the year showed a decrease of about £100 on the previous year.

W. Blackman and party opened out a new claim near Hatters Track, in the vicinity of Stafford, in December last, and since that time they have purchased water to the value of £42, and the results obtained have been very satisfactory. This ground, which presented no mining difficulties whatever, was abandoned years ago.

Although the year was one of the driest experienced for many years past there was an excellent supply of water, and the Waimea siphon, which carries about 30 heads, was practically running full all the time.

Kumara Water-race.

The cash received from this race for the year was £39, and the expenditure on management, gauging, maintenance, and repairs, £347, showing a debit of £308 on the year's transactions.

The average number of miners supplied with water was 2·75, a decrease of 1·91 on the previous year; and the approximate amount of gold obtained by them was 114 oz., having a value of £447, a decrease on that of last year of £416.

The sales of water amounted to £39, a decrease of £38 as compared with the previous year.

Moynihan and party was the only claim supplied with water from this race, and they abandoned their property in February. Since that time no sluicing has been done on the Kumara field.

The Kumara Flax-milling Company started to purchase water from this race for scutching purposes, and used water intermittently until the end of the year, but, although the industry finds employment for a considerable number of men, the revenue derived from sales of water is very small.

Branch Race to Callaghan's and Middle Branch Flat.

The receipts for sales of water from this race for the year were £114, and the expenditure on management, gauging, maintenance, and repairs, £353, showing a debit of £238.

The average number of miners supplied with water during the year was 3·33, a decrease of 1·42 on the previous year; and the approximate quantity of gold obtained by them was 196 oz., having a value of £769, a decrease on last year of £580.

Kumara Trans-Taramakau Water-race.

The cash received for sales of water from this race for the year was £140, and the expenditure on management, gauging, maintenance, and repairs, £325, showing a debit balance of £185.

The average number of miners supplied with water during the year was 11, and the approximate amount of gold obtained by them was 494 oz., having a value of £1,929, an increase on last year of £1,754.

Erin-go-Bragh Water-race.

The cash received for sales of water from this race was £223, and the expenditure amounted to £290, showing a debit balance of £67 for the year.

The average number of miners supplied with water was 9·75, a decrease of 2·58 on the previous year; and the approximate amount of gold obtained was 537 oz., having a value of £2,107, a decrease on last year of £793.

Wainihinihi Water-race and Waimea Branch Race.

On the night of the 31st December an unusually large flood occurred, which carried away about a chain of ditching, together with the outlet tank at the end of the pipe-line over the Arahura–Wainihinihi Creek; it also completely filled up a small tunnel and about 2 chains of ditching at the intake of the western branch of the Arahura–Wainihinihi, and about 3 chains of ditching at the intake in Macpherson's Creek. Repairs were started by the permanent staff on the 15th January, and were completed by the end of February, and the races are now in good order.

Waimea-Kumara Water-races.

The following is a summary of the revenue and expenditure of these races for the year: Sales of water, £1,197; expenditure, £2,054; approximate value of gold obtained, £9,388; average number of miners employed, 46. The sales of water show a decrease of £146. In addition to the above, free water to the value of £113 was supplied to parties opening out new claims.

Mount Ida Water-race, Central Otago (Mr. J. C. Buchanan, Manager).

The total sales of water from the Mount Ida Water-race during the year amounted to £1,200, a decrease on last year of £126. The expenditure on maintenance and repairs for the same period amounted to £1,167, a decrease on last year of £455. Free water for washing up was supplied to the value of £96.

The approximate quantity of gold obtained by parties using water from the race was 1,477 oz., valued at £5,686, an increase on last year of £854. The average number of men employed was 17·33.

From the 1st April until the 26th May the season continued very dry, with a shortage of water. On the 26th May (after about six months' drought) an exceptionally heavy rain set in, and, continuing on the 27th, caused one of the heaviest floods known in this district for many years. The lower sections of the race suffered little damage, but on the upper section the flood caused four breaks, brought in several slips, filled in creek-crossings, and in places completely filled the race with debris, the worst of these places being near Trinity Creek, where it is filled for a distance of 5 chains. The chief cause of this damage was that after 10 in. of snow had fallen a heavy warm rain set in, which quickly melted the snow and caused every small hollow to become a raging torrent. Owing to the shortage of labour I have so far been unable to carry out the necessary repairs to this section of the race.

APPENDIX B.

REPORTS RELATING TO THE INSPECTION OF COAL-MINES.

The Inspecting Engineer of Mines to the Under-Secretary of Mines.

Sir,— Wellington, 12th March, 1918.

I have the honour to present my annual report, together with statistical information, in regard to the coal-mines of the Dominion, for the year ended 31st December, 1917.

The report is divided into the following sections:—

I. Output.
II. Persons employed.
III. Accidents.
IV. General Remarks.

Annexures—

A. Summary of Annual Reports by Inspectors of Mines.
B. Statistics of Workings in Collieries.

SECTION I.—OUTPUT.

The output of the several classes of coal mined in each inspection district is summarized as follows:—

Class of Coal.	Output of Coal during 1917.				Total Output to the End of 1917.
	Northern District.	West Coast District.	Southern District.	Total.	
	Tons.	Tons.	Tons.	Tons.	Tons.
Bituminous and semi-bituminous*	101,320	1,146,669	...	**1,247,989**	30,048,697
Brown	369,318	109	259,747	**629,174**	13,774,384
Lignite	...	...	191,256	**191,256**	2,335,509
Totals for 1917 ...	**470,638**	**1,146,778**	**451,003**	**2,068,419**	**46,158,590**
Totals for 1916 ...	486,114	1,295,635	475,386	2,257,135	44,090,171

* Including coal formerly classified as "pitch" coal.

In the foregoing statement a decrease of 188,716 tons is shown in the annual output; for such decrease the bituminous-coal mines of the West Coast are responsible for 148,875 tons; but at all the coalfields, except Waikato and Inangahua, the output for 1917 was less than that of the preceding year. The decline in the coal-production was due to restriction of output at some mines during the first four months of the year; also to the reduction in the number of miners employed underground. In Otago damage by flood during the early part of the year caused temporary suspension of work at some mines.

The quantity of coal imported into the Dominion during 1917 was 291,597 tons, as against 293,956 during 1916; the quantity exported being 228,843 tons, as against 331,675 during the previous year.

The production from, and the number of persons employed at, the principal collieries of the Dominion are shown in the following table:—

Name of Colliery.	Locality.	Class of Coal.	Output for 1917.	Total Output to 31st December, 1917.	Total Number of Persons ordinarily employed.
			Tons.	Tons.	
Northern District.					
Hikurangi	Hikurangi...	Semi-bituminous	31,881	1,099,922	95
Taupiri Extended	Huntly ...	Brown ...	192,205	2,182,181	339
Pukemiro	Pukemiro...	" ...	89,375	181,966	145
Waipa	Glen Massey	" ...	81,718	319,699	100
West Coast District.					
Coalbrookdale	Millerton ...	Bituminous	279,760	5,252,425	440
	Denniston	"	200,950	7,601,588	409
Westport-Stockton	Mangatini	"	167,122	1,203,492	280
State Coal-mines (Point Elizabeth...	Dunollie ...	Semi-bituminous	119,411	2,255,717	189
State Coal-mines (Liverpool ...	Rewanui ...	Bituminous	145,856	472,471	302
Blackball	Blackball ...	"	132,515	2,588,380	286
Southern District.					
Kaitangata and Castle Hill ...	Kaitangata	Brown ...	107,274	3,507,495	288
Nightcaps	Nightcaps...	" ...	73,133	1,254,144	116
Other New Zealand collieries ...	All coalfields	Various ...	445,519	18,329,110	994
Totals	...	...	**2,068,419**	**46,158,590**	**3,983**

The only new colliery of importance which attained the output stage during the year was the Awaroa Colliery, the property of Taupiri Coal-mines (Limited), situated about six miles south-west from Huntly on a short branch line from the Huntly–Pukemiro Railway. At some of the principal collieries on the west coast of the South Island some coal areas which hitherto had remained inoperative, owing to difficulty of access, smallness of seam, or friability of coal, have been developed as a result of the increased price and considerable demand for coal of almost any class.

SECTION II.—PERSONS EMPLOYED.

Inspection District.	Average Number of Persons employed during 1917.		
	Above Ground.	Below Ground.	Total.
Northern	225	618	843
West Coast	590	1,596	2,186
Southern	275	679	954
Totals, 1917	**1,090**	**2,893**	**3,983**
Totals, 1916	988	3,000	3,988

The increase of 102 persons employed above ground can only be attributed to increased surface development and installation of plant.

The decline of 107 in the number of miners employed below ground is due to several causes, the principal being the improved wages paid in other occupations, also the fact that young men are not taking up coal-mining as a means of livelihood.

Coal-mining being an essential industry, coal-miners may be and generally are exempted from military service, therefore the reduction of miners during the year is not, I think, due to any considerable extent to the call of the war, though up to the 26th April, 1917, when the 28th Reinforcements entered camp, no less than 1,616 coal and metal miners, chiefly volunteers, were included in the New Zealand Expeditionary Forces.

SECTION III.—ACCIDENTS.

The following is a summary of coal-mining accidents during 1917, with their causes:—

	Fatal Accidents.		Serious Non-fatal Accidents.	
	Number of Separate Fatal Accidents.	Number of Deaths.	Number of Separate Non-fatal Accidents.	Number of Persons injured, including those injured by Accidents which proved Fatal to their Companions.
Explosions of fire-damp ...	...	...	...	...
Falls of ground	1	1	6	6
Explosives	..	...	1	1
Haulage	1	1	10	10
Miscellaneous—Underground...	1	2	5	5
On surface ...	...	...	1	1
Totals	**3**	**4**	**23**	**23**

The proportion of deaths by accident in or about coal-mines during 1917 was 1·93 per million tons raised and 1 per 1,000 persons employed. On two occasions only during the history of coal-mining in New Zealand has the annual proportion been less. This result compares most favourably with those obtained in Great Britain, which generally stands ahead of all other countries as regards the low proportion of fatal colliery accidents. For comparison it may be stated that during the past four years at British collieries fatal accidents per 1,000 persons employed amounted to 1·53, 1·35, 0·73, and 1·22 respectively, and per million tons of coal raised 4·84, 3·75, 3·64, and 4·36.

During 1917 two fatal colliery accidents, causing three deaths, occurred in this Dominion, both of which happened at the Blackball Colliery on the Grey Coalfield, which colliery has for several years held a bad record for fatal accidents.

In addition to the two fatal accidents, a death occurred from an accident received during 1916, and this is included in the foregoing summary.

It is again my pleasing duty to report that there has been no fatal accident in or about the coal-mines of Canterbury, Otago, or Southland during 1917, being the fourth successive year of immunity from such accidents in the Southern Inspection District under the control of Inspector E. R. Green.

At the North Island collieries under Inspector Boyd Bennie no fatal accident occurred, although a death took place due to an accident which happened during 1916. The credit for these good results from our safety provisions is shared equally by mine officials, workmen, and Government Inspectors.

The following statement shows the tons of coal and shale raised, persons employed, lives lost by accidents in or about coal-mines, &c., from 1878 to 1917 :—

Year.	Output.	Persons employed.			Tons raised per each Person employed Underground.	Lives Lost.		
		Above.	Below.	Total.		Per Million Tons raised.	Per Thousand Persons employed.	Number by Accident.
Prior	709,931	...	...	...	...	...	...	...
1878	162,218	147	366	513	443	*	*	0
1879	231,218	...	...	802	...	194·64	44·00	35†
1880	299,923	...	...	1,038	...	6·66	1·92	2
1881	337,262	...	...	963	...	2·96	1·04	1
1882	378,272	...	...	1,043	...	5·28	1·91	2
1883	421,764	361	888	1,249	475	4·74	1·60	2
1884	480,831	393	890	1,283	540	6·23	2·34	3
1885	511,063	338	1,145	1,483	456	5·87	2·01	3
1886	534,353	392	1,213	1,605	440	*	*	0
1887	558,620	388	1,111	1,499	503	7·16	2·66	4
1888	613,895	414	1,275	1,689	481	6·51	2·36	4
1889	586,445	466	1,251	1,717	468	6·82	2·37	4
1890	637,397	512	1,334	1,846	477	12·55	4·33	8
1891	668,794	416	1,277	1,693	523	5·98	2·36	4
1892	673,315	485	1,196	1,681	563	1·48	0·66	1
1893	691,548	590	1,298	1,888	533	7·23	2·64	5
1894	719,546	506	1,393	1,899	516	8·33	3·16	6
1895	726,654	525	1,274	1,799	618	6·88	3·33	5
1896	792,851	590	1,347	1,937	588	83·24	34·07	66‡
1897	840,713	531	1,381	1,912	609	4·75	2·09	4
1898	907,033	556	1,447	2,003	627	1·10	0·49	1
1899	975,234	554	1,599	2,153	609	3·07	1·39	3
1900	1,093,990	617	1,843	2,460	593	3·65	1·62	4
1901	1,239,686	688	2,066	2,754	600	2·42	1·09	3
1902	1,365,040	803	2,082	2,885	655	1·46	0·69	2
1903	1,420,229	717	2,135	2,852	665	2·81	1·40	4
1904	1,537,838	763	2,525	3,288	609	2·60	1·21	4
1905	1,585,756	833	2,436	3,269	651	3·78	1·83	6
1906	1,729,536	1,174	2,518	3,692	687	3·46	1·62	6
1907	1,831,009	1,143	2,767	3,910	662	6·55	3·07	12
1908	1,860,975	992	2,902	3,894	641	2·68	1·28	5
1909	1,911,247	1,159	3,032	4,191	633	3·65	1·79	7
1910	2,197,362	1,136	3,463	4,599	634	7·28	3·55	16
1911	2,066,073	1,365	2,925	4,290	706	6·77	3·26	14
1912	2,177,615	1,130	3,198	4,328	681	4·13	2·08	9
1913	1,888,005	1,053	3,197	4,250	590	3·18	1·38	6
1914	2,275,614	1,176	3,558	4,734	639	21·53	10·35	49§
1915	2,208,624	1,050	3,106	4,156	711	4·07	2·16	9
1916	2,257,135	988	3,000	3,988	750	2·65	1·50	6
1917	2,068,419	1,090	2,893	3,983	715	1·93	1·00	4
Totals ...	**46,173,033**	...	...	...	...	...	...	**329**

* No life lost. † Year of Kaitangata explosion. ‡ Year of Brunner explosion. § Year of Ralph's (Huntly) explosion.

The output per each person employed underground, although higher than in most countries, shows a decline, whereas the output per life lost is phenomenally high. The proportion of lives lost is the lowest for sixteen years.

The following is a description of fatal accidents in connection with coal-mining operations during 1917:—

Date.	Name and Situation of Mine.	Name, Age, and Occupation of Person killed.	Cause of Accident, Nature of Injuries, and Remarks.
14th Dec., 1916; died 13th July, 1917	Taupiri Extended Colliery, Huntly ..	James Gibson (31), clipper	At the commencement of the morning shift he was unclipping coal-tubs from the endless haulage-rope at the winding-shaft. The space between the shaft and unclipping-point was full of standing full tubs, leaving deceased only a few feet in which to stand to unclip the tubs approaching him on the endless rope. If he had failed to unclip a tub it would have collided with the standing full ones, and pushed some of them into the shaft. For security deceased signalled to the engine-driver to stop the rope while he unclipped an approaching tub. The signal was obeyed, but while deceased was unclipping, the rope restarted, and he was severely crushed between the approaching tub and the standing full tub nearest to him. The engine-driver states that he received a signal to start, probably from some other point on the haulage-road. The system of signalling on haulage-roads renders it necessary that great caution shall be exercised by persons working thereon. In this case the rope should have been stopped until the congested space near the shaft-bottom was free from standing tubs. The deceased also took a risk in working between the tubs. He died of acute mania seven months after the accident.
28th July	Blackball Colliery, Blackball	William Graham (40), miner	With his mate he was working in No. 2 dip, No. 6 bank. After getting coal they ran it down from the face to near the jig, and were about to jig when a fall of timber occurred followed by a fall of coal which buried deceased, killing him. The timber which fell consisted of sets, above which was built chocks to a height of 6 ft. or 7 ft. to the roof. Complaints had been made and opinions had been expressed by the cross-mates of deceased and those working in the bord opposite that the timber was not safe. The deputy, D. Veitch, in evidence stated at the inquest that he considered the place safe. At a subsequent inquiry held upon the application of the Inspector of Mines (under section 7 of the Coal-mines Amendment Act, 1914) the manager and underviewer were exonerated from blame, but it was found by the assessors that the Inspector was justified in asking for the inquiry.
30th July	,, ,, ...	John Henry Tipler (41), deputy; Thomas Lindsay Abbott (28), shiftman	At 6 a.m. the two deceased together entered the mine, which that day was idle. Tipler (deputy) first made an inspection of No. 17 section. An obstruction had been caused by a fall in No. 17 section waterway, three days previous, thus blocking water back for a depth of about 6 ft. and a length of about two chains. As the two men did not return to the surface in the afternoon, a search was made, and they were found drowned, with minor injuries to their bodies, near to where the waterway crossed the No. 17 heading rope-road below where the fall had dammed back the water, which was found to have broken away. The manager of the mine, Mr. John Watson, in his evidence at the inquest, stated that it was the deputy's duty to examine No. 17 section, and that he gave him instructions not to interfere with the water which he reported had accumulated in consequence of the fall in the waterway. There was no evidence given at the inquest or at the subsequent inquiry held by the Warden and two assessors, at the application of the Inspector of Mines (under section 7 of the Coal-mines Amendment Act, 1914), to prove what the deceased were doing immediately prior to the breaking-away of the impounded water. There is probability that they were attempting to remove the obstruction when it gave way and overwhelmed them. The management was exonerated of blame. The assessors recommended a better system by colliery officials of reporting inspections than appeared to be observed in the Blackball Mine. It is, however, necessary to state that, in addition to there being no report of the fall in the waterway entered in any of the mine officials' books, there was no danger or caution board erected to warn persons of the danger existing. The water could have been safely removed by diverting the inflow from the waterway down the No. 17 haulage-road at their crossing above the fall, and thereby permitting the accumulated water below to percolate through the fall and flow down the waterway, or the accumulated water could have been siphoned over the fall. A Supreme Court action for damages was commenced by the widow of T. L. Abbott for neglect by the company whereby his death was caused; the company did not, however, contest the case, but forthwith paid £750 compensation, being £250 above the maximum provided by the Workers' Compensation Act for death by accident during occupation in or about a mine. With regard to this accident, the absence of conclusive evidence as to any instructions given to deceased leaves the matter in an unsatisfactory position.

SECTION IV.—GENERAL REMARKS.

Ventilation.—The ventilation of mine-workings has been found generally to be excellent, and in no case has it been found necessary to remove men from a place by reason of the air containing less than the statutory quality standard of 19 per centum of oxygen or more than 1 per centum of carbon dioxide. No large accumulation of fire-damp has been reported at any mine, and no accident from gas-ignition occurred during the year. At the following mines fire-damp mixture has been reported most frequently by deputies during the year:—

	Number of Occasions.	Maximum Quantity Gaseous Mixture.
Taupiri Extended	24	500 cubic feet.
Kaitangata No. 1	51	500 ,,
Castle Hill	28	600 ,,
Point Elizabeth	26	20 ,,

At Castle Hill Colliery on the 26th September a blower was tapped in a bord in the rise workings of the Carson seam; on the 5th December I measured 600 cubic feet of gaseous mixture in the bord end, and bottled two samples therefrom, which upon analysis were proved to contain methane 53·80 per cent.; carbon dioxide, 0·40; oxygen, 8·82; nitrogen, 36·98. The fire-damp contents are the highest, and the oxygen-contents the lowest, of any sample of mine-air of which I have any record. At the time the samples were taken the gas was being properly removed by fixed brattice. I understand that the blower is now diminishing, but further influx of gas may be expected as work advances in the same locality.

Coaldust.—As a result of experiments conducted by Mr. Donovan, M.Sc., Mining Chemist, at the Dominion Laboratory, Wellington, it has been further proved that some of our bituminous and brown coal is exceedingly inflammable; and, in view of this and the impracticability in some cases of rendering harmless or removing accumulations of coaldust, the use of no explosive other than an Imperial-permitted explosive is now allowed at mines in which inflammable gas has been found within the previous three months, or at those which are not naturally wet throughout. The safe degree of wetness adopted by the Department as adequate is that recommended in the Sixth Report of the (British) Explosions in Mines Committee—viz., "The maintenance of at least 30 per cent. of water in a state of intimate mixture with the coaldust."

At some mines, such as those at Kaitangata, it has often been found impracticable to maintain pillar-sides free from accumulations of coaldust, as such dust is constantly being produced by frittering, and to a certain extent when heaped against the pillar-side prevents greater decrepitation. At the Taupiri Extended Colliery fully fifty miles of old standing workings contain accumulations of coaldust from falls and frittering. Efficacious treatment by stone-dust or watering in such places is impracticable. In such cases as these safety can only be secured by the use of permitted explosives and safety-lamps, and general observance of the regulations pertaining to the use of explosives and lights.

On the 23rd May, 1917, at 11.20 a.m. a coaldust explosion, fortunately unattended by loss of life, occurred in the Deep Creek section of the Ironbridge Colliery, the property of the Westport Coal Company (Limited).

The Deep Creek section consists of a remnant of erosion containing about 10 acres of bituminous coal at an altitude exceeding 2,000 ft. above sea-level. The coal-seam is 14 ft. thick. The method of working is bord and pillar, the bords not exceeding 18 ft. in width, with an average height of about 9 ft.; the dimensions of the pillars are variable. The workings are lighted by naked lights, no inflammable gas having been seen in this colliery, the numerous outcrops and proximity to the surface having assisted in the liberation of occluded gas. Gunpowder was used for blasting. A plan of the mine-workings accompanies this report.

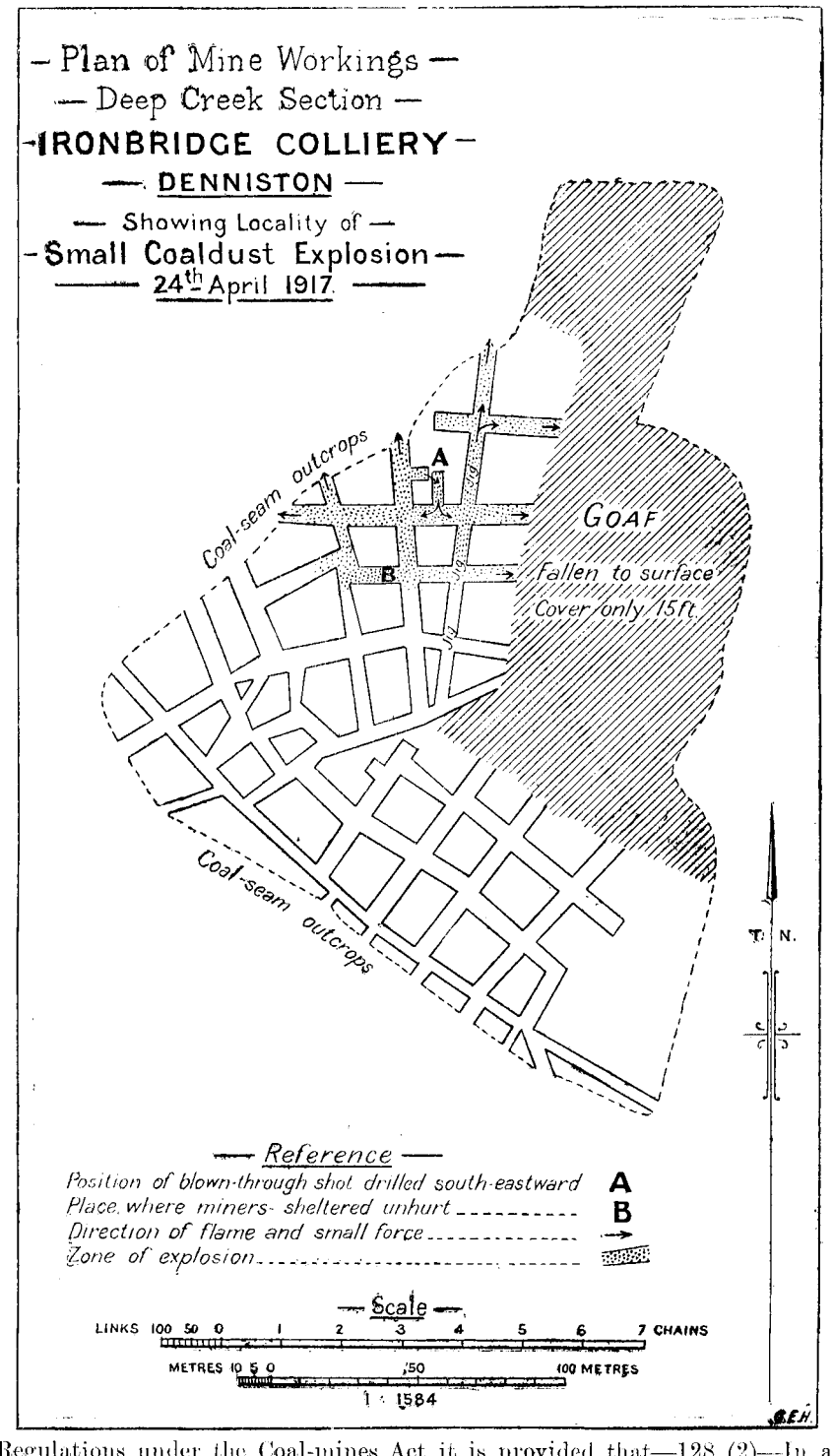
From the signed evidence of the colliery officials and some of the witnesses of the explosion, courteously supplied to me by Mr. Alexander Marshall, local manager for the company, and formerly Government Inspector of Mines for the district, the following account of the explosion has been prepared:—

A bord was being driven eastward at the point marked A on the plan, towards a place driven to split the pillar. Between the face of the bord and the side of the split there was only about 4 ft. 6 in. of solid coal. In the bord two miners were working, D. Crawford and E. Coppersmith; in the split no person was employed. Crawford drilled a shot-hole about 3 ft. 6 in. in length in a south-east direction at the face of the bord towards the split, inserted three plugs (1 lb.) of compressed gunpowder in the hole, and tamped the same with clay under the supervision of M. Connelly, deputy. None of these men knew that there was only about 1 ft. of solid coal between the charge and open place ahead of it. The shot was fired, and did not do its work, but blew through into that place; it made a report "like a cannon"; "the flame came as a ball of fire"; "the place was completely full of flame"; "the flame was steady"; the light from it was sufficient to enable the three men to retreat down the jig from the point B on the southern margin of the zone of explosion, where they had sheltered unhurt, although the shirt worn by Coppersmith was burned. Upon inspection of the zone of explosion it was found that the flame in every case had travelled towards the open goaf fallen to daylight, and to the holings to the surface, as shown by arrows on the plan. Along every drive marked by such arrows evidence of intense heating was noticeable, considerable charring of the coal and of the timber props being visible. The flame did not extend throughout the open workings, but propagation was confined to the area shown by the stippling of fine dots on the plan. No timber was knocked down or falls caused. Nine persons were employed in the Deep Creek section at that time; none, however, were in the zone of flame or received any injury.

On the 17th September I inspected the scene of the explosion. I found the sides of the pillars slightly damp, in degree insufficient, however, to moisten a postage-stamp. The floor was wet, although no pools were visible; coaldust could not be raised by kicking the floor or by blowing

on the sides. Props were the only timber used: there were no bars to harbour dust. Owing to this small section of workings being surrounded by outcrops and holings to daylight, the ventilation was excellent and the mine-air as pure as that outside. I never saw a place more free of coaldust; but notwithstanding this I am perfectly satisfied that sufficient dust was created or raised by the blown-through shot to cause propagation, which was confined to a small area owing to increased moisture in the unaffected workings. After this occurrence the owners of the colliery very wisely introduced British Imperial explosives into their collieries at Denniston and Millerton.

This explosion must be taken as a serious warning, for had it occurred in a larger and drier section of the extensive Denniston collieries the loss of life might have been appalling.



In the Regulations under the Coal-mines Act it is provided that—128 (2)—In all coal-mines other than opencast workings which are not naturally wet throughout no other than a permitted explosive shall be used; and by 129 (*f*) (iii), In all cases in which permitted explosives are required by these regulations, no shot shall be fired unless a shot-firer has examined the floor, roof, and sides of all contiguous places within a radius of 5 yards of the place where the shot is fired, for coaldust, and has taken efficient steps to render any dust within that area harmless.

In the case of the Deep Creek section, prior to the explosion it would have been a very debatable question as to whether it was not naturally wet throughout; the examination, however, of the contiguous place was not made.

The necessary degree of moisture to render coaldust uninflammable is seldom naturally present in mines. It appears necessary that an additional regulation should be made prohibiting the use of any but permitted explosives in all coal-mines except lignite-pits and opencast workings.

In the report of the U.S. Bureau of Mines, 1916, it is stated that investigations have shown that in one case it was found that a mixture of 77 per cent. of pulverized Pittsburgh coal and 23 per cent. of water (not including the water of composition in the coal) gave a very strong propagation in the experimental mine. In the Sixth Report of the (British) Explosives in Mines Committee, 1914, page 6, it is stated that "From the American experiments which were made with artificially prepared dust from a bituminous coal containing about 35 per cent. of volatile matter and about 5 per cent. of ash, it was concluded that the total moisture-content of the dust must approach 30 per cent. to ensure that it should be incapable of propagating flame. We have repeated these experiments, using not only coaldust containing merely its natural ash, but mixtures of coal and incombustible dust, and have determined quantities of water that it was necessary to mix intimately (by atomizer) with the dust in order to render them incapable of ignition by a stemmed charge of 24 oz. of blasting-powder. Our results are in accordance with those obtained in America."

Explosives.—There has been little or no shortage of Imperial-permitted explosives during the year. On the Grey Coalfield there have been numerous complaints that cartridges other than those in which the detonator is inserted have failed to detonate, in one instance a consignment of permitted explosive from a well-known British manufactory which cost £1,250 was destroyed owing to the above defect. In other parts of the Dominion permitted explosive gave satisfaction. At the Taupiri Extended Colliery during the year 35,783 shots, containing 30,481 lb. of Viking Powder or Cambrite, were fired, and in no case where the detonator exploded did the charge missfire. It is therefore reasonable to conclude that either the atmospheric conditions on the West Coast, or the transport thereto from the chief ports, is responsible for the defective condition of the explosive, some of the ingredients of which, such as nitrate of ammonium, sodium nitrate, or chloride of sodium, are exceedingly hydroscopic. In addition to more careful transport, handling, and storage, it appears advisable that the ends of the cartridges for use in New Zealand shall be completely closed by dipping in wax before they leave the manufactory. It was found at the Dominion Laboratory, where numerous tests were carried out by the Chief Inspector of Explosives, that the ends of defective cartridges were frequently insufficiently closed by their waxed cartels.

Support of Roof and Sides.—There has been considerable improvement in the observance of the regulations as regards systematic timbering, and to this must be credited the reduction in the number of accidents by falls—the most prolific cause of mining accidents throughout the world. The importance of a thorough observance of systematic timbering cannot be overestimated or too frequently instilled into miners and deputies. I generally find that where there has been failure in this respect the timber is available in the working-place, but the miners have delayed putting it up after firing until they have "filled their coal," or were "just going to put it up" when I came along. The workmen's inspectors in their reports after inspection, which are otherwise fair, seldom or never refer to failure by workmen to erect timber as required, and I will be glad if they will do so in future.

Supply of Materials.—The supply of material produced in the Dominion has been equal to the demand at no considerable increase in cost, but new material manufactured abroad, except explosives, has been practically unobtainable, such items as steel ropes, rails, tubs, wheels, axles, and electrical supplies being offered only at prohibitive prices. As a result shortages have been made good from installations at inoperative mines and works.

Bathhouses.—In accordance with the provisions of the Coal-mines Act, mine-owners have erected or are erecting bathhouses at such mines where by a vote of the workmen they are desired. The first colliery bathhouses were erected at the State collieries near Greymouth, from a design by Mr. I. A. James, the chief mine-manager; these proving a success, the design has been followed at the principal mines. The building consists of a changing-room with parallel rows of seats, above which clothing is elevated by cords and pulleys, where they are suspended and dried by heat from steam-pipes. Hot and cold showers, also fixed hand-basins, are contained in cabinets built as lean-tos of the changing-house, from which they are entered. The concrete floor is graded and drained, the floor-space in the change-room being not less than 12 square feet for each person.

The bathhouses in use have proved an unqualified success, and are very popular with the miners. At some mines they are made use of by more persons than voted for their erection. In all cases bathhouses are erected and maintained at the expense of the mine-owners.

Electricity at Collieries.—During 1917 there has been practically no increase in the number or capacity of electrical installations.

The following is a summary of the annual returns in accordance with Regulation 160 (*c*) regarding electrical apparatus at collieries:—

Number of collieries at which electrical apparatus is installed	13
,, continuous-current installations	10
,, alternating-current installations	2
,, collieries electrically lighted	12
,, collieries using electrical ventilating-machines	7
,, ,, pumping plants	5
,, ,, haulage plants	7
,, ,, screening plants	2
,, ,, miscellaneous plants	3
,, ,, locomotives	1
Total horse-power employed from motors on surface	1,740
,, ,, underground	671

I have, &c.,

FRANK REED,

Inspecting Engineer and Chief Inspector of Mines.

ANNEXURE A.

SUMMARY OF REPORTS BY INSPECTORS OF MINES.

NORTHERN INSPECTION DISTRICT (Mr. BOYD BENNIE, Inspector.)

Taupiri Coal-mines (Limited), Extended Colliery.—The present mine-workings are located in the north-west and south-west dip sections. In the north-west section, No. 6 level, south-east, a mine-creep was observed early in the year; the base of the coal-pillars were crushing and the floor heaving. Towards the end of the year the pillar-sides and the drives were being crushed to such a degree that mining there was suspended. The affected section is some chains west of the Waikato River, and where the cover is 450 ft. The area affected is small.

The concrete dams, built last year, have been closed, but the water behind the dams is allowed to drain through them by means of pipes. The mine, generally speaking, is in a good condition, ventilation being good. The company's official examiners report that small quantities of gas have been seen on several occasions in the present and old workings, mostly due to interruption of the ventilation by breaking down of the brattice-cloth. Some improvements have been made in the haulage gradients during the year.

Taupiri Coal-mines (Limited), Awaroa Colliery.—This new colliery is six miles south-west of Huntly, on the Huntly–Pukemiro Railway line; 60 chains of private line connect the Government railway to the mine. The coal-seam is entered by a short adit; the coal is hard and of good quality. The seam 17 ft. thick, dipping south-east, 1 in 10. The drainage will be light. Several valleys intersect the field, where the coal has been denuded, yet there appears to be an extensive field of coal available.

The screening and haulage plants are being erected, most of the machinery being that which was used at the company's Ralph's Mine, now closed.

A sirocco fan is to be erected at the mine, with a capacity of 60,000 to 70,000 cubic feet per minute. Steam power will be used.

Pukemiro Colliery.—An extensive area of good coal in sight. The field is intersected by two faults; that to the right of the haulage-road is 90 ft. of an upthrow, and the one to the left 80 ft. of a downthrow. The faults are approximately 25 chains apart and bearing north-east and south-west. Between these fault-lines are the present workings. A tunnel has been driven through the floor-rock of the coal beyond the fault to the right and into the coal, where the development drives are being driven.

The mine has been examined regularly by me, and also by the workmen's inspectors, and found to be in a safe state. There has been no addition to the mining plant during the year, only the main haulage-rope has been extended farther into the mine.

The thickness of the seam is approximately 20 ft., bords being worked 14 ft. wide and 16 ft. high, with 8-yard pillars.

Waipa Colliery.—At the Nos. 1 and 2 sections the first working has been completed to the upthrow fault, and a considerable portion of the pillar coal worked. No. 1 section is almost exhausted, only a few pillars being left. A fire occurred in that area, and it is now sealed off from No. 2 section.

At No. 2 level there is extensive crushing of the pillar coal, in places the floor rising to the top of the drives; there remains, however, a considerable quantity of coal there to be won.

No. 3 section, beyond the upthrow fault, is closed for the time being, owing to a collapse of the main heading through defective timbering.

In No. 4 section, west of the No. 2 section and beyond the big upthrow fault, there are a number of miners at work. The coal is hard and of a good quality, the seam being from 8 ft. to 10 ft. thick.

The ventilation is by two sirroco fans, and is adequate and satisfactory. I visited the mine approximately once a month.

The company, without authority, mined under a public road to such an extent as to cause subsidence. For this the Crown received compensation from the company.

Huntly Coal and Fireclay Mining Company.—The mine is being worked by opencast, the cover overlaying the coal being approximately 8 ft. thick, of poor fireclay. All coal mined is used at the company's brick and tile kilns. The fireclay-quarry is adjacent to the coal-mine, and is the foot-wall fireclay. Both the mine and quarry are carefully worked.

Waikato Extended.—Early in the year the mine became the property of the Waikato Steam Navigation Company. Since then a new wharf has been built and a new ground tram formed to the mine.

The mine has not been energetically worked. The coal is taken in barges over the Waikato River to settlers, butter-factories, &c., but the directors of the company have been lax in providing sufficient barges and temporary storage for coal, and unless a more vigorous policy is pursued the mine must ultimately be closed. I examined the mine several times during the year and found it safe. Ventilation by natural means good.

Crown Lease, Aria.—I visited the mine on the 12th November, 1917, and found that, since my previous visit, a road had been formed to the mine and the adit level driven into the coal, approximately 140 ft., the drive being securely timbered. The seam is broken. I expect that an upthrow fault will be met with after about 25 ft. more driving, and beyond that fault or slide the coal-seam will be firmer and the coal of a better quality, with less waste. 75 tons of coal were sold during the year, mostly to the butter-factory at Aria.

Manyapapa Mine (Mokau).—Owing to the accumulation of logs in the Mokau River, referred to in the previous report, preventing shipping from reaching the mine, the mine has been idle during the year.

Hikurangi Colliery.—Early in the year this company had great difficulties to overcome in the drainage of the mine. The water-free coal has been mined, and the surface has subsided, resulting in the surface drainage entering and flooding the lower levels of the mine during the winter months. A shaft was sunk to the deepest part of the mine, and the water is bailed therefrom. The mine was drained and work resumed in December. There is an extensive area of pillar coal to be worked under the Waro limestone rocks. The Phœnix section, which has been closed for many years, is now being worked, but there are several faults, which will considerably increase the cost of mining. The company have purchased all the coal mined from a Crown lease near-by, which is owned and worked by a co-operative company of workmen.

I have visited the mine many times during the year.

Northern Colliery, Hikurangi Section.—The company's Tauranga section (the Old Northern Mine) is almost exhausted, only two miners being at work there on a small outcrop pillar of coal. In the company's Crown lease, Section 2, Block XVI, Little and party, tributors, the coal-seam has been from 8 ft. to 10 ft. thick, and of good, clean, hard coal, but the area is small. The Waro Rocks section is still closed.

Northern Colliery, Kiripaka Section.—(Crown lease, Block VII, Whangarei Survey District.) The mine is situated on the bank of the Waitangi Stream, Te Kiripaka. The coal is good, but the seam is much faulted, which has hindered the development in opening up the mine. The coal-seam is from 6 ft. to 12 ft. thick. A section of the seam is folded, and the coal is inclined at an angle of 45°. Some of the places have been worked up the fold to a height of 60 ft., where the same angle continues. At the south-east portion of the mine the coal is displaced by faulting. Ventilation is fair.

Crown Lease, being a Portion of Section 2, Block XVI, Hikurangi.—(Doel and Foot, lessees.) This is a small area adjoining the Northern Coal Company's lease. The coal is good, the seam being from 6 ft. to 9 ft. thick.

Crown Lease, Section N.E. 39, Block XVI, Hikurangi.—(Kerr and Co., lessees.) The company are working small areas left by a former mining company. There is nothing permanent, but at one point got into a fine block, where the coal was 15 ft. thick, and is worked from an adit. The coal is sold to the Hikurangi Coal-mining Company. The ventilation is good.

Crown Lease, Section 48 N.E., Block XVI, Hikurangi.—Some small outcrop pillars of coal, left in by a former company, are now being worked. The coal is sold at the mine and carted to the settlers in the district.

North New Zealand Coal and Cement Mining Company.—During the past year a greater number of men have been employed and a record output of coal obtained, but development has been neglected owing to inadequate pumping machinery.

The coal in the deepest workings is much improved in thickness and quality. The ventilation of the mine has been fair, but, owing to the pumps in the mine being driven by steam, more air is required to keep the temperature at a reasonable minimum. A Hayes fan is being installed.

An electric-lighting plant has been erected.

Several minor improvements have been made during the year. I have made many visits of inspection of the mine.

Fatal and Serious Non-fatal Accidents.

FATAL ACCIDENT.

James Gibson: Aged thirty-one, clipper, crushed by trucks in Taupiri Extended Colliery on the 14th December, 1916. Died in Avondale Asylum seven months later on the 13th July, 1917, from "exhaustion from acute mania." In the doctor's opinion this mania was the result of the injuries to his head received when crushed in the Extended Mine.

SERIOUS NON-FATAL ACCIDENTS.

J. Moore, Pukemiro Colliery: Fractured knee-cap, 31st May, 1917.

D. Cumming, Pukemiro Colliery: Compound fracture of leg, caused by fall of coal in his working-place on 6th December, 1917.

D. Burt, Waipa Colliery: Crushed ankle-joint, on 2nd August, 1917.

S. Martin, Taupiri Extended Colliery: Total loss of the sight of one eye.

West Coast Inspection District. (Mr. James Newton, Inspector.)

New Zealand State Coal-mines.

Liverpool Colliery, Nos. 1 and 3A Sections.—In the No. 1 section, lying to the east of the Seven-mile Creek, development has proceeded continuously in a north-easterly direction. The seam going eastward has pinched to an unprofitable thickness, and winning of the pillars has

commenced. The rise headings have been driven approximately 27 chains. The coal is of good quality. On the west side of the Seven-mile Creek the output has been derived solely from pillar-extraction, owing to the seam being thin and incapable of further development. There now only remains the standing pillars to be won.

The Morgan Seam: This seam, underlying the upper seam above referred to, is entered by a cross-measure drift from the main adit of the upper seam. East and west levels have been driven during the year a distance of 7½ chains and 5½ chains respectively. The Morgan seam, which when first entered was very soft, friable coal, has somewhat improved in hardness. During the year small quantities of fire-damp have been met with. A considerable area of proved coal in this seam awaits exploitation.

Section No. 3A: This area, employing only a limited number of colliers, has not, during development, shown any improvement, and is, in fact, fast becoming unworkable, owing to thinning caused by stone replacing the coal.

Section No. 3: Development during the year has undoubtedly proved this area to be limited in extent, owing to extensive faulting trending north-east and south-west, in addition to thinning of the seam to the north-east and east. The coal won has been excellent in quality. A fair quantity has been obtained by pillar-extraction. The life of this area will most probably be of short duration.

Point Elizabeth Colliery.—This colliery is almost exhausted, and cannot, under the most favourable conditions, continue to produce coal beyond a few months at most.

Paparoa Colliery.—A small area lying to the south-east has been opened, and is still under development. The coal throughout is very friable and soft. Inflammable gas has been met with frequently during the year, which undoubtedly proves the stand taken to prevent the manager replacing the safety-lamps with naked lights was a wise one. During the period under review a deputy and trucker were prosecuted and fined for abusing each other on the property during working-hours. The manager was also proceeded against and fined for failing to provide timber in accordance with Special Rule 11.

Blackball Colliery.—During June a very serious fire originated between the main haulage-road and the return airway from No. 9 dip at No. 7 bank, necessitating the entire isolation of the principal winning portion of the colliery, No. 17 section and No. 9 dip. The former section was closed for approximately three months, whilst the latter was idle for the remainder of the year. During the period the inner workings were cut off; the No. 2 dip only was available for production of coal. This section was subsequently abandoned towards the end of the year. Future development of the colliery will be mostly to the dip, necessitating expensive pumping plant, as all previous workings in the colliery having proved the dip areas to be heavily watered. Two fatal accidents, by which three lives were lost, occurred at this colliery during the year.

North Brunner Colliery.—The output has been exclusively won from pillar-extraction. The top section has been won back; work thereon ceased until a lower level commanding a small area may be attained by a stone drive. The lower section (Changing Flat) approaching exhaustion will cease to produce coal in a few months.

Brunner Mine.—The output has exclusively been obtained from pillar-extraction. There is no prospect of improvement in the area being worked, and with the present small output the life of the present mine can only be a matter of two or three years. An inclined stone drive has been driven intermittently during the year in order to cut a seam of clay previously proved by boring to enable the brick and tile works to continue operations. An endeavour is being made to unwater the old Tyneside and Brunner workings in order to win some pillars of coal that were previously abandoned.

Reefton Mines.—The output of 14,717 tons from these small mines, ten in number, shows an increase of 3,218 tons over last year's winnings, the coal being used for household and steam purposes. A good deal of local assurance exists that in the near future there will be large collieries operating in this district; but before such can be warranted it will be necessary to expend a considerable sum of money in boring to thoroughly prove the area, which I believe will be found to be extensively faulted. The overlying strata is heavily charged with water.

Iron Bridge Colliery, Denniston.—Development has proceeded steadily in a westerly direction on the north side of the Waimangaroa River. The seam, approximately 12 ft. thick where pierced, has proved the coal to be hard and of excellent quality. Preparations for endless-rope haulage for this area have not yet reached completion. A good deal of the output has been won from pillars in the Shaft and Deep Creek sections. The future outlook for a steady output from this colliery is good.

Coalbrookdale Colliery, Denniston.—The Warcatea area, lying to the south of the lease, is the only one that is capable of development, and during the year operations have been steadily pushed forward. The seam, which is undulating and variable in thickness, has been proved to be hard coal and of excellent quality. Stone-band intrusions, causing splitting and occasionally minor faulting, have been encountered, but nothing to hamper to a serious degree the development of the area. There yet remains a large portion of the lease untouched that is known to contain workable coal. No. 8 and Dip sections, both of which are in the Cascade area, have produced their output exclusively by pillar-extraction. These sections are both incapable of further extension, and their life depends entirely on the amount of coal that can be safely won. The overlying strata in both sections are difficult to control, and most probably some of the pillar coal will have to be sacrificed in order to keep the operations within safe mining limits.

Millerton Colliery.—Development of the colliery has mostly been confined to the areas known as the Stone Drive, 2nd West and 4th West levels. All of these sections are in the Mine Creek portion of the colliery, and are operated from the crosscut haulage-way going north and west.

The lower or dip area of the colliery has been proceeding steadily in a southerly direction, and eventually will connect with the areas mentioned above, the approximate distance apart being 14 chains. In the Mangatina section the output has been won from small isolated coal areas. The main South Mangatina heading has been driven for 30 chains in barren ground and stopped, and a borehole recently drilled to the west of the heading, a distance of 10 to 12 chains, has cut the coal. The prospects of a long life for this colliery are good.

Westport-Stockton Colliery.—Development is mostly confined to the eastern portion of the mine (E section), where a large area of medium hard coal of good quality has been proved by driving, and there yet remains a large area known to contain workable coal not touched.

Old mine, B, C, and D tunnel sections: Development to the south of D tunnel has ceased owing to inferior and dirty coal, and the pillars, mostly soft coal, are being won homeward.

C tunnel is at present producing no output. A few pillars have been won from this area during the year. B tunnel: A few pillars are yet to be won on the boundary side (west) of the haulage-way. On the eastern side a section of good hard coal, the seam being about 5 ft. 6 in. thick, has been operated, and is still being won out. Should the present demand for steam-coal continue, there yet remains sufficient available coal in the old mine to last a considerable number of years at the present output.

Puponga Colliery, Collingwood District.—This colliery ceased work during July. At the time of stoppage it was impossible to successfully drive to the dip, the only direction apparently open to profitable operation, owing to the inadequate plant available at the colliery. The winning-places eastwards were fast becoming unworkable, owing to the intrusion of stone bands splitting the seam and replacing the coal.

North Cape Mine, Collingwood District.—The outlook for this property is not bright, and most probably its productive life will be short. In every direction driven the seam has consistently thinned to an unprofitable thickness. The main winning-dip, which has been driven approximately 10 chains, is standing in thin coal. The bottom west level after proceeding 12 chains has encountered a downthrow fault, and as the level has proceeded the seam has gradually thinned to about 18 in., an unprofitable thickness. The fault met with at the face of this level cuts the country east to west, and will be met with almost immediately driving is commenced again in the dip. Sinking on the head of the fault is being carried out, and unless the throw is small and the seam shows decided improvement in this direction development must cease.

Mokihinui Mine, Coal Creek.—No improvement in the quality of the coal has been met with during the year, although a considerable amount of driving has been accomplished. The country driven through has been found to be somewhat faulted, and the seam of coal dirty and irregular in thickness.

Co-operative Mine, Seddonville.—Driving has been continued on the outside of the old No. 4 workings with varying results. At times the seam has been found hard and clean, and at others soft and dirty.

Fatal Accidents.

Three persons lost their lives underground, and all at the Blackball Colliery.

On the 28th July a miner named William Graham, whilst engaged jigging a truck in No. 2 dip, No. 6 bank, was struck by a fall of coal from the roof, with fatal results.

On the 30th July John Tipler, deputy, and Thomas Abbott, shiftman, met their death by drowning, the result of being overtaken by a sudden rush of water which had accumulated behind a fall in the back heading of No. 17 section.

An official inquiry was held, pursuant to the provisions of the Coal-mines Amendment Act, 1914, in each of the foregoing occurrences. The Court found in each case that the charges against the officials of the mine could not, upon the evidence, be sustained.

Serious Non-fatal Accidents.

Puponga Colliery.—1st June: John Waddell, miner; received a severe injury to his right hand, caused by premature explosion of a detonator.

Westport-Stockton.—25th July: A. Kearns, trucker; received a severe fracture of the base of his skull through being struck with full tub of coal. Kearns was lowering a tub down a gentle gradient when it became derailed. He was in the act of spragging at the time, and the back portion of the tub as it lifted struck him, causing the injury.

On the 14th September, 1917, George Higham, miner: lascerated the muscles of his lower leg, caused by falling and striking buffer of truck on incline.

Point Elizabeth Colliery, No. 1 Section.—27th July: Peter Neilson, miner; fractured his skull, caused by a falling prop.

Denniston Colliery, Iron Bridge Section.—8th August: Edward Oldham, trucker; being struck by an empty tub while jigging, received injuries causing amputation of his leg.

Coalbrookdale Section.—22nd November: William Brown, miner; by a fall of coal at the face his thigh was broken.

Blackball Colliery.—3rd November: William Liddle, miner; by a fall of coal had both collar-bones broken.

Millerton Colliery.—12th December: S. McDonald, horse-driver: by being jammed between a full tub and limbers or shafts on which he was riding had a thigh bone broken.

Dangerous Occurrences requiring Notification in accordance with Regulation 81.

Denniston Iron Bridge Colliery.—On the 23rd May an explosion occurred in the Deep Creek area, the result of a blow-through shot, the explosive used being blasting-powder. This has been specially reported on by me.

Blackball Colliery.—On the 18th June a serious fire occurred close to the main haulage-road at a stopping in No. 7 bank. A detailed report regarding this occurrence has been forwarded.

Millerton Colliery.—On the 27th August a spontaneous fire was discovered in the 6th West pillars section in the Mine Creek area. The outbreak was speedily and successfully dealt with by cutting off the air-supply. Since the completion of the air-stoppings no further trouble from this source has been encountered.

Coalbrookdale Colliery.—On the 13th December a fire was discovered by the examining deputy on his rounds in the No. 8 Cascade section. After a couple of hours strenuous work by several of the employees the fire was extinguished. It is surmised to have had its origin in a spark from a miner's oil-lamp, the spark falling amongst and kindling old timber and rubbish.

Ventilation.—At all the larger mines efficient mechanical appliances (fans) are employed to produce ventilation; and, generally speaking, the working-places throughout the mines have been found, when inspected, to be in a satisfactory condition. Whenever samples of the air have been taken in any place they have upon analysis been found to be of good quality.

Coaldust.—More attention than formerly has been given to coaldust, and managers have been urged to thoroughly damp and keep the roadways as clean as practicable from small coal in order to more thoroughly minimize the dangers from this source. Instructions have been given to managers to discontinue non-permitted and use only permitted explosives.

Falls of Roof and Sides.—There has been only one fatality under this head during the year. This is undoubtedly an improvement compared with previous years, and can, I think, be apportioned mostly to better attention being given to systematic timbering. There is, however, still room for improvement, and in order to bring this about it is necessary that officials and workmen should keenly appreciate the danger from falls from roof and sides, and should, by careful and frequent examination, endeavour to safeguard against such occurrences. I am strongly of the opinion that a very large proportion of the accidents that occur under the above heading would be prevented if ordinary precaution and a little common-sense were displayed.

SOUTHERN INSPECTION DISTRICT. (MR. E. R. GREEN, Inspector.)

Sheffield Coal-mine, Sheffield.—Prospecting for coal; shaft down 100 ft., following a bore-hole, where 5 ft. seam had been passed through at 120 ft.

Bush Gully Coal-mine, Coalgate.—Drawing pillars on south side of crosscut dip, and now at No. 4 level, 200 ft. from surface. Supports were being left to the pair of dip drives, so that any future mining may be conducted in that direction.

Homebush Coal-mine, Glentunnel.—Driving to dip in the old engine seam and levels off the same are being broken away north and south. The mine had been closed down, and is only in the reprospecting stage.

St. Helens Coal-mine, Whitecliffs.—The mine last seen had been abandoned as worked out, and a new mine to the dip has been driven in a spur where there remained some unworked coal.

Tripp's Coal-mine, Mount Somers.—Mine in fairly good order. The pillars towards the outcrop are being well drawn; second outlet is to be further improved for travelling and airway.

Woolmer's Coal-mine, Mount Somers (George Bland).—Tram laid, grade 1 in 3, 1,500 ft. in length, to the foot of the hill, thence transport by drays to the Selwyn tram-line, distance about one mile.

Albury Coal-mine, Albury.—Mine in good order, and ventilation good. A new air-shaft had been sunk ahead of the advancing workings, thereby providing direct air-circulation.

Allanholme Coal-mine, Waihao.—A good seam of hard lignite which had the appearance of being fairly extensive, with improvement to the dip. Ventilation good.

St. Andrew's Coal-mine, Papakaio.—Extraction of pillar coal practically finished. Another opening will soon be required if the output is to be maintained.

Prince Alfred Coal-mine, Papakaio.—Robbing dip pillars and head coal. Ventilation good. Report-book kept.

Ngapara Coal-mine, Ngapara.—Ventilation good. Advancing in solid coal on the freehold towards the boundary of the adjoining Crown land, the surface of which is leased by Mr. Nimmo.

Shag Point Coal-mine, Shag Point.—The return airway had recently been restored. Ventilation is generally good. These workings were conducted in an upper seam, 3 ft. to 4 ft., overlying the original main-seam workings in old Shag Point Colliery.

Shag Point Coal Proprietary Mine, Shag Point.—Workings well timbered. Ventilation not quite satisfactory in distant places, chiefly on account of the small furnace in use being inadequate to remove powder-smoke.

McPherson's Coal-mine, Coal Creek Flat.—Opencast working. The low-level drain for unwatering the pit was progressing slowly, water for sluicing the overburden being only available on Sundays when not required by the gold-miners. The fire on the hill-face in the upper and inferior seams is well kept under by water and smothered with clay from above.

Perseverance Coal-pit, Coal Creek Flat.—Suspended. This pit had stood idle throughout the winter owing to the difficulties of mining in the vicinity of the creek.

Alexandra Coal-mine, Alexandra.—Workings in good order, and ventilation satisfactory. Roof tender at far-in places, necessitating timbering, although driven narrow.

St. Bathan's Coal-mine, St. Bathan's.—Pit flooded with water and face mostly smothered with fallen overburden. Output small.

Rough-ridge Coal-mine, Otureihua.—Water in pit and face encountered with winter waste from overburden.

Idaburn Coal-mine, Oturehua.—Opencast pit flooded with water, as it frequently had been during this wet season.

Cromwell Coal-mine, Cromwell.—Prospecting for seam on the left-hand bank of the Kawarau River.

Shepherd's Creek Coal-mine, Bannockburn.—Mine-workings in good order, and ventilation satisfactory.

Cardrona Coal-mine, Cardrona.—Overburden, 30 ft. to 40 ft., sluiced away with water to expose coal-seam.

Gibbston Coal-mine, Gibbston.—Pillaring outward, substantial fire-stoppings constructed against the waste.

Nevis Coal-mine, Nevis.—A seam of coal 15 ft. to 20 ft. in thickness had been opened by a surface cutting.

Nevis Crossing Coal-mine, Nevis.—Opencast. Manager's attention drawn to dangerous method of getting coal by undermining at one point.

Fernhill Coal-mine, Abbotsford.—Mine in good order. Ventilation satisfactory. Fire-stoppings well attended.

Freeman's Coal-mine, Abbotsford.—The lower dip workings had been abandoned owing to creep and fire. Pillar and head coal-extraction continued.

Green Island Coal-mine, Green Island.—A new entrance had been made toward the rise workings. Substantial fire-stoppings constructed against the waste.

Jubilee Coal-mine, Saddle Hill.—Withdrawing pillar and head coal left at first working.

Christie's Saddle Hill, Nos. 1 and 2 Mines, Saddle Hill.—Fan ventilation good; pillar-extraction carefully conducted.

East Taieri Coal-mine, East Taieri.—Floor heaving badly owing to creep. Attention to brattice was required at two working-faces.

Brighton Coal-mine, Brighton.—The new drive to the dip will tap the level drive near the face and shorten the haulage.

Waronui Coal-mine, Milton.—New dip workings had become lost by water-inflow from overlying strata, which the pumps were unable to cope with. Roads were being laid into the rise pillars for maintenance of output.

McGilp's Coal-mine, Milton.—The old fire at the surface near the mine-mouth is now completely subdued. Levels are being driven, also headings to the outcrop. Natural ventilation by two shafts satisfactory.

Taratu Colliery, Lovell's Flat.—Pillar-drawing continued, with some development to the dip, where water is troublesome and additional pumping plant is necessary. Workings to the south of the shaft are pillared and stopped off, also part where heating had occurred. The coal-roof is tender, and close attention to timbering is necessary. Pillar and head coal being taken from old mine reserve, and development proceeding in Barclay's drive at the surface-level seam.

Mahara Coal-mine, Kaitangata.—Mine in good order; timber well used; air well conducted by brattice.

Longridge Coal-mine, Kaitangata.—A small mine driven in an upper seam of the Kaitangata coal-measures.

Kaitangata No. 1 Mine.—No. 6 dip section. The principal development had been continued eastward, where the main seam was proved to be undisturbed by faulting, and remarkably flat compared with earlier workings to the westward of the field. This district should provide most of the output in the near future. Owing to "creep," all places had been driven from 6 ft. to 8 ft. in width, in order to reduce upkeep and provide facilities for future withdrawal of pillar and head coal, together with better control of spontaneous "fires," which inevitably occur as work and time progress. Working-faces are about one mile and a half distant from the mine-mouth. It is proposed to sink a shaft, or to construct a rise at No. 6 dip, for the purpose of substituting surface for underground haulage, also to improve the ventilation and provide a second outlet.

Mundy's Dip section has been continued on pillar and head coal; substantial stoppings had been inserted against the waste. Fire-damp, usually in small quantity, had been reported on a number of occasions. A maximum of 500 cubic feet having been reported in the waste, the pillaring-place was then finished and stopped off.

No. 21 dip section: The 32 ft. seam here worked has provided a considerable output. It is estimated that 70 per cent. of the seam has been extracted. The barrier system of getting coal has been followed, with satisfactory results.

Kaitangata No. 2 Mine.—Nos. 1 and 2 dip sections provided the output from this mine. Owing to heavy creep, the maintenance of roads and airways had been difficult in consequence. Heating from spontaneous fire occurred behind the steel tubbing on the haulage-way where old coal-workings had been crossed, and it became necessary to extend the tubbing at several points, with apparently satisfactory results.

The 6 ft. seam: Further development proved the seam to continue to the dip, having a fine hard conglomerate roof, with no fire-damp and very little water.

In all probability the small quantity of water and comparative absence of fire-damp in this mine was due to their having been drained away by former workings in the proximity, but every precaution was taken as though fire-damp was known to occur, and safety-lamps only were allowed in the mine.

Castle Hill Mine, Kaitangata.—No. 7 dip and rise workings north have been finished and permanently stopped off. The output was produced from the Carson seam being developed north and south from the rise stone heading. On the 26th September, near a "roll" on the

south side, a blower of gas was tapped. Work in the level was suspended, and the place fenced off. The blower is now diminishing. Improvement has been made to the travelling airway to second out-let shaft since the installation of a sirocco fan, which replaced the furnace.

No lamps other than safety-lamps were allowed at Kaitangata collieries, also only permitted explosives used, with electrical shot-firing by authorized shot-firers.

Foundations had been prepared for a modern bathhouse for workmen for early erection.

The condition of the ponies used in the mines, about thirty in number, had been favourably reported upon by the Inspector of the Society for Prevention of Cruelty to Animals.

Benhar Coal-mine, Stirling.—Mine in good order, and ventilation well conducted by brattice around the working-faces.

Mount Wallace Coal-mine, Stirling.—Lignite seam about 20 ft. in thickness, of which 10 ft. worked. Mine-mouth standing well. Tram laid to main roadside, a distance of about 500 yards.

Pukerau Coal-mine, Pukerau.—Worked for supply of local requirements.

Whiterigg Coal-mine, East Gore.—Ventilation satisfactory, and workings in good order.

Green's Coal-mine, Gore.—Roof and sides strong. Ventilation good. The pillar which had been on fire was not properly cooled down, but the faces of the stoppings were cool, and there was evidence of the fire being well in hand. Water laid on as required.

Bushy Park Coal-mine, Gore.—Opencast pit; one place well stripped ahead of working-face.

Burnwell Coal-mine, North Chatton.—Seam large and strong, but excessive extraction to rise had been the cause of heavy fall to surface, so that difficulty may be expected in future working to dip.

Ramsay's Coal-mine, North Chatton.—New dip drive opening out satisfactorily. New powder-magazine being constructed.

Springfield Coal-mine, Waikaka Valley.—Mine-mouth fallen; work practically suspended.

Pyramid Coal-mine, Riversdale.—Reopening on the seam where formerly worked and exhausted as was thought at that time.

Rossvale Coal-mine, Waikaia.—New air-shaft required, the old one having been affected by recent rains. Magazine approved for storage 350 lb. of explosives.

Waikaia Coal-mine, Waikaia.—Prospecting to dip; output small and not likely to increase apparently, as the seam appeared to have run out.

Muddy Terrace Shale-mine, Freshford.—Prospecting for oil-shale is being conducted by aid of a Government Keystone drill.

Princhester Creek Coal-mine, The Key.—Only a small annual output from this out-of-the-way place, for supply of local requirements. Seam irregular, coal occurring in pockets or bunches each of a few tons having 25 ft. to 30 ft. of stripping on top.

Mataura Collieries, Mataura.—The new air-shaft and doors at mine-mouth have evidently improved ventilation. Powder-smoke not now hanging in workings, and workmen stated that ventilation had been satisfactory.

Mataura Lignite-mine, Mataura.—Opencasting has been suspended, and underground mining is in progress. I pointed out to the manager that the pillars being left near the entrance were too small, and that timbering is necessary.

Nightcaps Collieries, Nightcaps.—No. 1 Mine, Nightcaps: No. 1 section: Pillar and head-coal extraction continues. Where heating had occurred in the waste substantial ash stoppings have been put in. A drive had been commenced at near the mine-mouth with a view to winning the resin-seam lying to the dip. The old resin-seam workings contained an accumulation of water, and precautions were being taken.

No. 2 section: A few men were employed getting coal from pillars near the outcrop at first working.

No. 3 section, or Lloyd's dip: Dip workings are being developed toward the south, hard conglomerate forming excellent roof. Rise workings are being pillared backward, and falls of roof kept close up for safe working.

No. 2 Mine, Morley: A new mine being opened on land leased from the Southland High Schools Commissioners. The seam, 25 ft., overlain by from 8 ft. to 10 ft. of clay and gravel, which is stripped and the coal worked opencast. Prospecting-drives and boring from the surface indicate the existence of a fair-sized area of coal. The coal is conveyed by a light locomotive to the company's loading-bank at Nightcaps Railway-station, a distance of one mile and a half.

Black Diamond Coal-mine, Nightcaps.—Seam 25 ft.; underground mining; bord and pillar; new air-shaft provided.

Beattie's Burndale Coal-mine, Nightcaps.—New mine opening. Seam 9 ft.

Coaldale Coal-mine, Nightcaps.—A new opening. Tramway being laid to Nightcaps Railway terminus.

New Brighton Coal-mine, Wairio.—Drawing pillars and head coal. Timber used. Ventilation good. Three several openings at outcrop; new low-level drive prepared for connection with dip workings.

Thistle Coal-mine, Nightcaps.—Worked out and abandoned.

Wairio Coal-mine, Wairio.—Drawing pillars and head coal. Ventilation good. Timber well used.

Beaumont Coal-mine, Nightcaps.—The narrow bank left between Ohai Stream and the mine carried away, and the mine was inundated.

Mossbank Coal-mine, Nightcaps.—Three several openings on seam at near outcrop. New low level prepared for connection with the proposed Wairio Railway extension, which was being made.

Linton Coal-mine, Nightcaps.—Work suspended on account of the tramway embankment being carried away by flood-water in Ohai Stream.

Diamond Lignite-pit, Seaward Bush.—Opencast pit. Two men at work.

Orepuki Coal-mine, Orepuki.—An opencast mine being driven on the outcrop of a lease held by the New Zealand Coal and Oil Company. Seam 12 ft.; stripping 9 ft.

Lynwood Coal-pit, Te Anau.—Pit worked for supply of fuel to the Government Tourist Department's steamer on Lake Te Anau.

Southport Coal-mine, Preservation Inlet.—Prospecting has been carried out, and a surface survey was being made.

Accidents.

There has been no fatal accident in or about the coal-mines of the Southern Inspection District during 1915, 1916, or 1917.

Serious Non-fatal Accidents.

Kaitangata No. 2 Mine, Kaitangata.—3rd January: Henry Hansen, 15, rope attendant; injury to foot and back; jammed between rake and runaway box; seventy-three days off work.

Green's Coal-mine, Gore.—13th February: John Smyth, 46, miner; injured ankle; struck by fall of coal on returning to face after shot-firing; 114 days off work.

Bush Gully Coal-mine, Coalgate.—23rd February: Amund Petersen, 34, banksman; lacerated finger, caught between drum and rope; 141 days off.

Nightcaps Coal-mine, Nightcaps.—16th March: John Foster, 34, miner; injury to ribs while trucking a box of coal; seventy-five days off work.

Mataura Lignite-mine, Mataura.—23rd April: John Bolger, engineman; fractured forearm; sleeve caught in belt off engine-shaft; forty-eight days off work.

Saddle Hill No. 2 Mine, Saddle Hill.—7th May: A. Manderson, miner; contusion of back by fall of coal; fifty-one days off work.

Whiterigg Coal-mine, Gore.—30th June: James Strachan; rupture of blood-vessel in thigh; knocked by coal-truck; still off work.

Nightcaps Coal-mine, Nightcaps.—16th August: John Eunson, 49, carpenter; two finger-nails torn off; was booking rope on winch-drum; eighty-three days off work.

Jubilee Coal-mine, Green Island.—6th September: James Miller, 45, miner; contusion of hand and sprained finger while filling coal; sixty-four days off work.

Freeman's Coal-mine, Abbotsford.—24th September: A. Diehl, miner; fractured collar-bone; struck by prop, which fell while setting it; forty-three days off work.

Jubilee Coal-mine, Green Island.—16th October: Robert Campbell, miner; injured eye (subsequently removed), coal flying from pick; still off work.

ANNEXURE B.

STATISTICS OF WORKINGS IN COAL-MINES, 1917.

Name of Mine and Locality.	Name of Manager.	Number of Years worked.	Quality of Coal.	Number of Seams worked.	Thickness of Seams.	Thickness worked.	System of Underground working.	Number of Shafts.	Total Output for 1917.	Approximate Total Output to 31st December, 1916.	Approximate Total Output to 31st December, 1917.	Number of Men ordinarily employed.			Means of Ventilation.
												Above.	Below.	Total.	
NORTHERN INSPECTION DISTRICT.															
North Auckland Coalfields.									Tons.	Tons.	Tons.				
Whangarei	E. J. Scoble	7	Semi-bituminous	1	6′ to 8′	6′ to 8′	Bord and pillar	2	9,083	17,825	26,908	4	19	23	Natural.
Northern	H. Tipton	20	Ditto	2	4′ to 6′	4′ to 6′	Ditto	..	13,381	597,583	610,964	5	5	10	,,
Northern Crown lease	G. Doel	1 3/12	,,	1	5′ to 10′	5′ to 10′	,,	..	14,401	8,111	22,512	..	10	10	,,
Northern Kiripaka	E. Nelson	2 1/4	,,	1	4′ to 10′	4′ to 10′	,,	2	21,254	304,705	325,959	17	28	45	Fan.
Northern Co-operative	E. A. Cunningham	3 3/12	,,	1	5′ to 8′	5′ to 8′	,,	..	1,880	19,317	21,197	2	6	8	Natural.
Kerr and Wyatt	F. H. Kells	2	,,	2	4′ to 11′	4 to 11′	,,	..	7,585	1,984	9,569	2	10	12	,,
Foot and Doel	R. Cherrie	1/2	,,	1	7′	7′	,,	..	1,855	..	1,855	..	4	4	,,
Hikurangi	A. H. Taylor	26	,,	1	8′ to 12′	6′ to 10′	,,	2	31,881	1,068,041	1,099,922	28	67	95	Fan.
Waikato Coalfield.															
Waipa	H. Thomson	4	Brown coal	1	11′ to 12′	9′	Bord and pillar	..	81,718	237,981	319,699	30	70	100	Fan.
Taupiri Extended	W. Wood	29	,,	1	10′ to 34′	20′	Ditto	2	192,205	1,989,976	2,182,181	62	277	339	,,
Taupiri Rotowaro	A. Penman	1/2	,,	1	17′	9′	,,	..	1,656	..	1,656	20	15	35	Natural.
Pukemiro	A. Burt	2 1/3	,,	1	16′ to 20′	7′ to 15′	,,	..	89,375	92,591	181,966	45	100	145	Fan.
Huntly Coal and Brick	R. Greenwell	5	,,	1	15′	15′	Open cut	..	3,399	13,686	17,085	9	..	9	..
Waikato Extended	W. C. Davies	1 2/3	,,	1	7′	7′	Bord and pillar	..	890	30	920	1	5	6	Natural.
Greencastle (Aria district)	A. Morgan	1/2	,,	1	12′	9′	Ditto	..	75	..	75	..	2	2	,,
Output of mines included in previous statements at which operations are abandoned or suspended									..	3,721,489	3,721,489	..	..	..	..
WEST COAST INSPECTION DISTRICT.															
Nelson Coalfield.															
Puponga	A. Morris	14	Bituminous	1	9′	Full height	Bord and pillar	..	7,485	207,968	215,453	20	30	50	Mechanical.
North Cape	Job Hughes	7	,,	1	2′ 6″ to 4′ 6″	4′	Ditto	1	12,131	42,566	54,697	14	31	45	,,
Buller Coalfield.															
Co-operative Mine	H. Chester	3	Bituminous	1	10′	8′	Bord and pillar	..	1,688	2,973	4,661	1	4	5	,,
Coal Creek Mine	W. McGuire	2	,,	1	4′	4′	Ditto	..	2,554	2,477	5,031	..	5	5	,,
Westport-Stockton	P. Hunter	9	,,	1	4′ to 20′	4′ to 18′	,,	2	167,122	1,036,370	1,203,492	110	170	280	,,
Millerton Colliery	R. Fox and W. Pearson	26	,,	1	5′ to 30′	10′	,,	..	279,760	4,972,665	5,252,425	81	359	440	,,

STATISTICS OF WORKINGS IN COAL-MINES, 1917—*continued.*

Name of Mine and Locality.	Name of Manager.	Number of Years worked.	Quality of Coal.	Number of Seams worked.	Thickness of Seams.	Thickness worked.	System of Underground working.	Number of Shafts.	Total Output for 1917.	Approximate Total Output to 31st December, 1916.	Approximate Total Output to 31st December, 1917.	Number of Men ordinarily employed.			Means of Ventilation.
												Above.	Below.	Total.	
WEST COAST INSPECTION DISTRICT—*continued.*															
Buller Coalfield—continued.									Tons.	Tons.	Tons.				
Iron Bridge Colliery	G. Smith ..	26	Bituminous	2	3′ to 30′	Full height	Bord and pillar ..	..	200,950	7,400,638	7,601,588	124	235	409	Mechanical.
Coalbrookdale Colliery ..	N. Milligan ..	37	,,	1	4′ to 20′	,,	Ditto	..							
Rocklands Mine	J. P. Burley (P.) ..	15	Brown ..	1	27′	8′	,, ...	..	109	6,956	7,065	..	2	2	Natural.
Inangahua Coalfield.															
Coghlan's Freehold	J. Coghlan (P.) ..	21	Semi-bituminous	1	12′	8′	Bord and pillar ..	..	988	5,838	6,826	..	2	2	Natural.
Archer's Freehold	F. W. Archer (P.) ..	22	Ditto ..	2	9′ to 12′	8′ to 10′	Ditto	..	1,650	18,566	20,216	1	2	3	,,
Burke's Creek Mine	A. Thompson ..	16	,, ..	1	12′	8′	,, ...	..	4,304	28,266	32,570	3	6	9	,,
Deep Creek Mine	E. F. Lockington (P.)	16	,, ..	1	12′	Full height	,, ...	..	314	3,382	3,696	..	2	2	,,
Phœnix and Venus Mine ..	W. Knight (P.) ..	36	,, ..	2	25′ to 30′	12′ x 8′	,, ...	..	3,165	34,755	37,920	2	4	6	,,
Lankey's Creek Mine	F. Knight (P.) ..	15	,, ..	1	8′	7′	,, ...	..	1,606	23,183	24,789	1	2	3	,,
Loughnan's Coal-mine ..	H. Griggs ..	31	,, ..	1	4′	Full height	,, ...	..	1,821	13,226	15,047	1	2	3	,,
Big River Mine	W. Kirwin (P.) ..	4	,, ..	1	1′ to 8′	,,	,, ...	..	724	2,707	3,431	..	3	3	,,
Murray Creek Mine	C. A. Svensen (P.) ..	4	,, ..	1	4′ to 12′	,,	Open cast ..	..	134	1,473	1,607	..	2	2	,,
Waitahu Mine	I. Rhodes ..	15	,, ..	1	14′	8′	Bord and pillar ..	..	60	4,659	4,719	..	2	2	,,
Grey Valley Coalfield.															
Paparoa Colliery	H. Talbot ..	9	Bituminous	1	5′ to 25′	12′	Bord and pillar ..	..	36,435	227,114	263,549	15	52	67	Mechanical.
Blackball Colliery	G. Davidson ..	27	,,	2	17′	15′	Ditto	..	132,515	2,455,865	2,588,380	59	227	286	,,
North Brunner Colliery ..	J. Armstrong ..	8	,,	1	2′ to 12′	Full height	,, ...	..	17,060	87,324	104,384	20	31	51	,,
Brunner Colliery	R. Allison ..	53	,,	1	12′	,,	,, ...	..	8,936	2,399,316	2,408,252	5	15	20	,,
N.Z. State Coal-mines.															
Point Elizabeth	O. J. Davis ..	13½	Bituminous	1	8′ to 16′	8′ to 10′	Bord and pillar ..	..	119,411	2,136,306	2,255,717	51	138	189	Mechanical.
Liverpool Colliery	W. Parsonage and G. Duggan	5	,,	3	4′ to 16′	Full height	Ditto	..	145,856	326,615	472,471	82	220	302	,,
Output of mines included in previous statements at which operations have been abandoned or suspended									..	2,133,767	2,133,767	..	..	..	..
SOUTHERN INSPECTION DISTRICT.															
Canterbury.															
Bush Gully, Coalgate	J. Gillick	4	Brown ..	1	5′	5′	Bord and pillar	1	8,265	28,918	37,183	8	16	24	Fan.
Homebush, Glentunnel ..	,, ...	44	,, ..	1	6′	6′	Ditto ..	1	3,266	296,312	299,578	6	9	15	Exhaust steam.
St. Helens, Whitecliffs ..	J. Sutherland ..	36	,, ..	1	6′	5′	,, ..	1	1,744	25,130	26,874	1	3	4	Natural.
Tripp's, Mount Somers ..	J. McClimont (P.)	51	,, ..	1	40′	15′	,, ...	..	2,020	66,118	68,138	1	4	5	,,
Woolmer's, Mount Somers ..	G. A. Bland ..	1	,, ..	1	5′	4′ 6″	,, ..	1	294	..	294	1	3	4	,,
Te Moana, Geraldine	G. D. McFarlane ..	3	,, ..	1	5′	5′	,, ...	..	1	144	145	..	..	..	,,

Albury, Albury	T. F. Slowey (P.) ..	26	Brown ..	1	16′	10′	Bord and pillar	1	1,822	14,963	16,785	1	2	3	Natural.
Allanholme, Waihao Forks ..	Alex. Todd (P.) ..	2	,, ..	1	15′	9′	Ditto		342	411	753	1	1	2	,,
Dalgety's, Hakataramea ..	C. W. Ensor ..	36	,, ..	1	30′	15′	,, ...		20	3,570	3,590	..	..	..	,,
Verdun, Waihao Forks ..	A. Todd (P.) ..	1	,, ..	1	5′	4′	,, ...		289	..	289	1	1	2	,,
North Otago.															
St. Andrew's, Papakaio ..	T. Nimmo (P.) ..	39	Brown ..	1	7′	6′	Bord and pillar	2	1,842	54,866	56,708	1	4	5	Natural.
Prince Alfred, Papakaio ..	A. Beardsmore (P.)	48	,, ..	1	9′	7′	Ditto ..	1	1,422	61,023	62,445	1	2	3	,,
Ngapara, Ngapara	W. Nimmo (P.) ..	39	,, ..	1	25′	8′	,, ..	1	842	30,649	31,491	1	2	3	,,
Shag Point (old mine), Shag Point	W. Hunt (P.) ..	3	,, ..	1	4′	4′	,, ..	1	1,264	408,664	409,928	1	6	7	,,
Shag Point Proprietary, Shag Point	C. E. Twining ..	9	,, ..	1	5′	5′	,, ..	1	12,074	22,068	34,142	9	23	32	Furnace.
Central Otago.															
Coal Creek, Roxburgh ..	W. Burt (P.) ..	47	Lignite ..	1	20′	7	Bord and pillar	..	246	60,431	60,677	2	1	3	Natural.
McPherson's, Coal Creek Flat ..	J Weatherall (P)	47	..	1	60′	20′	Open ..	..	1,716	68,918	70,634	3	..	3	,,
Perseverance, Coal Creek Flat ..	J. Craig	30	,, ..	1	75′	25′	Bord and pillar	1	90	60,401	60,491	1	..	1	,,
Alexandra, Alexandra	A. W. Whittleston	36	,, ..	1	9′	7′	Ditto ..	1	3,743	89,707	93,450	1	8	9	Exhaust steam.
Cambrian, Cambrian	David Jones ..	56	,, ..	1	30′	All	Open ..	..	319	48,752	49,071	1	..	1	..
Laudervale, Cambrian ..	R. Jones ..	13	,, ..	1	12′	12′	,, ..	..	84	1,225	1,309	1	..	1	..
St. Bathan's, St. Bathan's ..	J. Enwright ..	20	,, ..	1	20′	20′	,, ..	..	94	6,057	6,151	1	..	1	..
Roughridge, Oturehua ..	J. Beck (P.) ..	31	,, ..	1	20′	20′	,, ..	..	1,209	29,829	31,038	2	..	2	..
Idaburn, Oturehua	J. White (P.) ..	47	,, ..	1	20′	20′	,, ..	..	867	45,417	46,284	2	..	2	..
Gimmerburn, Gimmerburn ..	C. Dougherty ..	61	,, ..	1	12′	12′	,, ..	..	24	3,229	3,253	1	..	1	..
Shepherd's Creek, Bannockburn	W. R. Parcell ..	40	,, ..	1	8′	7′	Bord and pillar	..	3,293	83,265	86,558	2	11	13	Exhaust steam.
Cairnmuir, Bannockburn ..	H. C. Russell (P.) ..	15	,, ..	1	12′	10′	Ditto ..	1	1,80	39,992	41,794	1	7	8	,,
Ranfurly, Bannockburn ..	J. Hodson, jun. (P.)	7	,, ..	1	10′	10′	Levels ..	..	1,022	8,125	9,147	1	5	6	,,
Cardrona, Cardrona	R. McDougal (P.) ..	33	,, ..	1	10′	10′	Open	..	148	25,780	25,928	3	..	3	..
Gibbston, Gibbston	R. Cowan (P.) ..	31	,, ..	1	15′	10′	Bord and pillar	..	847	22,712	23,559	1	2	3	Natural.
Nevis, Nevis	R. Thompson (P.)	17	,, ..	1	20′	20′	Levels ..	..	487	6,088	6,575	..	2	2	,,
Nevis Crossing, Nevis ..	R. Ritchie (P.) ..	14	,, ..	1	16′	16′	Open	..	394	12,971	13,365	2	..	2	..
Dillon's, Blackstone Hill ..	J. Dillon ..	20	,, ..	1	12′	12′	,, ...	..	8	274	282	..	..	..	..
South Otago.															
Fernhill, Abbotsford	J. Dunlop (P.) ..	40	Lignite ..	1	11′	8′	Bord and pillar	1	2,082	157,137	159,219	1	3	4	Natural.
Freeman's, Abbotsford ..	G. F. Whittleston	37	,, ..	1	10′ and 12′	All	Ditto ..	3	11,787	545,807	557,594	4	16	20	Fan.
Green Island, Green Island ..	T. Barclay, jun. ..	30	,, ..	1	10′	8′	,, ..	1	4,415	127,029	131,444	3	5	8	Furnace.
Jubilee, Saddle Hill	T. Barclay, sen. ..	20	,, ..	1	6′ to 10′	All	,, ..	2	17,786	322,185	339,971	9	22	31	,,
Saddle Hill (No. 1), Saddle Hill	Robert Hill ..	45	,, ..	1	20′	20′	,, ..	1	7,738	234,259	241,997	4	8	12	Fan.
Saddle Hill (No. 2), Saddle Hill	Robert Hill ..	16	,, ..	1	20′	20′	,, ..	1	17,810	232,454	250,264	6	20	26	,,
East Taieri, Riccarton ..	W. Coulter (P.) ..	6	,, ..	1	10′	7′	,, ..	1	3,127	11,981	15,108	1	6	7	Natural.
Brighton, Brighton	H. C. Russell (P.) ..	2	,, ..	1	6′	6′	,, ..	1	54	3,459	3,513	1	2	3	,,
Waronui, Milton	J. Carruthers ..	13	Brown ..	1	18′	8′	,, ..	1	6,359	184,577	190,936	13	23	36	Fan.
McGilp's, Milton	J. J. Cooper (P.) ..	13	,, ..	1	12′	10′	,, ..	1	7,584	32,543	40,127	1	7	8	Natural.
Taratu, Livell's Flat	T. Shore	16	Lignite ..		8′ to 18′	8′ to 15′	,, ..	2	46,137	260,939	307,076	16	49	65	Fan.
Mahara, Kaitangata	J. Neilson (P.) ..	9	Brown ..	1	9′	7′	,, ..	..	948	1,301	2,249	2	3	5	Natural.
Port Arthur, Kaitangata ..	J. M. Morrison ..	8	,, ..	1	10′	8′	,, ..	..	421	891	1,312	..	1	1	,,
Longridge, Kaitangata ..	N. Mackie (P.) ..	9	,, ..	1	4′	4′	,, ..	..	188	3,626	3,814	..	1	1	,,

STATISTICS OF WORKINGS IN COAL-MINES, 1917—*continued.*

Name of Mine and Locality.	Name of Manager.	Number of Years worked.	Quality of Coal.	Number of Seams worked.	Thickness of Seams.	Thickness worked.	System of Underground working.	Number of Shafts.	Total Output for 1917.	Approximate Total Output to 31st December, 1916.	Approximate Total Output to 31st December, 1917.	Number of Men ordinarily employed.			Means of Ventilation.
												Above.	Below.	Total.	
South Otago—continued.					SOUTHERN INSPECTION DISTRICT—*continued.*										
									Tons.	Tons.	Tons.				
N.Z. Coal and Oil Company (Limited)—															
Kaitangata No. 1, Kaitangata	A. S. Gillanders ..	41	Brown ..	1	25′	25′	Bord and pillar	1	107,274	3,400,221	3,507,495	65	223	288	Fan.
Kaitangata No. 2, Kaitangata	W. Carson ..	5	,, ..	2	26′ and 6′	All	Ditto ..	1							
Castle Hill, Kaitangata ..	W. Carson ..	24	,, ..	1	18′	18′	,, ..	1							
Benhar, Stirling	J. Walls (P.) ..	54	Lignite ..	1	25′	12′ to 16′	,, ..	1	6,563	163,271	169,834	1	6	7	Exhaust steam.
Stevenson Collieries, Stirling ..	J. Throp (P.) ..	1	,, ..	..	15′	10′	,, ..	..	196	..	196	1	..	1	Natural.
Southland.															
Pukerau, Pukerau	F. A. Junker (P.) ..	37	Lignite ..	1	14′	14′	Open	..	718	41,385	42,103	1	..	1	..
Whiterigg, East Gore	W. C. Johnston (P.)	39	,, ..	1	20′	12′	Bord and pillar	1	3,647	64,497	68,144	1	2	3	Natural.
Green's, Gore	J. Mason ..	29	,, ..	1	20′	14′	Ditto ..	1	12,211	178,064	190,275	3	8	11	Fan.
Bushy Park, Croydon ..	G. M. Wilson ..	12	,, ..	1	20′	20′	Open	..	246	22,268	22,514	1	..	1	..
Burnwell, North Chatton ..	W. McIvor (P.) ..	18	,, ..	1	20′	12′	Bord and pillar	1	1,748	38,757	40,505	1	2	3	Natural.
Ramsay's, North Chatton ..	J. Broome ..	14	,, ..	1	20′	15′	Ditto ..	..	4,299	80,652	84,951	1	3	4	,,
Springfield, Waikaka Valley ..	N. Fletcher ..	24	,, ..	1	17′	10′	,, ..	1	3,349	55,832	59,181	1	2	3	,,
Glenlee, Waikaka	D. T. McGill (P.) ..	24	,, ..	1	14′	10′	Open	..	559	15,331	15,890	1	..	1	..
Edges, Greenvale	A. A. Edge (P.) ..	1	,, ..	1	14′	10′	Bord and pillar	1	770	..	770	1	1	2	Natural.
Rossvale, Waikaia	R. Craig (P.) ..	14	,, ..	1	10′	8′	Ditto ..	1	3,410	36,827	40,237	1	3	4	,,
Waikaia, Waikaia	J. Johnstone ..	9	,, ..	1	8′	6′	,, ..	1	252	14,501	14,753	1	1	2	,,
Argyle, Waikaia	H. C. Hutton ..	26	,, ..	1	12′	12′	Open	..	417	5,294	5,711	2	..	2	..
Punchester Creek, The Key ..	J. A. Denton ..	15	,, ..	1	6′	6′	,, ..	..	118	1,613	1,731	1	..	1	..
Mataura Collieries, Mataura ..	A. E. Barnes ..	21	,, ..	1	17′	12′	Bord and pillar	1	7,213	179,803	187,016	2	8	10	Exhaust steam.
Mataura Lignite Mine, Mataura ..	W. Coster (P.) ..	41	,, ..	1	18′	14′	Ditto ..	..	14,498	158,552	173,050	2	6	8	Natural.
Heatherlea, Waimumu ..	F. Barber ..	6	,, ..	1	10′	8	Open	..	86	478	564	1	..	1	..
Ota Creek, Wyndham ..	E. George (P.) ..	37	,, ..	1	9′	9′	,, ..	..	1,357	19,951	21,308	2	..	2	..
Clarke's, Wyndham	P. Farrington ..	10	,, ..	1	12′	12′	,, ..	..	845	14,049	14,894	2	..	2	..
Glenham, Wyndham	N. McEwan ..	2	,, ..	1	6′	6′	,, ..	..	46	339	385	..	..	..	..
Nightcaps No. 1, Nightcaps ..	W. Barclay ..	36	Brown ..	3	8′, 12′, and 16′	All	Bord and pillar	2	73,133	1,181,011	1,254,144	32	84	116	Two fans.
Nightcaps No. 2, Nightcaps ..	W. Barclay ..	1	,, ..	1	28′	20′	Bord and pillar and open	..							Natural.
Black Diamond, Nightcaps ..	C. Tinker (P.) ..	2	,, ..		25′	10′	Bord and pillar	..	2,614	138	2,752	2	5	7	,,
Beattie's, Nightcaps	G. Beattie ..	3	,, ..	..	9′	..	Open ..	..	..	24	34	..	..	..	..

New Brighton, Nightcaps ..	W. Dixon ..	11	Brown ..	2	5′ and 11′	All	Bord and pillar	1	4,473	44,056	48,529	5	11	16	Exhaust steam.
Thistle Coal Company, Nightcaps	J. Robertson ..	4	,, ..	1	9′	7′	Ditto ..	..	1,587	4,238	5,825	2	5	7	Natural.
Wairio, Nightcaps	C. R. Heycock ..	12	,, ..	2	5′ to 17′	All	,, ..	..	15,216	51,008	66,224	6	19	25	,,
Wairio Rail and Coal Company, Wairio	C. R. Heycock ..	3	,, ..	1	Prospecting		..	..	..	1,155	1,155	..	..	..	..
Coaldale Company, Nightcaps ..	J. Robertson (P.) ..	..	,, ..	..		,,	..	..	..	..	..	1	6	7	..
Wairaki, Nightcaps	W. Excell ..	4	,, ..	1	9′	..	..	..	..	350	350	..	..	..	..
Beaumont, Nightcaps ..	W. Crawford ..	9	,, ..	1	20′	12′	Open ..	..	650	11,584	12,234	4	..	4	..
Mossbank, Nightcaps	D. McKenzie (P.) ..	3	,, .	1	12′	7′	Bord and pillar	..	1,872	765	2,637	2	4	6	Natural.
Linton, Nightcaps	W. Smith (P.) ..	2	,, ..		20′	20′	Open ..	..	1,467	2,312	3,779	6	..	6	..
Mount Linton, Nightcaps ..	W. J. McGregor ..	23	,, ..	1	20′	15′	,, ..	..	..	3,314	3,314	..	..	..	..
Wellwood Park, Pukerau ..	A. M. Mason ..	16	Lignite ..	1	7′	7′	,, ..	..	15	349	364	..	..	..	..
Otikerama, Pukerau	W. J. Voight ..	20	,, ..	1	7′	7′	,, ..	..	20	312	332	..	..	..	..
Riverview, Gore	J. Nicol	30	,, ..	1	10′	10′	,, ..	..	35	1,933	1,968	..	..	..	..
Diamond Lignite, Seaward Bush	W. Robinson (P.) ..	15	,, ..	1	25′	18′	,, ..	..	1,228	14,075	15,303	2	..	2	..
Orepuki, Orepuki	W. Herrick ..	21	Brown ..	1	10′	10′	,, ..	..	454	24,471	24,925	1	2	3	..
Lynwood, Te Anau	N.Z. Tourist Dept.	17	Lignite ..	1	7′	7′	,, ..	..	81	2,284	2,365	1	..	1	..
Output of mines included in previous statements at which operations are suspended or abandoned							..	..	..	2,565,249	2,565,249	..	..	..	..
Totals, Southern District, South Island	..	..	..	..	..	..	..	..	451,003	12,144,520	12,595,523	275	679	954	..
Totals, West Coast District, South Island	..	..	..	..	..	..	..	..	1,446,778	23,574,975	24,721,753	590	1,596	2,186	..
Totals, North Island ..	..	..	..	..	..	..	..	..	470,638	8,073,319	8,543,957	225	618	843	..
Grand totals ..	..	..	..	..	..	..	..	..	2,068,419	43,792,814	45,861,233	1,090	2,893	3,983	..
Output of some mines prior to 1890 not included in the above statement					..	..	..	..	..	..	311,779	..	..	..	..
Shale exported, 1914 ..	..	..	..	..	..	..	..	..	..	..	21	..	..	..	..
											46,173,033*				

* This total includes 14,443 tons of oil-shale mined prior to 1914.

APPENDIX C.

REPORT OF THE BOARD OF EXAMINERS.

Mines Department, Wellington, 11th November, 1918.

The Under-Secretary for Mines, Wellington.

I HAVE the honour to submit the following report of the Boards of Examiners under the Mining Act and Coal-mines Act for the year 1917–18.

A meeting of the combined Boards was held on the 30th January, 1918, to consider the work of candidates at the annual examinations. Before proceeding with the business the Chairman expressed the great regret of members at the death of their former colleague, Mr. H. A. Gordon, and their sympathy with Mrs. Gordon and other relatives of the deceased. The following new members were welcomed by the Chairman: Messrs. W. Carson, J. L. Gilmour, and Professor D. B. Waters.

First-class mine-managers' certificates under the Coal-mines Act were granted to A. W. Whittlestone and G. Langford, and partial passes to T. McDonald, T. King, M. McLean, J. Neilson, W. E. Hewitson, and C. Strongman.

No second-class certificates were awarded, but R. W. Duncan was granted a partial pass.

A first-class mine-manager's certificate under the Mining Act was granted to G. W. Lowes, and a partial pass to W. H. Scott.

A partial pass for second-class certificate was gained by J. J. Birch, while G. H. Metcalfe gained a battery superintendent's certificate and L. J. Kitching a partial pass for same.

The necessity of holding interim examinations was considered, and as it seemed that the Act required such examinations to be held, arrangements were duly made, and all candidates who had been unsuccessful at the December examinations were given an opportunity of sitting again in May.

A meeting of the coal-mining members of the Board was held on the 4th July to deal with the results of this examination, and first-class certificates were then issued to T. King, M. McLean, and C. Strongman, and a second-class certificate to J. Robertson.

A special meeting of the Board to deal with certificates under the Mining Act was not called, but with the approval of all the members a battery superintendent's certificate was granted to L. J. Kitching and a second-class mine-manager's certificate to J. J. Birch.

Examinations for firemen-deputies and underviewers were held during the year at Huntly, Greymouth, and Kaitangata, and the following certificates were granted:—

Firemen-deputies: Alex. Wyse, William Eckersley, Thomas Caldwell, Henry Timms, William Frew, John Rodgers, Robert Oliver, John Joseph Cooper, P. G. Cruickshanks, John Nuttall, Idris Lewis, Edward Kerry, Arthur Colledge, John Hale, Alex. Hill.

Underviewers: David McIvor, John Chippendale, A. J. Honey, V. Armstrong, Job Makinson, Alex. Cain.

P. G. MORGAN,
Chairman of Board.

Appended are lists of persons who hold certificates of competency under the Mining and Coal-mines Acts:—

LIST OF MINE-MANAGERS, BATTERY SUPERINTENDENTS, AND DREDGE-MASTERS WHO HOLD CERTIFICATES UNDER THE MINING ACTS.

FIRST-CLASS MINE-MANAGERS' CERTIFICATES.

Certificates of Service issued under the Mining Act, 1886, without Examination.

Adams, H. H., Waiorongomai.
Andrews, T., Thames.
Barclay, T. H., Thames.
Bennett, J., Alexandra.
Black, T., Waiomio.
Burch, W. H., Thames.
Cameron, A., Macetown.
Chapman, J. A., Dunedin.
Davis, J. E., Queenstown.
Edwards, J., Skipper's.
Elliott, J., Macetown.
Evans, J. H., Skippor's.
Frewen, J. B., Queenstown.
Gilmour, T., Thames.
Glass, W. M., Naseby.
Harrison, R. H., Coromandel.
Hunter, R., Thames.
James, F., Thames.
Jamieson, A., Coromandel.
Jenkins, M., Wakatipu.
Johnstone, H., Bluespur.
Kerr, J., Thames.
McCullough, R., Thames.
McGruer, G. N., Karangahake.
McIntosh, D., Bluespur.
Moore, H. W., Thames.
Morrisby, A. A., Glenorchy.
Newman, W., Naseby.
Polton, A., Karangahake.
Porter, J., Waipori.
Quinn, E., Te Aroha.
Ralph, J. G., Thames.
Reid, P., Coromandel.
Rooney, F., Reefton.
Scott, T., Waiorongomai.
Smith, J. E., Thames.
Stone, F., Karangahake.
Sturm, A., Waipori.
Todd, C., Heriot.
Treloar, J. S., Reefton.
Watson, T., Reefton.
Wearne, T., Endeavour Inlet.
Williams, J., Skipper's.
Wylie, W., Ross.
Young, G., Skipper's.

Issued after Examination under the Mining Act, 1886, and Amendment Acts.

Adams, B., Thames.
Baker, W., Thames.
Cochrane, D. L., Reefton.
Colebrook, J. D., Coromandel.
Crawford, J. J., Thames.
Donaldson, W., Otago.
Fleming, M., Thames.
Harris, W., Thames.
Horn, G. W., Thames.
Horne, W., Coromandel.
Hornick, M., Thames.
Hosking, G. F., Auckland.
Kruizenza, W., Reefton.
Logan, H. F., Wellington.
Mangan, T., Thames.
Mouat, W. G., Dunedin.
Watkins, W. E., Reefton.

Issued on Production of Certificate from a Recognized Authority outside the Dominion under the Mining Acts, 1886, 1891, 1898, 1905, 1908, and 1913.

Argall, W. H., Coromandel.
Beckwith, L. H., Wellington.
Brook, R. H. T., Reefton.
*Cook, J., jun., Ross.
Cook, W. Waiomio.
Datson, J., Manaia.
Dodd, William, Milton.
Griffiths, A. P., Auckland.
Griffiths, H. P., Auckland.
Hailey, R. C., Dunedin.
Hall, E. K., Reefton.
McKenna, Thomas, Dunedin.
Molineaux, H. S., Gore.
Rich, F. A., Auckland.
Williams, W. H., Auckland.

* Alluvial.

FIRST-CLASS MINE-MANAGERS' CERTIFICATES—*continued.*

Issued after Examination under the Mining Act, 1891.

Agnew, J. A., Thames.
Annear, William, Reefton.
Arscott, R., Waihi.
Bennett, E. P., Thames.
Boydell, H. C., Coromandel.
Bradley, R. J. H., Te Puke.
Carroll, J., Lyell.
Cartwright, E., Thames.
Crabb, J., Reefton.
Evans, H. A., Wellington.
Gilmour, J. L., Thames.
Hodge, J. H., Thames.
Keam, P. E., Thames.
Lawn, C. H., Capleston.
Linck, F. W., Thames.
Morrison, R., Thames.
McDermott, G., Thames.
McDermott, J., Thames.
McDermott, W., Thames.
McGregor, W. T., Thames.
McKenzie, H. J., Coromandel.
McPeake, J., Thames.
O'Keeffe, M. D., Thames.
Paltridge, Henry, Thames.
Paul, Matthew, Thames.
Robertson, D. B., Stafford.
Ross, Richard, Thames.
Russell, Murray, Dunedin.
Shepherd, H. F., Thames.
Stanford, W. J., Macetown.
Tierney, R., Thames.
Vialoux, F., Coromandel.
Warne, George, Thames.
Waters, D. B., Skipper's.
White, G. H., Thames.
Whitley, A., Thames.

Issued after Examination under the Mining Acts, 1898, 1905, and 1908.

Allen, Henry, Waihi.
Autridge, L. E., Thames.
Baker, S. G., Thames.
Barker, B., Thames.
Barrance, K. M., Karangahake.
Bell, O., Waihi.
Bennie, Boyd, Waihi.
Bishop, Thomas Otto, Skipper's.
Blenkhorn, C., Coromandel.
Bolitho, Joseph, Reefton.
Bower, J. W., Coromandel.
Broad, R., Waihi.
Buddle, Frank, Coromandel.
Bull, C. W., Waihi.
Caisley, John, Karangahake.
Carroll, A. M., Reefton.
Carroll, John, Kuaotunu.
Carter, R. P., Waihi.
Clouston, R. E., Kaitangata.
Collier, E., Reefton,
Cooper, J. H., Thames.
Cooper, Thornhill, Waihi.
Cordes, F. M., Karangahake.
Cornes, J. G., Waihi.
Docherty, W. H., Coromandel.
Downey, J. F., Reefton.
Dutton, W. F., Waihi.
Ellery, John, Reefton.
Fry, S., Waimangaroa.
Evered, N. J., Waihi.
George, M. T., Waihi.
Goldsworthy, C., Karangahake.
Goldsworthy, W., Coromandel.
Gordon, J. A., Thames.
Grayden, P., Thames.
Greening, W., Karangahake.
Gudgeon, C. W., Macrae's.
Hitchcock, W. E., Barewood.
Hooker, John, Coromandel.
Irwin, Samuel, Waihi.
Jackson, G. T., Waihi.
Johnson, J. H., Coromandel.
Kingsford, C., Waihi.
Langdon, H., Waihi.
Langford, G. S., Waihi.
Lautour, H. A. de, Waihi.
Lawn, Nicholas, Reefton.
Lewis, Ralph Reginald, Waihi.
Lowes, G. W., Reefton.
Mackie, Portland George A., Waihi.
McConachie, W., jun., Waihi.
McDonald, R. M., Table Hill.
MacDuff, R. B., Thames.
McGruer, A., Karangahake.
MacLaren, J. A. J., Coromandel.
McMahon, J. H., Reefton.
McMahon, T., Reefton.
McMillan, T., Waihi.
Mitchell, William J., Barewood.
Moore, L. O., Waihi.
Morgan, William, Waihi.
Morrison, William, Waihi.
Moye, Michael, Reefton.
Oats, John, Black's Point, Reefton.
O'Shea, J., Reefton.
O'Sullivan, J. W., Thames.
Rimmer, J. C., Helensville.
Rodden, John, Reefton.
Ruffin, R. C., Reefton.
Saunders, W. H., Reefton
Scoble, E. J., Waihi.
Sheehan, D., Karangahake.
Smith, Walter, Karangahake.
Spearing, J. R., Waihi.
Stewart, F., Waihi.
Stewart, R. A., Reefton.
Sullivan, T., Reefton.
Thomson, J. R., Waihi.
Thomson, Thomas, Waihi.
Thorne, G. M., Waihi.
Tucker, E. S., Coromandel.
Turner, G. W. E., Reefton.
Turnbull, E. V., Coromandel.
Turner, C. E., Murchison.
Ulrich, G. A. C., Waihi.
Walker, A. J., Waihi.
Watson, J. L., Thames.
Wood, P. H., Reefton.
Wotherspoon, James, Waihi.

Issued under Section 313 of the Mining Act, 1891.

Hornibrooke, H. P., Coromandel.
Martin, James, Reefton.
Rickard, John, Thames.
Snow, Thomas, Huntly.
Thomas, James, Thames.
Trelease, J. H., Thames.
White, John S., Karangahake.
Williams, John, Kuaotunu.

Certificates of Competency granted to Holders of Provisional Warrants under Section 32 of the Mining Act Amendment Act, 1896.

Alexander, Thomas, Deep Creek.
Argall, A. E., Coromandel.
Battens, H., Coromandel.
Bunney, Joseph, Waihi.
Campbell, Alexander, Cullensville.
Carlyon, Samuel, Coromandel.
Cornes, C. A., jun., Karangahake.
Daldy, Edward Arthur, Coromandel.
Draffin, Samuel, Waitekauri.
Farmer, C. S., Waitekauri.
Goldsworthy, William, Karangahake.
Harvey, A. G., Coromandel.
James, Robert, Thames.
Jamieson, John, Reefton.
Johns, Thomas, Waihi.
Kennerley, W. H., Thames.
McCombie, John, Karangahake.
MacDonald, H., Coromandel.
McEnteer, James, Tararu.
McLean, Benjamin J., Waitekauri.
Meehan, James, Westport.
Moorecraft, Walter, Coromandel.
Morgan, William, Owharoa.
Moyle, Thomas, Thames.
Patton, William, Macetown.
Pearce, Francis, Reefton.
Potter, William H., Thames.
Rillstone, Charles, Waipori.
Somervell, John, Thames.
Thomas, Archelaus, Tapu, Thames.
Turnbull, Thomas A., Whangamata.

Issued to Inspectors of Mines by virtue of Office under the Mining Acts, 1886, 1891, and 1898.

Binns, G. J., Dunedin.
Cochrane, N. D., Westport.
Green, E. R., Dunedin.
Hayes, J., Dunedin.
McLaren, J. M., Thames.
Tennent, R., Westport.

SECOND-CLASS MINE-MANAGERS' CERTIFICATES.

Certificates of Service issued under the Mining Act, 1891.

Adams, W. J., Thames.
Agnew, J. A., Coromandel.
Argall, A. E., Coromandel.
Blair, Thomas, Kuaotunu.
Bolitho, James, Reefton.
Bremner, John, Coromandel.
Brokenshire, James, Thames.
Brown, John, Macrae's.
Bunny, Joseph, Thames.
Byrne, John, Karangahake.
Comer, W. W., Thames.
Comer, George, Thames.
Corbett, T., Paeroa.
Crabb, Thomas, Reefton.
Daniel, P. F., Greymouth.
Dobson, John Allen, Kuaotunu.
Edwards, George, Westport.
Ellery, John, Reefton.
Foster, Thomas, Wellington.
Gemmings, Charles, Thames.
Gill, George, Thames.
Goldsworthy, Henry, Thames.
Goldsworthy, William, Mauku, Auckland.
Gribble, James, Norsewood.
Grimmond, Joseph, Ross.
Guthrie, John, Wellington.
Hardman, James Edward, Thames.
Hetherington, William, Thames.
Hill, Alexander Grey, Waikakaho.
Hollis, Frederick J., Waihi.
Hore, John, Wellington.
Hornibrooke, H. P., Kuaotunu.
Jamieson, John, Reefton.
Jobe, James, Thames.
Johns, Thomas, Thames.
Johnstone, William, Collingwood.
Kerr, George, Kamo.
Kirker, Thomas, Thames.
Laughlin, David, Thames.
Law, John, Thames.
Loughlin, S., Thames.
Mackay, William, Nenthorn.
Martin, David, Black's Point.
Martin, James, Reefton.
Mayn, John, Coromandel.
McCombie, John, Karangahake.
McEwen, James, Reefton.
McNeill, George, Upper Kuaotunu.
Meagher, John, Karangahake.
Morgan, William, Upper Thames.
Moyle, Thomas, Thames.
Newdick, Alfred, Thames.
O'Keefe, M. W. D., Thames.
Page, John, Lyell.
Peebles, Alexander, Kuaotunu.
Pettigrew, Robert, Sydney.
Potts, W. H., Thames.
Primrose, J., Kuaotunu.
Richards, A. H., Kuaotunu.
Rickard, John, Thames.
Rogers, William Henry, Kumara.
Shaw, James, Karangahake.
Sligo, Alexander, Nenthorn.
Thomas, A., Thames.
Thomas, James, Thames.
Thomson, John, Dunedin.
White, John S., Karangahake.
Williams, James, Thames.
Williams, John, Thames.
Wilson, J. G., Thames.
Worth, Robert, Waihi.

Issued after Examination under the Mining Acts, 1891, 1898, and 1908.

Benney, J., jun., Paeroa.
Bennie, Boyd, Coromandel.
Cahill, T. M., Upper Kuaotunu.
Carroll, John, Upper Kuaotunu.
Christie, William, Waitekauri.
Draffin, S., Waitekauri.
Dunkin, T., Coromandel.
Evans, H. A., Skipper's.
Mathewson, A., Hyde.
McNeil, A. H., Coromandel.
Tilsley, G., Thames.
White, F. H., Kuaotunu.
White, G. H., Thames.

SECOND-CLASS MINE-MANAGERS' CERTIFICATES—*continued.*

Issued under Section 313 of the Mining Act, 1891.

Connon, William, Thames. Edwards, E., Coromandel. McCormick, W. J., Waitekauri.

Certificates of Competency granted to Holders of Provisional Warrants under Section 32 of the Mining Act Amendment Act, 1896.

Allen, W. J., Coromandel.
Barney, Montague T., Waitekauri.
Brownlee, Henry, Thames.
Collins, Charles, Waitekauri.
Curtis, Charles, Taylorville.
Davis, James, Coromandel.
Gardner, James, Waimangaroa.
Howe, Albion S., Waitekauri.
Johnson, Frank H., Collingwood.
Kirwan, William, Reefton.
Martin, William, Tararu, Thames.
Murphy, Joseph, Coromandel.
O'Brien, John, Westport.
Prescott, Arthur J., Coromandel.
Ruffin, Richard, Manaia, Coromandel.

Certificates of Service issued under the Mining Amendment Act, 1910.

Adams, Albert Augustine, Thames.
Adams, R. W., Thames.
Barker, J. W., Coromandel.
Brabyn, John, Clarendon.
Butcher, F. J., Waitekauri.
Donaldson, George, Macrae's Flat.
Gillan, Thomas, Thames.
Grace, Pierce, Waitekauri.
Hansen, Charles Hans, Puketui.
Hayes, James, Thames.
Hill, Harrold Alexander, Thames.
Hyde, Henry John, Karangahake.
Iles, E. J., Bannockburn.
Inglis, Robert, Kuaotunu.
Kell, Arthur, Karangahake.
Lynch, James, Glenorchy.
McKenzie, D., Georgetown.
Reid, George, Glenorchy.
Reynolds, Edmond Francis, Coromandel.
Sheehan, James, Thames.
Tallentire, John, Waiorongomai.
Williams, John Paul, Puriri.

BATTERY SUPERINTENDENTS' CERTIFICATES.

Issued under the Mining Act 1891 Amendment Act, 1894, without undergoing Examination.

Adams, H. H., Waihi.
Aitken, R. M., Reefton.
Banks, Edwin Gripper, Waihi.
Barry, Hubert Percy, Waihi.
Goldsworthy, Henry, Kuaotunu.
Goldsworthy, John, Kuaotunu.
Greenway, H. Howard, Auckland.
Hope, John S., Waitekauri.
Hutchison, William, Karangahake.
Margetts, Frederick Ernest, Kuaotunu.
McKenna, T. N., Tararu.
McLellan, William, Waitekauri.
Noble, James R., Karangahake.
Park, James, Thames.
Shepherd, Henry Franklin, Waihi.
Sims, C F., Tararu.
Walker, James A., Kuaotunu.
Wilson, Arthur E., Waihi.
Wilson, James Kitchener, Auckland.

Issued after Examination under the Mining Act 1891 Amendment Act, 1894.

Adams, A. A., Thames.
Allen, F. B., Thames.
Allom, H. O., Thames.
Ansley, Comyn, Paeroa.
Ansley, Walter, Thames.
Banks, J. H., Waihi.
Bowers, W., Thames.
Brown, A. E., Thames.
Clarke, J. L., Thames.
Clarke, R., Waitekauri.
Clarke, W. J., Waihi.
Day, A. T., Thames.
Dixon, Clement, Waihi.
Fuller, J. P., Kuaotunu.
Gray, J. W., Waihi.
Hayward, F. W., Komata.
Horn, G. W., Kuaotunu.
Jackson, J. H., Paeroa.
Jones, Achison, Waihi.
Kidd, F. D., Thames.
Laurie, D. B., Karangahake.
Lee, J. W., Reefton.
Macdonald, W., Waihi.
McKenzie, H. J., Thames.
McMicken, S. D., Thames.
Morgan, P. G., Thames.
Morrin, W. S., Thames.
Noakes, H. L., Waihi.
Raithby, R. W., Reefton.
Robinson, J. R., Waitekauri.
Stafford, B. H., Waihi.
Taylor, C. H., Tararu.
Thorpe, A. H., Thames.
Vercoe, R. B., Thames.
Williams, A. G. R., Thames.
Wingate, H. M., Maratoto.
Winslow, G., Thames.

Issued after Examination under the Mining Acts, 1898, 1905, and 1908.

Adams, J. H., Coromandel.
Adams, J. H., Thames.
Adams, Richard W., Tararu, Thames.
Airey, Hubert, Karangahake.
Aitken, Alexander Hugh, Waihi.
Allen, D. V., Thames.
Allen, H. E., Wellington.
Anderson, David, Waihi.
Andrews, T. T., Waihi.
Auld, J. B., Crushington.
Baker, W. H., Thames.
Banks, C. A., Waihi.
Banks, E. J., Thames.
Barrance, K. McK., Karangahake.
Barrett, J. J., Karangahake.
Barron, William E., Waikino.
Baskett, E. G., Karangahake.
Bell, L. M., Waihi.
Bidlake, A. E., Waiomio.
Bird, A. W., Thames.
Bishop, T. O., Reefton.
Blackadder, William, Crushington.
Bradley, R. J. H., Karangahake.
Brown, F. M., Karangahake.
Brown, J. E., Komata.
Brown, W. E., Reefton.
Browne, E., Waitekauri.
Burns, William, Waiomio.
Bush, E. F., Parawai.
Bush, George Arthur, Karangahake.
Bush, H. R., Thames.
Campbell, Colin, Thames.
Carless, Noel, Waihi.
Carpenter, W. E., Karangahake.
Carroll, John, Kuaotunu.
Carter, S., Waihi.
Chappell, G. A., Karangahake.
Clark, John L., Waihi.
Clarke, Thomas, Waihi.
Coote, J. M., Thames.
Couper, J., Thames.
Cowles, R. K., Crushington.
Crawford, H., Macrae's.
Crompton, H., Maratoto.
Croucher, Herbert, Waihi.
Dawson, B., Ellerslie.
Donnelly, Thomas, Waihi.
Donovan, Willie, Waikino.
Draffin, Eugene, Kuaotunu.
Eaton-Turner, Geoffrey William, Waihi.
Ellis, L. L., Waitekauri.
Empson, J. B., Karangahake.
Evans, G. C., Waihi.
Evans, J., Waihi.
Evans, W. B., Reefton.
Ewen, H. F., Auckland.
Fletcher, H. T., Katikati.
Fry, Sidney, Westport.
Fuller, John P., Kuaotunu.
Fyfe, A., Dunedin.
Gardner, E. A., Reefton.
Gibson, William, Waihi.
Gilpin, J., Waihi.
Gow, E. A., Crushington.
Grayden, J., Waitekauri.
Grayden, Peter, Thames.
Grumitt, P. H., Thames.
Gwilliam, Benjamin, Karangahake.
Halliwell, L. V., Karangahake.
Hargraves, E. P., Waihi.
Harsant, C., Puketui.
Hay, Adam, Karangahake.
Hazard, T. R. C., Waitekauri.
Hitchcock, W. E., Barewood.
Hogg, B., Karangahake.
Hogg, T. R., Karangahake.
Horn, G. W., Kuaotunu.
Gillooly, T., Roxburgh.
Gillstrom, Carl A., Berlin's.
Hutchison, R. M., Karangahake.
Johnson, Edward, Waihi.
Jones, R. D., Karangahake.
Kidd, R. B., Waitekauri.
Kingsford, A., Karangahake.
Kingsford, C., Waihi.
Langford, G. S., Waikino.
Launder, G. H., Waitekauri.
Lawless, L. J., Paeroa.
Lawn, H., Reefton.
Littlejohn, W. D., Karangahake.
Lovelock, J. E., Crushington.
Mackay, John, Crushington.
Maltman, A., Reefton.
Mann, C., Westport.
Matheson, A. M., Barewood.
Maxwell, W. L., Waihi.
McDonall, P. H., Waihi.
McEwin, J. A., Reefton.
McKinlay, John, Waihi.
McNeil, A. R., Karangahake.
McPadden, J., Coromandel.
Melrose, P., Waihi.
Metcalf, G. H., Karangahake.
Montgomery, A. E., Opitonui.
Morgan, Robert James, Waihi.
Motherwell, William, Waihi.
Moyle, W. T., Upper Tairua.
Orbell, G. S., Waikouaiti.
Orr, F. S., Waiuta.
Paltridge, F., Thames.
Pond, H. C., Auckland.
Quick, J. N., Thames.
Reid, J. E., Great Barrier.
Reynolds, E. A., Auckland.
Roberts, H. C., Waihi.
Rodden, William, Lyell.
Rosewarne, R. H., Thames.
Royse, W. G., Reefton.
Sanford, A. G., Waihi.
Shaw, D. S., Waikino.
Shaw, L. J., Waikino.
Stephens, H., Dunedin.
Sutherland, J. A., Reefton.
Thomson, G. W., Bendigo.
Thurlow, J. R., Coromandel.
Tomlinson, A., Karangahake.
Tomlinson, David Mitchell, Barewood.
Tomlinson, W. F., Dunedin.
Turnbull, E. V., Waihi.
Ulrich, G. A. C., Komata.
Ulrich, Herstall, Whangapoua.
Walker, Alfred James Dickson, Waihi.
Waters, D. B., Waihi.
Watson, A. B., Waitekauri.
Watson, A. P., Crushington.
Watson, J. P., Reefton.
Watson, J. R., Reefton.
Watson, W. A., Crushington.
Wearne, W., Reefton.
White, A. S. H., Karangahake.
White, E. D. Karangahake.
Williams, A. C., Waihi.
Williams, James, Reefton.
Williams, Joseph, Reefton.
Williams, William Eustace, Waihi.
Wilson, A. P., Crushington.

DREDGEMASTERS' CERTIFICATES.

Issued without Examination under the Mining Act, 1898, and Amendment Acts, 1901 and 1902.

Anderson, L. C., Alexandra.
Andrews, Ralph, Canvastown.
Baker, J. R., Alexandra.
Ballantyne, D., Miller's Flat.
Barnes, T. J., Beaumont.
Bradley, Neil, Alexandra.
Bennett, George, Gore.
Bennett, James, Kumara.
Blue, G. P., Alexandra.
Brand, Peter, Waikaka.
Brennan, Philip, Palmerston South.
Bremner, A. P., Lower Shotover.
Brice, William H., Cromwell.
Bringans, D., Alexandra.
Brown, T. G., Ahaura.
Bunting, James, Murchison.
Busbridge, P., Gore.
Butler, Ewen, Roxburgh.
Butler, M. J., Kanieri.
Cameron, Samuel, Alexandra.
Clarke, Edward, Port Chalmers.
Compton, Albert, Dobson.
Cormack, W., Greymouth.
Cornish, J. T., Miller's Flat.
Coutts, Henry, Miller's Flat.
Cowan, Alexander, Stillwater.
Cowan, James, Nelson Creek.
Crookston, W. L., Three-channel Flat.
Cumming, J. C., Beaumont.
Curtis, Charles, Stillwater.
Cutten, W. H., Dunedin.
Deniston, R. A., Cromwell.
Dewar, John, Alexandra.
Donaldson, J. G. A., Greenstone.
Faithful, William, Greymouth.
Foohy, J. M., Alexandra.
Gibb, William, Croydon Siding.
Gibson, A., Island Block.
Graham, J. M., Gore.
Grogan, William A., Miller's Flat.
Hay, James, Dunedin.
Hedley, A., Cromwell.
Herbert, J., Beaumont.
Hewitt, James, Clyde.
Hogg, Thomas, Cromwell.
Hoskins, Thomas, Maori Point.
Hoy, Samuel, Alexandra.
Inwood, W. J., Rocklands Beach.
Johnston, E. A., Alexandra.
Johnstone, Alexander, Cromwell.
Kennedy, Angus, Alexandra.
Kitto, Edward T., Miller's Flat.
Kitto, Francis, Lowburn.
Kitto, J., Lowburn Ferry.
Kitto, John F., Miller's Flat.
Kitto, W. H., Cromwell.
Kloogh, N. P., Lowburn Ferry.
Lawson, Edward, Dunedin.
Ledingham, J., Bannockburn.
Lee, George, Collingwood.
Lidicoat, R. H., Fern Flat.
Luke, S. J., Alexandra.
Magnus, A., Roxburgh.
Magnus, Olaf, Box 130A, Christchurch.
Mailer, John, Stillwater.
Maitland, A. E., Miller's Flat.
McClure, F. C., Rongahere.
McConnell, J., Cromwell.
McCormack, D., Kanieri.
McDonald, E. A., Waitiri.
McDonald, J., Sofala.
McDonald, John, Cromwell.
McGeorge, Alexander, Dunedin.
McGeorge, J., Dunedin.
McGregor, D., Kanieri.
McGregor, G. R., Alexandra.
McIntosh, D. J., Lowburn Ferry.
McLean, D., Waitiri.
McMath, D. C., Ross.
McMath, Thomas, Alexandra.
Mills, Edward, Murchison.
Mitchell, D. A., Dunedin.
Morel, C. G., Inangahua Junction.
Morris, G. S., Cromwell.
Murray, D., Clyde.
Murray, Madget, Cromwell.
Neilson, S., Miller's Flat.
Nicholson, W. E., Alexandra.
O'Leary, D., Waiau.
Olsen, Charles, Roxburgh.
Parsons, J. D., jun., Clyde.
Percy, John, Clyde.
Perkins, A. C., Dunedin.
Pettigrew, George, Nelson Creek.
Poulter, G. W., Alexandra.
Pringle, John, Miller's Flat.
Ray, J. C., Totara Flat.
Reeder, Philip, Bald Hill Flat.
Rennie, Andrew, Roxburgh.
Ross, Alexander, Cromwell.
Ross, Robert, Alexandra.
Richmond, J., Gibbston.
Ritchie, J. S., Waitiri.
Sanders, H. P., Clyde.
Sanders, John, Cromwell.
Sanders, Thomas, Alexandra.
Schaumann, H., Alexandra.
Scott, M. G., Alexandra.
Scott, Robert, Capleston.
Shore, T. M., Queenstown.
Shore, William, Gore.
Simonsen, Charles, Alexandra.
Skilton, A. G., Old Diggings.
Sligo, N. K., Ahaura.
Smith, Alfred, Inangahua Junction.
Steel, Archibald, Kawarau Gorge.
Steel, Thomas, Dunedin.
Templeton, Ivie, Rongahere.
Thompson, T., Miller's Flat.
Troy, G. C., Cromwell.
Turnbull, W. D., Canvastown.
Tyson, John, Rongahere.
Von Haast, J. H., Clyde.
Wallace, John A., Miller's Flat.
Weaver, Charles, Alexandra.
Williamson, R., Miller's Flat.
Williamson, Walter, Miller's Flat.
Wilson, S. W., Waikaka Valley.
Wood, R. M., Cromwell.
Woodhouse, W. S., Roxburgh.
Young, Andrew, jun., Roxburgh.

Issued after Examination under the Mining Acts, 1898, 1901, 1902, 1905, and 1908.

Anderson, Andrew, Alexandra South.
Anderson, Bertram, Maori Point.
Anderson, G. B., Roxburgh.
Archer, D. J., Ngakawau.
Baird, William G., Clyde.
Bardsley, John James, Cromwell.
Bate, H. T. G., Greymouth.
Bishop, Hugh Arthur, Collingwood.
Blair, G., Abbotsford.
Borthwick, Robert, Alexandra.
Bourke, John, Clyde.
Brent, C. D., Cromwell.
Briggans, Thomas, Alexandra.
Briggans, William, Alexandra.
Broderick, T., Lyell.
Bruce, J. A., Kawarau Gorge.
Burley, J. P., Westport.
Burnside, Walter, Alexandra.
Burton, A. P., Miller's Flat.
Callaghan, E., Three channel Flat.
Campbell, G. W. T., Alexandra.
Carnegy, A., Three-channel Flat.
Carr, W., Alexandra.
Carter, W. W., Sandy Point.
Chapman, Robert, Maori Point.
Clark, D., Callaghan's Creek.
Clarke, R. S. B., Alexandra South.
Coup, George, Albertown.
Cox, R. D., Alexandra.
Craig, D. A., Shag Point.
Curno, C. B., Alexandra.
Dalton, J. R., Three-channel Flat.
Dalzell, T. L., Cromwell.
Donaldson, John, Lawrence.
Downie, Henry, Totara Flat.
Eaton, Edgar W., Alexandra.
Elder, D. D., Roxburgh.
Fache, S. C., Gore.
Faithful, Alfred, Bannockburn.
Farmer, Nathan C., Miller's Flat.
Farquharson, George, Alexandra.
Filippi, S. de, Westport.
Findley, David, Dunedin.
Fisher, Hurtle, Miller's Flat.
Foley, S., Lowburn Ferry.
Forno, D., Inangahua Junction.
Fraser, W. J., Roxburgh.
French, T. E. K., Three-channel Flat.
Gibson, William H., Cromwell.
Graham, Thomas Arthur, Gore.
Gunn, W. E., Beaumont.
Guy, Donald, Cobden.
Guyton, James, Dunedin.
Hanning, C. J., Clyde.
Hansen, H. C., Three-channel Flat.
Harden, J., Stafford.
Harliwick, Matthew, Roxburgh.
Hepburn, D. O., Alexandra.
Hewetson, Sydney, Nelson Creek.
Hogg, J., Nevis.
Holden, Charles, jun., Cromwell.
Holden, John, Cromwell.
Hughes, John L., Miller's Flat.
Johnston, John, Maori Gully.
Johnston, Louis, Beaumont.
Jones, David Rowland, Island Block.
Jones, T. R., Miller's Flat.
Junker, Frank J., Berlin's.
Kane, William, Clyde.
Kean, F. F., Waikaka.
Kellett, C. H., Dunedin.
Kennedy, A., Ophir.
Kitto, Henry, Alexandra South.
Kitto, John, Clyde.
Linney, William, Island Block.
Livingstone, D., Alexandra.
Lloyd, Arthur, Inangahua Junction.
Lloyd, Hubert, Lyell.
MacDonald, C. J., Cromwell.
MacGinnis, J. A., Cromwell.
MacGinnis, M. P., Alexandra.
MacLaren, John, Alexandra.
Marklund, C. O., Lowburn Ferry.
Mathews, James Halbert, Miller's Flat.
Matthews, A. A., Three-channel Flat.
Mayne, W. C., Nelson Creek.
McCallum, W. S., Alexandra.
McDonald, C. J., Waitiri.
McDonald, G., Alexandra.
McGregor, Dougald S., Alexandra.
McKenzie, John, Roxburgh.
McKinnon, John, Alexandra.
McLean, John, Roxburgh.
Melvin, J. R., Roxburgh.
Merchant, Isaiah, Clyde.
Milne, John A., Roxburgh.
Moffitt, R. W., Miller's Flat.
Mollison, William, Stillwater.
Moncrieff, Henry, Miller's Flat.
Monson, C. H., Miller's Flat.
Morel, A. E., Noble's.
Morel, L. H., Inangahua Junction.
Morgan, Harold, Roxburgh.
Morgan, John, Alexandra.
Morris, V., Cromwell.
Mouat, W. G., Greymouth.
Munro, C. T., Waitiri.
Munro, Hugh, Alexandra South.
Munro, R. F., Ross.
Murray, H. B., Cromwell.
Murray, Robert John, Canvastown.
Nelson, Edgar, Brunnerton.
Nelson, George L., Brunnerton.
Newick, Albion Edgar Charles, Bannockburn.
Nicholson, Charles S. G., Mataura.
Noble, William, Alexandra.
Olsen, Hans, Alexandra.
Omond, Thomas, Nevis.
Orkney, H. E., Cromwell.
Orr, H. T., Cromwell.
Orr, William W., Cromwell.
Parker, P. R., Roxburgh.
Paterson, J. B., Miller's Flat.
Patterson, J., Clyde.
Plumb, E. H., Maori Point.
Poppelwell, William, Alexandra.
Rait, Hume, Albertown.

DREDGEMASTERS' CERTIFICATES—*continued.*

Issued after Examination under the Mining Acts, 1898, 1901, 1902, 1905, and 1908—continued.

Ray, J. F., Bannockburn.
Ray, Robert Marshall, Bannockburn.
Reiderer, Edward, Cromwell.
Reynolds, T., Greymouth.
Roberts, G., Three-channel Flat.
Robertson, D. J., Alexandra.
Robertson, W. R., Alexandra.
Rooney, J. B., Roxburgh.
Rumble, Charles, Ngahere.
Rumble, Joseph, Miller's Flat.
Sanders, W. J., Ahaura.
Saunders, C. E., Cromwell.
Sawle, J., Cromwell.
Sawyer, J. F., Alexandra.
Sherwood, T. W., Greymouth.
Simpson, Edward Robert, Cromwell.
Sparrow, J. A., Upper Nevis.
Steele, Thomas, Alexandra.
Steele, W. H., Miller's Flat.
Taylor, Alexander, Alexandra.
Taylor, J. T., Dunedin.
Theyers, C., Alexandra.
Theyers, J. W., Alexandra.
Turner, T. F., Moonlight.
Vickerman, E. M., Cromwell.
Walker, J. J., Alexandra South.
Wasserbrenner, M., Alexandra.
Wathen, James, Miller's Flat.
Watson, E. H., Collingwood.
Weaver, P., Alexandra.
Weir, R., Gore.
Weir, T. R., Cromwell.
Weir, W., Nevis.
Wescombe, Alfred L., Island Block.
Westcott, P. A., Miller's Flat.
Williams, Frederick, Alexandra.
Wilson, George, Marsden.
Wilson, Stephen L., Inangahua Junction.
Wood, W. W., Cromwell.
Woodhouse, F., Bannockburn.
Woodhouse, G. G., Waitiri.
Wylde, G. R., Inangahua Junction.

LIST OF PERSONS WHO HOLD CERTIFICATES UNDER THE COAL-MINES ACTS.

First-class Mine-managers' Certificates.

Issued under the Coal-mines Acts, 1886 and 1891.

Aitken, T., Wendon.
Alexander, T., Brunnerton.
Binns, G. J., Dunedin.
Bishop, J., Brunnerton.
Cameron, J., Denniston.
Cochrane, N. D., Dunedin.
Collins, W., Taupiri.
Dando, M., Brunnerton.
Gray, J., Abbotsford.
Kerr, G., Kamo.
Lloyd, J., Invercargill.
Love, A., Whangarei.
Mason, J., Nightcaps.
May, J., Greymouth.
Moore, W. J., Springfield.
Ord, J., Huntly.
Reed, F., Westport.
Shore, T., Orepuki.
Smith, A. E., Nelson.
Smith, T. F., Nelson.
Sneddon, J., Mosgiel.
Swinbanks, J., Kawakawa.
Taylor, E. B., Huntly.
Thompson, A., White Cliffs.
Walker, J., Collingwood.

Issued under the Coal-mines Acts, 1886, 1891, 1905, and 1908, after Examination.

Armitage, F. W., Auckland.
Armstrong, J., Brunnerton.
Barclay, T., Kaitangata.
Barclay, W., Kaitangata.
Bennie, Boyd, Waihi.
Bishop, T. O., Reefton.
Brown, J. C., Denniston.
Burt, A., Waihi.
Campbell, Peter, Fairfield.
Carruthers, J., Shag Point.
Carson, W., Kaitangata.
Crockett, S., Millerton.
Crowe, W., Ngakawau.
Davis, O. J., Runanga.
Dixon, C. W., Granity.
Dixon, W., Kaitangata.
Duggan, George, Burnett's Face.
Dunn, Andrew, Denniston.
Dunn, W., Brunnerton.
Dunn, W. R., Thames.
Fleming, J., Kaitangata.
Fletcher, James, Granity.
Fox, R. A., Denniston.
Fry, Sydney, Waimangaroa.
Gibson, John, Westport.
Gillanders, A., Shag Point.
Green, E. R., Abbotsford.
Green, J., Brunnerton.
Hamilton, J. S., Burnett's Face.
Herd, J., Brunnerton.
Heycock, C. R., Nightcaps.
Hill, Robert, Abbotsford.
Hosking, G. F., Auckland.
Hughes, Job, Puponga.
Jebson, D., Canterbury.
Jones, T., Kimihia.
Langford, G. S., Huntly.
Leitch, J., Blackball.
Leitch, W., Blackball.
Marshall, A. G., Denniston.
McCaffrey, Patrick, Ferntown.
McCormack, W., Denniston.
McEwan, Robert, Coromandel.
McGeachie, J., Mokau.
Milligan, J., Denniston.
Milligan, N., Westport.
Morgan, William, Waihi.
Mosley, J. T., Kaitangata.
Murray, T., Westport.
Newton, James, Brunnerton.
Parsonage, W., Runanga.
Pearson, W., Waihi.
Penman, A., Huntly.
Scoble, E. J., Waihi.
Smith, George, Fairfield.
Sowerby, H., Denniston.
Talbot, H., Brunnerton.
Tattley, E. W., Huntly.
Tattley, F. J., Mercer.
Taylor, A. H., Waikato.
Thomson, Thomas, Denniston.
Turner, G. F., Shag Point.
Westfield, C. H., Fairfield.
Whittlestone, A. W., Shag Point.
Young, James H., Waimangaroa.

Issued under the Coal-mines Act, 1886, on Production of English Certificate.

Binns, G. J., Dunedin.
Black, T. H., Waipori.
Broome, G. H., Ngakawau.
Cochrane, N. D., Dunedin.
Hayes, J., Kaitangata.
Hodgson, J. W., Ross.
Reed, F., Wellington.
Tattley, W., Auckland.

Issued to Inspectors of Mines by virtue of Office, under the Coal-mines Acts of 1886 and 1891.

McLaren, J. M., Thames.

Issued under the Coal-mines Acts of 1891, 1905, and 1908, on Production of Certificate from a recognized Authority outside the Dominion.

Alison, J., Mangatini.
Alison, R., Greymouth.
Bayne, J. A. C., Roa.
Clark, W., Blackball.
Davidson, Gavin, Blackball.
Davies, D. J., Ngakawau.
Fletcher, George, Westport.
Frame, Joseph, Kaitangata.
Gillick, J., Kaitangata.
Goold, A. L., Auckland.
Hunter, Peter, Ngakawau.
Irvine, James, Dunedin.
James, Isaac Angelo, Westport.
Kane, D., Denniston.
Kirkwood, D., Coromandel.
Lamont, J., Devonport.
Lewis, W., Blackball.
Mark, W. S., Kaitangata.
McAvoy, H., Christchurch.
Morris, A., Huntly.
Nelson, E., Hikurangi.
Tennent, R., Brunnerton.
Twining, C. E., Dunedin.
Watson, James, Greymouth.
Watson, John, Blackball.
Wight, E. S., Auckland.
Woods, William, Mokihinui.

Second-class Mine-managers' Certificates.

Issued under the Coal-mines Act, 1891.

Collier, Levi, Kamo.
Clarke, Edward, Shag Point.
Elliot, Joseph, Coal Creek.
Harris, John, Denniston.
Herd, Joseph, Brunnerton.
Howie, James, Kaitangata.
Lobb, Joseph, Mokau
McIntosh, Allan, Shag Point.
McLaren, J. M., Thames.
Murray, Thomas, Denniston.
Radcliffe, William, Reefton.
Sara, James, Reefton.
Smith, Charles, Whangarei.
Thomas, James, Springfield.
Wallace, William, Huntly.
Willetts, John Morris, Papakaio.
Young, William, Waimangaroa.

Issued under the Coal-mines Acts, 1886, 1891, 1905, and 1908, after Examination.

Allan, J., Brunner.
Austin, W. B., Sheffield.
Ball, A., Kimihia.
Barber, John, Shag Point.
Barclay, T., Kaitangata.
Barclay, T., jun., Kaitangata.
Barclay, William, Kaitangata.
Barnes, A. E., Shag Point.
Broome, J., jun., Gore.
Brown, Robert, Kaitangata.
Cadman, J., Hikurangi.
Campbell, Peter, Fairfield.
Carruthers, J., jun., Nightcaps.
Charles, E., Glentunnel.
Cherrie, R. C., Mokau.
Christie, James, Saddle Hill.
Clemo, G., Whangarei.
Craig, John, Coal Creek Flat.
Crockett, S., Millerton.
Dale, E. G., Kaitangata.
Davies, W. C., Huntly.
Dixon, W., jun., Kaitangata.
Doel, G., Lovell's Flat.
Duffy, Frank, Burnett's Face.
Duncan, James, Kaitangata.
Duncan, J. E., Kaitangata.
Duncan, John, Lovell's Flat.
Ferguson, A., Kaitangata.
Ferguson, G., Roa.
Fox, R. A., Blackball.

SECOND-CLASS MINE-MANAGERS' CERTIFICATES—*continued.*

Issued under the Coal-mines Acts, 1886, 1891, 1905, and 1908, after Examination—continued.

Harris, A., Saddle Hill.
Hewitson, W. E. G., Burnett's Face.
Heyes, T., Kaitangata.
Heycock, C. R., Nightcaps.
Hill, R., Abbotsford.
Hodson, John, Kaitangata.
Hughes, Job, Roa.
Hunter, A., Southland.
Kells, F. H., Denniston.
Lewis, David, Puponga.
Lewis, J., Nightcaps.
Lindsay, J. B., Orepuki.
Lowden, W., Millerton.
McAllister, Neil, Kaitangata.
McLelland, J., Kaitangata.
McLelland, A. C., Kaitangata.
McNeill, D., Fairfield.
Milligan, J., Denniston.
Mills, Walter, Huntly.
Morganty, Louis, Ngakawau.
Mosley, J. T., Stirling.
Neilson, J., Runanga.
Neilson, Moffat, Abbotsford.
Newburn, S., Kaitangata.
Ogilvie, W. W., Saddle Hill.
Orr, Hugh, Fairfield.
Parcell, W., jun., Bannockburn.
Penman, C. P., Kaitangata.
Price, F. J., Burnett's Face.
Scoble, E. J., Blackball.
Snow, T., Mercer.
Tuttley, F. J., Mercer.
Taylor, Joseph, Collingwood.
Thompson, Joseph, Blackball.
Thomson, James, Nightcaps.
Todd, T, Nightcaps.
Waldie, A. B., Mokau.
Watson, A, Soldier's Creek.
Westfield, C., Fairfield, Otago.
Whittlestone, A. W., Shag Point.
Whittlestone, G. F., Abbotsford.

Issued under the Coal-mines Acts of 1891, 1905, and 1908, on Production of Certificate from a recognized Authority outside the Dominion.

Arundel, W., Hikurangi.
Baxendale, J., Mine Creek.
Black, J., Granity.
Boyd, J., Hikurangi.
Brownlie, T., Huntly.
Burt, A., Huntly.
Clarkson, S., Kaitangata.
Cross, G., Hikurangi.
Dickinson, W., Gore.
Eyeington, G., Huntly.
Greenwell, R., Huntly.
Grenall, S., Granity.
Inglis, A., Huntly.
Jones, T., Kimihia.
Kerr, D., Collingwood.
Lennox, W., Springfield.
Little, W., Wellington.
Littlewood, G. G., Denniston.
Longstaff, H. C., Kaitangata.
McCall, John, Wellington.
McGeachie, J., jun., Mokau.
McGuire, P., Mount Somers.
McGuire, William, Seddonville.
McHardy, A. J., Ferntown.
Molony, C. V. P., Auckland.
Newburn, F., Roa.
Parsonage, W., Dunollie.
Penman, A., Huntly.
Provan, P., Runanga.
Robertson, R., Roa.
Sneddon, J., Blackball.
Strachan, J., Dunedin.
Tennant, D., Paparoa.
Talbot, H., Huntly.
Webb, T. E., Huntly.

UNDERVIEWERS' CERTIFICATES.

Issued under the Coal-mines Amendment Act, 1909.

Allan, James, Puponga.
Attrill, Charles Waterford, Mercer.
Berry, A. H., Huntly.
Bond, John, Waikaia.
Boustrage, T. Hubert, Brunnerton.
Broome, James, Gore.
Clough, Henry, Millerton.
Davidson, William, Mine Creek.
Davis, William, Runanga.
Donaldson, James, Kaitangata.
Flynn, John, Bannockburn.
Green, Richard, Abbotsford.
Hawthorn, James, Puponga.
Hunter, Peter, Ngakawau.
Johnston, William Crowan, Gore.
Johnstone, Thomas, Denniston.
Levick, Harry, White Cliffs.
Marsh, Charles George, Glentunnel.
Muncaster, William, Runanga.
McAlister, Robert, Kaitangata.
McGrane, Reginald, Seddonville.
McKenzie, David, Nightcaps.
McNeill, William, Fairfield.
Newlands, George, Brunnerton.
Nimmo, Thomas, Papakaio.
Nimmo, William, Ngapara.
Penman, John, Denniston.
Proctor, William, Kaitangata.
Robertson, William, Mosgiel.
Todd, Thomas, Nightcaps.
Walker, John, Blackball.
Williams, William, Kaitangata.
Wilson, Daniel, Kaitangata.
Winter, John, Denniston.

Issued under the Coal-mines Amendment Act, 1909, after Examination.

Ainscough, William, Huntly.
Armstrong, V., Runanga.
Atkinson, John, Puponga.
Bashall, J., Puponga.
Berry, A. H., Huntly.
Boddy, A. J., Rewanui.
Brennan, John, Kaitangata.
Brown, Charles Henry, Denniston.
Carson, F. Kaitangata.
Chippendale, John, Westport.
Clark, W. S., State Collieries.
Dowgray, John, Granity.
Duffy, F., Burnett's Face.
Dymond, John, Mine Creek.
Griffen, J., Kaitangata.
Hadcroft, John, Dunollie.
Hall, Thomas, Kaitangata.
Hewitson, W. E. G., Burnett's Face.
Honey, A. J., Burnett's Face.
Hughes, T. G., Huntly.
Hunter, Peter, Stockton.
Jack, W., Millerton.
Johnston, C. M., Seddonville.
King, T. H., Granity.
Lowden, William, Millerton.
Maher, William, Denniston.
McDonald, Thomas, Ngakawau.
McIvor, D., Runanga.
McKernan, John, Millerton.
McLean, Malcolm, Granity.
McLeod, J. G., Millerton.
Morganty, L., Stockton.
Mosley, J. T., Denniston.
Nicholson, D., Huntly.
O'Brien, D. Q., Mangatini.
Peacock, Thomas, Denniston.
Pearson, William, Burnett's Face.
Pendleton, Samuel, Blackball.
Powell, Isaac, Rewanui.
Rogers, James, Ngakawau.
Strorgman, C. J., Cobden.
Sweeney, J. L., State Collieries.
Thomson, James, Huntly.
Tucker, J., Kaitangata.
Turnbull, E. V., Thames.
Turner, Alfred, Kiripaka.
Turton, J., Huntly.
White, Edward, Ngaruawahia.
Whittlestone, G. F., Abbotsford.
Williamson, W. R., Rewanui.
Young, Joseph, Huntly.

Issued under the Coal-mines Amendment Act, 1910.

Beardsmore, E., Denniston.
Cuthbertson, Robert, Fairfield.
Evans, William, Abbotsford.
Fisher, T., Westport.
Gibson, M., Abbotsford.
Greene, M, Kaitangata.
Hadcroft, J., Runanga.
Hunt, W., Shag Point.
Jones, David, Nightcaps.
Jones, Morris, Nightcaps.
Jones, W., Waikaka Valley.
Kitto, Richard, Kaitangata.
Manderson, P., Runanga.
Mann, D., Granity.
Marshall, J. W., Westport.
Mason, Edward, Kingston Crossing.
Mitchell, Alexander, Runanga.
McCaughern, John, Kaitangata.
Neill, S., Kawakawa.
Newburn, S., Kaitangata.
Statham, Robert, Kaitangata.
Walker, J. R., Brighton.

Issued under the Coal-mines Amendment Act, 1914, on Production of Certificate of Corresponding Class granted in any British Possession or Foreign Country.

Martin, Elias, Ngakawau.
Middleton, Robert, Runanga.

FIREMEN AND DEPUTIES' CERTIFICATES.

Issued under the Coal-mines Amendment Act, 1909.

Aitken, George, Glentunnel.
Allan, A. George, Abbotsford.
Allan, Charles, Brunnerton.
Beardsmore, Edward, Denniston.
Berry, Albert Henry, Huntly.
Blaney, James, sen., Kaitangata.
Boyd, Robert, Waronui.
Bradley, Robert, Denniston.
Buchols, Joseph, Waikaka.
Burgess, William Charles, E. Gore.
Callaghan, Frederick, Kiripaka.
Campbell, Samuel, Millerton.
Chamley, William, Millerton.
Clausen, Emil P., c/o J. Worthington, 33 Hiropi Street, Newtown, Wellington.
Connelly, Michael, Denniston.
Connew, John, Puponga.

FIREMEN AND DEPUTIES' CERTIFICATES—*continued.*

Issued under the Coal-mines Amendment Act, 1909—continued.

Coppersmith, John, Denniston.
Coulthard, Thomas, Brunnerton.
Cowan, Robert Black, Gibbston.
Cuthbertson, Robert, Fairfield.
Davis, Evan, Denniston.
Deeming, William, Hikurangi.
Dellaway, Archibald, Denniston.
Dickson, Richard, Hikurangi.
Dillon, Lawrence M., Nightcaps.
Duncan, Frank, Huntly.
Duncan, Hugh, Kaitangata.
Evans, John, Granity.
Evans, William, Abbotsford,
Findlay, Charles, Denniston.
Foot, Frederick Ernest, Denniston.
Gibson, Matthew, Abbotsford.
Gibson, Robert, Millerton.
Gilmour, William, Millerton.
Glover, Richard, Runanga.
Gray, Thomas, Abbotsford.
Gribben, John, Kaitangata.
Headcroft, James, Runanga.
Hamilton, John, Hikurangi.
Hargreaves, Charles, Millerton.
Harris, John, Reefton.
Harris, Joseph T., Saddle Hill.
Hartley, John, Denniston.
Hay, James, Denniston.
Heron, Ralph, Kimihia.
Higgins, Thomas James, Denniston.
Hislop, William, Denniston.
Holden, Samuel, Granity.
Housley, Benjamin, Huntly.
Howe, George Charles, Shag Point.
Jackson, Samuel, Millerton.
Jarvie, William Marshall, Kaitangata.
Jaspers, George F., Denniston.
Jenkins, James, Ngakawau.
Johnston, C. Mountier, Seddonville.
Jones, David, Nightcaps.
Kaye, Charles, Runanga.
Kitto, Richard, Kaitangata.
Leeming, J. T., South Malvern.
Lutton, William, Millerton.
Mann, Duncan, Millerton.
Mason, William, Denniston.
Mears, Andrew David, Runanga.
Monerieff, Thomas, Nightcaps.
Moore, Thomas, Mangatini.
Morganty, Charles, Ngakawau
Murdoch, Colin McColl, Stirling.
McCaffrey, James, Seddonville.
McCaughern, John, Kaitangata.
McDonald, John T., Millerton.
McGarry, Isaac, Millerton.
McGhee, William, Kaitangata.
McGill, Douglas Thomas, Waikaka.
McGill, John, Huntly.
McKenzie, James, Nightcaps.
Newburn, Robert, Kaitangata.
Newburn, Samuel, Kaitangata.
Nicholas, William, Kaitangata.
Oliver, William, Kaitangata.
Parcell, Henry Clyde, Bannockburn.
Park, Francis, Stirling.
Penman, Robert, Kaitangata.
Richards, James, Brunnerton.
Rodgers, Edwin, Kaitangata.
Sanderson, John, Kurow.
Scott, Charles, Nevis.
Scott, John, Runanga.
Smith, William, Seddonville.
Snedden, James, Blackball.
Statham, Robert, Kaitangata.
Taylor, David, Roa.
Taylor, James, Springfield.
Thin, William, White Cliffs.
Travis, James, Alexandra South.
Tripp, Albert, Kaitangata.
Wallace, John, Mataura.
Wardrope, Francis, Hikurangi.
Watson, Andrew, Roa.
West, George Thomas, Waronui.
White, James, Roa.
Wilson, Walter William, Springfield.
Young, Thomas Gardner, Waikaia.

Issued under the Coal-mines Amendment Act, 1909, after Examination.

Allan, George, Huntly.
Allan, James, Brunnerton.
Anderson, Walter, Blackball.
Armstrong, V., Runanga.
Atkinson, J., Puponga.
Baddeley, Jesse, Dunollie.
Ball, A., Kimihia.
Birchall, J., Burnett's Face.
Blair, Peter, Huntly.
Boddy, Archibald John, Runanga.
Bond, W. T., Huntly.
Brennen, J., Kaitangata.
Broadbent, Samuel, Huntly.
Brown, J., jun., Denniston.
Buchanan, William, Millerton.
Burdon, George, Denniston.
Burt, T., Huntly.
Calder, Thomas, Ngakawau.
Caldwell, Thomas, Blackball.
Callaghan, M., Blackball.
Campbell, J. C., Glentunnel.
Carson, Frederick.
Chadwick, A., Millerton.
Chapman, A. E., Kaitangata.
Chippendale, J., Millerton.
Clark, W. S., Dunollie.
Clarke, S., Roa.
Cleveland, F. L., Kaitangata.
Connolly, John, Runanga.
Connolly, John Joseph, Runanga.
Cowan, J., Millerton.
Cruikshank, P. G., Runanga.
Curragh, A., Burnett's Face.
Curran, James, Ngakawau.
Cuthbertson, John, Glentunnel.
Danks, Peter, Millerton.
Darby, W., Huntly.
Davidson, Thomas, Mine Creek.
Davies, F., Puponga.
Davis, Oliver James, Runanga.
Delaney, J. E., Puponga.
Dowgray, John, Millerton.
Downes, William Norbury, Cobden.
Duggan, Francis, Runanga.
Dunsdale, George, Rewanui.
Dutton, John, Granity.
Dymond, J., Millerton.
Eckersley, W., Paparoa.
Fairhurst, R. W., Huntly.
Fannigan, P., Ngakawau.
Ferguson, A., Kaitangata.
Forrest, John, Runanga.
Gox, Henry John, Blackball.
Gilligan, H., Runanga.
Green, T., Kaitangata.
Griffen, James, Kaitangata.
Hall, R. H., Huntly.
Hall, Thomas, Kaitangata.
Hardie, J., Millerton.
Harvey, D., Huntly.
Hawkins, Joseph, Burnett's Face.
Hendry, John, Millerton.
Hicks, J. R., Kiripaka.
Hill, E. E., Brunnerton.
Hilton, Thomas, Denniston.
Hogg, C., Blackball.
Honey, Archibald John, Denniston.
Hopkinson, Joseph, Seddonville.
Hughes, T. E., Huntly.
Innes, Andrew, Runanga.
Isherwood, T., Runanga.
James, F. T., Seddonville.
Johnson, J. H., Hikurangi.
Johnson, Thomas, Huntly.
Jones, B., Millerton.
Jones, J., Hikurangi.
Jones, J., Kimihia.
King, Thomas Henry, Granity.
Lancater, Herbert, Puponga.
Lauder, Matt Currie, Runanga.
Lowden, W., Millerton.
McAuley, P., Ngakawau.
McAvoy, William, Ngakawau.
McDonald, J., Ngakawau.
McDonald, Thomas, Burnett's Face.
McGovern, R., Wairio.
McGuinness, E., Runanga.
McIvor, David, Runanga.
McKenty, H., Denniston.
McKernan, John, Millerton.
McLaughlin, J. W., Huntly.
McMillan, John, Huntly.
McMillan, John, Kaitangata.
McMillan, R., Kaitangata.
Mackinson, Job, Hikurangi.
Maddison, W., Huntly.
Maher, W., Denniston.
Makepeace, Henry, Runanga.
Martin, T. N., Huntly.
Miles, B. C., Millerton.
Mitchell, A., Seddonville.
Morganti, Louis, Millerton.
Moreland, S., Hikurangi.
Mosley, J. T., Denniston.
Moye, John Patrick, Denniston.
Myers, Richard, Millerton.
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Nicholson, J., State Collieries.
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Nolan, John, Granity.
Nuttall, John, Blackball.
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O'Brien, Martin, Millerton.
O'Fee, J., Kaitangata.
Parker, Andrew, Greymouth.
Parr, Joseph, Burnett's Face.
Parrott, W., Waiuta.
Paul, James, Seddonville.
Pearson, James Thomas, Mataura.
Pearson, Samuel G., Burnett's Face.
Pearson, William, Burnett's Face.
Pendleton, S., Blackball.
Phillips, J., Puponga.
Ponton, F., Millerton.
Powell, J., Dunollie.
Pratt, Alexander, Millerton.
Ralph, J., Huntly.
Ramsay, J. McK., Kaitangata.
Reed, W. H., Hikurangi.
Reid, Henry, Millerton.
Reid, Henry, Huntly.
Richardson, W., Dunollie.
Robson, W., State Collieries.
Rodgers, J., Ngakawau.
Rogers, A. G., Kaitangata.
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Seddon, William, Huntly.
Sharp, J. R., Kaitangata.
Shore, W. M., Taratu.
Smith, C. B., Dunollie.
Smith, J. A., Seddonville.
Smith, Thomas W., Millerton.
Smith, W. A., Denniston.
Snell, J., Kaitangata.
Southward, William, Runanga.
Strongman, Charles James, Cobden.
Sutherland, J., Millerton.
Sweeney, John Lewis, Runanga.
Tate, Anthony, Seddonville.
Taylor, Christopher, Millerton.
Thawley, William, Denniston.
Thomson, J., Huntly.
Thomson, Thomas, Mine Creek.
Throp, J., Kaitangata.
Tunstall, A. G., Hikurangi.
Tunstall, W., Hikurangi.
Turner, F., Kiripaka.
Turton, John, Huntly.
Unwin, James, Runanga.
Veitch, D., Blackball.
Vurlow, Frederick Alexander, Denniston.
Walker, W. J., Granity.
Wallwork, Moses, Runanga.
Wear, Daniel, Huntly.
Webster, Oliver, Huntly.
White, Edward, Granity.
Williamson, W. R., Rewanui
Wilson, J. T., Kamo.
Wilson, W., Shag Point.
Woods, A., Millerton.
Wood, W., Huntly.
Worthington, T., Millerton.
Wyse, A., Blackball.
Young, Joseph, Huntly.
Young, Thomas, Granity.

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Issued under the Coal-mines Amendment Act, 1910.

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Burgess, R. S., Waikaka.
Cain, Alexander, Waikaia.
Cameron, D., North Chatton.
Churchill, S. G., Alexandra South.
Clasen, Charles, Shag Point.
Crabbe, George, Alexandra South.
Cumming, J. S., Denniston.
Cunningham, Thomas, Kaitangata.
Dixon, A., Nightcaps.
Garrey, W., Kaitangata.
Gray, Hugh, Dunedin.
Halsey, W. J., Saddle Hill.
Hartshorne, W. C., Brunnerton.
Hodgetts, I., Burnett's Face.
Hunt, William, Shag Point.
Junker, F. A., Waikaia.
Kidd, G. C., Albury.
King, J., Granity.
Lee, S., Nightcaps.
Mackie, N., Kaitangata.
McAuley, John, Kaitangata.
McClimont, John, Mount Somers.
McDowell, R., Nightcaps.
McIntosh, A. S., Shag Point.
McIvor, W., Waikaka.
Nelson, J. H., Pukerau.
Ramsey, George, Waikaka.
Robinson, R., Ngakawau.
Russell, H. C., Bannockburn.
Saunders, W., Denniston.
Stevenson, J., Shag Point.
Thomas, B., Denniston.
Tinker, G., Nightcaps.
Whittlestone, G. F., Abbotsford.

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Coan, R., Huntly.
Davies, W. C., Huntly.
Malcolm, A., Nightcaps.
Quinlan, A. E., ——.
Tucker, J., Kaitangata.

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