

SESSION II.
1912.
NEW ZEALAND.

MINES STATEMENT,

BY THE HON. JAMES COLVIN, MINISTER OF MINES.

MR. SPEAKER,—

I have the honour to present to Parliament the Mines Statement for the year ended the 31st December, 1911.

The value of the mineral-output for the year amounted to £3,492,362, as against £3,774,898 for the preceding year, being a decrease of £282,536; but this decrease should not be regarded as indicating a general decline in our mining industry, it being due principally to an impoverished zone which has been encountered at the Waihi Mine, with the result that the annual return from that mine alone shows a decrease of £224,636.

The value of the bullion produced from our gold-mines amounted to £1,948,369 for the year, as against £2,067,890 for 1910. Dividends declared during 1911 by registered gold-mining companies amounted to £504,795. The profit from privately owned mines and dredges is also considerable.

The output of coal amounted to 2,066,073 tons, being greater than that for any previous year except 1910, when the output was unusually high owing to a strike at Newcastle, New South Wales, which caused orders to be diverted to New Zealand.

Kauri-gum continues to be a valuable export. Up to the end of 1911 gum to the value of £15,809,152 has been exported, of which £395,707 worth was obtained during 1911.

Mining development generally has been unimportant, with the exception of explorations for mineral oil, which have been carried out at Poverty Bay, Taranaki, and near Lake Brunner. Drilling-operations carried out by the Taranaki Petroleum Company (Limited) have been fairly successful, three flowing wells having been located, and a considerable quantity of oil of high quality impounded in tanks. On the 3rd May this company obtained the Government bonus of £2,500 offered for the production of a quarter of a million gallons of crude petroleum of specified quality; and it is anticipated that very shortly it will succeed in obtaining the second bonus of £2,500, which is offered for the production of a further quarter-million gallons. During the current year the company has been refloated and renamed the Taranaki Oil-wells (Limited), with a capital of £400,000, and it is proposed to at once erect a refinery, and drill additional wells.

MINERAL-PRODUCTION.

The following table shows the quantity and value of gold, silver, and other minerals, including kauri-gum, exported during the years 1910 and 1911, also the quantity of native coal consumed in the Dominion during the same periods:—

Product.	Year ending			
	31st December, 1910.		31st December, 1911.	
	Quantity.	Value.	Quantity.	Value.
		£		£
Gold	478,288 oz.	1,896,328	455,226 oz.	1,816,782
Silver	1,711,235 "	171,562	1,311,043 "	131,587
Manganese-ore	5 tons	15	...	4
Mixed minerals	2,088 "	22,202	3,470 tons	22,104
Colonial coal exported, including that used by Home steamers	277,011 "	259,562	223,918 "	205,008
Colonial coal used in New Zealand ...	1,920,351 "	960,175	1,842,155 "	921,078
Kauri-gum	8,693 "	465,044	7,587 "	395,707
Coke	6 "	10	...	...
Antimony	...	...	20 tons	92
Total value of production for 1911				£ 3,492,362
" 1910				3,774,898
Total decrease				<u>£282,536</u>

AURIFEROUS-QUARTZ MINING.

This still remains the most important branch of the mining industry in the Dominion. The value of the bullion obtained from our quartz-mines during 1911 amounted to £1,375,253, as a result of treating 645,991 tons, the dividends obtained thereby amounting to £451,969.

The following is a statement of the quantity of quartz treated, the value of bullion obtained, and the amount of dividends paid by the most important quartz-mines during 1911:—

Name of Company.	Quantity of Quartz treated.	Value of Bullion.	Dividends paid.	
			1911.	Total to end of December, 1911.
	Tons.	£	£	£
Waihi Gold-mining Company (Limited) ..	316,349	670,179	272,748	4,230,585
Waihi Grand Junction Gold-mining Company (Limited)	94,603	150,729	19,218	19,218
Talisman Consolidated (Limited) ..	47,550	222,058	109,307	560,291
New Big River Gold-mining Company (Limited) ..	6,913	28,062	13,200	51,600
Blackwater Mines (Limited) ..	44,038	92,062	37,496	87,496
Other quartz-mines throughout New Zealand	136,538	212,163	*	*
Totals	645,991	1,375,253	451,969	*

* Unknown.

There has been a serious decline in the production from the Waihi Mine, owing to impoverishment of the lodes at the lower levels. Operations are being energetically carried out for the development of the lodes at greater depth, and it is hoped that the impoverished zone will eventually be passed through. It is impossible, however, to forecast what the developments will disclose.

It is satisfactory to report substantial increases in the value of the production from the Waihi Grand Junction, Talisman, New Big River, and Blackwater Mines, and that some promising new mines are being opened up in other parts of the Dominion.

ALLUVIAL AND DREDGE MINING.

The abundant rainfall during 1911 permitted more continuous sluicing of auriferous gravel than has been possible during recent years, with the result that there has been an increase in the value of the gold-production from this source amounting to £86,752, the total production being £275,216, obtained from 277 claims. The most successful of the alluvial mines were the Mont d'Or, Round Hill, Havelock, and Golden Crescent.

The value of the production from our gold-dredges during 1911 amounted to £297,900, as against £315,237 for 1910; but there has been a slight increase in the average production per dredge, which for the past year amounted to £3,203. The dredges in commission numbered ninety-three, thirty-one of which, the property of registered companies, paid dividends amounting in the aggregate to £45,318. Fifteen dredges are operating on the west coast of the South Island, and seventy-eight in Otago.

The following is a statement regarding the most productive dredges owned by registered companies:—

Name of Dredge.	Production during 1911.	Dividends paid	
		During 1911.	To 31st December, 1911.
	£	£	£
Workshop	16,284	9,300	15,900
No Town Creek	7,486	5,400	34,200
Pactolus	5,144	1,875	62,500
Blackwater River	6,728	2,605	11,494
Waikaka Syndicate	5,180	2,450	22,750
Golden Bed	5,896	1,922	15,269
Rising Sun	6,439	2,200	16,000
Magnum Bonum	4,368	1,812	8,875
Electric (two dredges)	10,922	3,250	126,092
Paterson's Freehold (two dredges)	7,244	1,800	15,000
Dredge No. 909	7,251	2,250	3,750
Willowbank	4,491	1,600	2,000
Other working dredges	208,976	8,734	..
Totals	296,409	45,198	..

The most noteworthy feature of the year in connection with gold-dredging has been a renewal of activity in the Waikaka Valley, where a deep lead has been located by keystone drilling. At Waikaka the Mystery Flat Gold-dredging Company are engaged in operations which constitute a departure from former gold-dredging practice. After dredging all the available river-flat, this company's dredge is now working its way up the slopes of the surrounding foothills and terraces.

SCHEELITE.

The quantity of scheelite exported during the year amounted to 138 tons, valued at £11,853, as compared with 143 tons, valued at £15,070, in 1910. The main sources of supply continue to be Glenorchy (at the head of Lake Wakatipu) and Macrae's (Otago). A number of new scheelite-mines are being opened up, and, owing to the activity now being displayed, a considerable increase in the production of scheelite may be anticipated.

KAURI-GUM.

The quantity of kauri-gum exported during the year amounted to 7,587 tons, valued at £395,707, as compared with 8,693 tons, valued at £465,044, in 1910.

The market price for this commodity continues to decline slowly, and as the demand for general labour in New Zealand increases, the occupation of gum-digging becomes less and less attractive, and but few men are now so occupied in comparison with the number engaged during former years.

COAL-MINING.

The production of coal for the past year is, with the exception of 1910, the highest yet attained, being 2,066,073 tons. The output from the three inspection districts is shown in the following table :—

COMPARATIVE STATEMENT OF COAL AND LIGNITE RAISED DURING THE YEARS 1909, 1910, AND 1911.

Inspection District.	Output for 1911.	Increase or Decrease, 1910 and 1911.	Output for 1909.	Increase or Decrease, 1909 and 1910.
	Tons.	Tons.	Tons.	Tons.
Northern	397,872	Decrease 2,792	348,370	Increase 52,294
West Coast	1,218,693	„ 122,339	1,122,642	„ 218,390
Southern	449,508	„ 6,158	440,235	„ 15,431
Totals	2,066,073	Decrease 131,289	1,911,247	Increase 286,115

The comparative tonnage of the various classes of coal, &c., for the years 1910 and 1911 is summarized as follows :—

Class of Coal.	Output for 1911.	Output for 1910.	Increase or Decrease for 1911.
	Tons.	Tons.	Tons.
Bituminous and semi-bituminous ..	1,358,357	1,495,709	Decrease 137,352
Pitch-coal	4,411	6,068	„ 1,657
Brown coal	601,093	594,995	Increase 6,098
Lignite	102,212	100,590	„ 1,622
Totals	2,066,073	2,197,362	Decrease 131,289

The total recorded output for the various classes of coal, lignite, and oil-shale is now 33,297,621 tons.

There continues to be an increasing demand for the high-class bituminous coal from the West Coast mines and from the semi-bituminous collieries of the Waikato district, and with a view to meeting these requirements new collieries are being laid down on the Grey and Waikato coalfields, in addition to which existing mines are being further equipped and prepared for increased outputs.

The production of coal and shale from the mines of the Dominion is shown in the following table :—

Name of Colliery.	Class of Coal.	Output for 1911.	Total Output to 31st December, 1911.
		Tons.	Tons.
Taupiri	Brown	252,262	2,574,413
Westport Coal Company—			
Millerton	Bituminous	299,642	3,431,993
Denniston	„	323,368	6,045,799
Westport-Stockton	„	87,236	332,129
State coal-mines—			
Seddonville	„	60,045	400,104
Point Elizabeth No. 1	„	188,892	1,413,463
Blackball	„	156,821	1,469,946
Kaitangata	Brown	134,829	2,714,181
Nightcaps	„	64,250	788,575
Other collieries	Various	498,728	14,127,018
Totals		2,066,073	33,297,621

PERSONS ENGAGED IN MINING.

The number of persons employed in and about the mines of the Dominion during 1911 is estimated at 11,690. The number employed in connection with the metalliferous mines was 7,400, and at coal-mines 4,290. The number of gum-diggers is not ascertainable.

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

Classification.	Inspection District.			
	Northern.	West Coast.	Southern.	Total.
Gold and silver	2,943	2,304	2,118	7,365
Coal	732	2,610	948	4,290
Iron	..	11	..	11
Scheelite	..	..	24	24
Totals	3,675	4,925	3,090	11,690

MINING ACCIDENTS.

The number of fatalities recorded in connection with mining operations during 1911 is nineteen, and the number of men reported as seriously injured thirty-nine. The fatalities which occurred in and about the coal-mines total fourteen, or two less than during the previous year, when the number of serious accidents was twenty, as against sixteen in 1910. At metalliferous mines the fatalities during the year numbered five, compared with fifteen during 1910, a most satisfactory decrease. The number of serious non-fatal accidents at coal-mines was nineteen, as against seventeen during 1910. The fatalities per thousand persons employed in metal-mines were 0·67, and in coal-mines 3·26, or an average of 1·62 per thousand for metalliferous and coal mines combined.

STATE COLLIERIES.

The output from the State collieries during 1911 amounted to 248,937 tons, as against 275,602 during the previous year, being a decline of 26,665 tons. This decrease is due to the approaching exhaustion of the two State collieries at Seddonville and Point Elizabeth, which were not new mines when acquired by the Government several years ago. Provision, however, has been made to meet the requirements of the market by the laying-down of a new colliery—namely, the Point Elizabeth No. 2 Mine—which is situated at Seven-mile Creek, beyond Runanga. To this colliery a branch railway and haulage inclines have been constructed, and by the end of the current year the mine should have reached the output stage.

I regret to state that the profit on the working of the State coal-mines during the financial year ended 31st March, 1912, was less than during the previous year. This is principally owing to higher cost of production, but partly to diminished output.

The briquette-manufactory at Westport, which for about three years was worked in conjunction with the Seddonville Colliery, was closed during 1911 owing to the high cost of manufacture. The making of briquettes at the Westport State manufactory was one of the subjects inquired into by the Royal Commission on Mines, the report being to the effect that the cost of manufacturing with a pitch bond precluded competition in the market with coal as a fuel, and that it did not appear that any material saving could be effected in the manufacture of the briquettes.

SCHOOLS OF MINES.

The schools of mines, which have now been established twenty-seven years, continue to contribute to the education of mining and metallurgical students at the principal mining centres throughout the Dominion. The number of important positions occupied by students from these schools in many of the great mining districts of the world bears testimony to the efficiency of the system, and the practical teaching at these schools has no doubt contributed to the low working-cost and the high proportion of the dividends paid by the most important of our mining companies.

At the last annual examinations seventy-six students presented themselves for examination.

Including grants made to the School of Mines connected with the Otago University at Dunedin, the expenditure on account of these institutions by the Mines Department during the past year amounted to £2,110, and the aggregate expenditure thereon by the Department since their initiation totals to £49,816.

ROADS AND TRACKS.

The Government recognize the need for constructing roads and tracks to open up mineral lands, and that policy will be adhered to. The expenditure on roads and tracks constructed by subsidies and direct grants during the financial year ended 31st March, 1912, amounted to £41,067.

PROSPECTING.

Liberal assistance is offered under the Mining Regulations to prospectors. The expenditure on subsidies to prospecting associations and parties of miners in the different counties for the year amounted to £3,534.

GOLDFIELDS WATER-RACES.

The total revenue derived from sales of water during the year ended 31st December, 1911, amounted to £2,594, and the total expenditure thereon, including maintenance, to £3,369, showing a deficiency of £775.

On the 12th April, 1912, the Kumara Water-race extension, by inverted siphon two miles in length across the valley of the River Taramakau, was officially opened by me. This conduit delivers 36 cubic feet of water per second into the distributing-race on the northern terrace of the Taramakau, and, with its storage dam, will be able to supply 50 cubic feet of water per second for twelve hours a day throughout the whole year for the development of the extensive alluvial deposits still unworked in the Westbrook, Maori Point, and Hayes Terrace localities. The cost of this water-race extension amounted to about £20,000, and it is sincerely hoped that the miners will use the water to the fullest extent and to the best advantage, and thereby encourage the extension of the Government water-races to other localities. As a power scheme this conduit has valuable possibilities, as from it about 2,600 brake horse-power could be developed at the Government power reserve on the south bank of the river, and no doubt, as the price of coal and other fuel increases, this power will be in considerable requisition. Indeed, in the not-distant future it may be that the water-power available from our west coast mountain rivers and streams, being within easy access of navigable rivers and railway communication with our large towns, will be the means of establishing manufactories and industries supplied with raw material from distant parts. The conservation, therefore, of the sources of high-pressure water-power is very important in the interests of the Dominion.

GEOLOGICAL SURVEY.

During the year detailed geological surveys have been carried on in the Waihi-Tauranga and Mokihinui Subdivisions, and the results of these operations will be duly published in the annual report on the survey, as well as in the usual Bulletins.

ROYAL COMMISSION ON MINES.

During the year a Royal Commission was appointed to inquire into and report on the conditions relating to the health and safety of the miners of New Zealand, and the administration of the laws relating to mining, and to make recommendations as to any amendment of these laws which might be considered necessary for the better protection of the health and safety of persons working in mines. The Commission was directed to inquire more especially as to the prevention of accidents in mines; the ventilation of mines; the underground sanitation of mines; change- and bath-houses for miners; what steps should be taken to guard against miners' phthisis; and as to the profitable utilization of the soft bituminous and lignite coals of the Westport district.

The Commission entered upon its duties on the 3rd August, 1911, and on the 16th December presented its report. It is proposed to incorporate the recommendations contained therein in Bills to amend the Mining and Coal-mines Acts.

THE REGULATION OF STONE-QUARRIES.

The necessity for the proper regulation of stone-quarries in the interests of safety having become apparent, a Stone-quarries Act was passed in 1910, and on the 1st April of the following year it came into operation. In that Act it is provided that all stone-quarry managers or foremen (where explosives are used or any stone-face exceeds 20 ft. in depth) shall be the holders of permits of competency or of service granted by an Inspector of Quarries; and during the year 261 permits were so granted in twenty-one inspection districts. General rules and regulations provide for the safe storage and use of explosives, and for suitable ropes, chains, ladders, and other appliances.

This Act is administered by the existing staff of the Mines and Public Works Departments without additional cost. In mining districts the Inspectors of Mines, in addition to their ordinary work, have been assigned the duties of Inspectors of Quarries, and in the remaining districts the Overseers of the Public Works Department carry out the duties in conjunction with their other work.

During the year there were four fatal accidents, causing five deaths, at quarries coming under the operation of the Act, three persons being killed by explosives, one by machinery, and one by a truck. The consensus of opinion, as conveyed in the reports of the Inspectors, is that the Act is a wise and necessary measure, and that it has already been the means of additional precautionary steps being taken.

GOLD-MINERS' RELIEF FUND.

The Gold-miners' Relief Fund, which was inaugurated by the passing of the Mining Act Amendment Act, 1910, has worked satisfactorily, the balance to credit on the 31st March last being £3,720 13s. 5d. During the year the payments from the fund amounted to £2,947 6s. 3d.

TABLES AND APPENDICES.

Attached hereto are the usual tables, and the customary reports on the gold-fields and coal-mines of the Dominion appear as Appendices to this Statement.

CONCLUSION.

In conclusion, I desire, in a very few words, to remind honourable members of the beneficial results to the community of the establishment and progress of the mining industry. The discovery of gold in any country is the means of attracting people to its shores, and this alone has in the past brought thousands of people to New Zealand who otherwise would not have come, and although many of them have ceased to be connected with mining, they have followed other pursuits and made this country the land of their adoption.

New Zealand is to a large extent indebted to the miner, who, in the early days, forced his way into the wilds where no civilized human being had ever trod before, overcoming all difficulties and dangers in order that he might wrest from nature the riches that for ages had lain hidden, and thereby causing attention to be directed to other sources of wealth.

The day of the individual miner is doubtless fast drawing to a close, as the more easily won deposits have become or are becoming exhausted, and it is now to the geologist and chemist, as well as to the engineer, that we must look for the future development of the industry.

There is, however, still great mineral wealth to be won, and abundance of opportunity for the judicious investment of unemployed capital.

TABLES TO ACCOMPANY THE MINES STATEMENT.

No. 1.

TABLE SHOWING COMPARISON IN QUANTITY AND VALUE OF GOLD ENTERED FOR EXPORTATION, ALSO THE QUANTITY AND VALUE OF OTHER MINERALS, FOR THE YEARS ENDED THE 31ST DECEMBER, 1910 AND 1911, AS WELL AS THE TOTAL VALUE SINCE THE 1ST JANUARY, 1853.

Name of Metal or Mineral.	For Year ending the 31st December, 1911.		For Year ending the 31st December, 1910.		Total from the 1st January, 1853, to the 31st December, 1911.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Precious metals—	Oz.	£	Oz.	£	Oz.	£
Gold	455,226	1,816,782	478,288	1,896,328	20,164,988	79,253,913
Silver	1,311,043	131,587	1,711,235	171,562	16,006,840	1,750,109
Total gold and silver	1,766,269	1,948,369	2,189,523	2,067,890	36,171,828	81,004,022
Mineral produce, including kauri-gum—	Tons.	£	Tons.	£	Tons.	£
Copper-ore	..	..	..	..	1,495½	19,198
Chrome-ore	..	..	..	..	5,869	38,002
Antimony-ore	20	92	..	..	3,768	54,941
Manganese-ore	..	4	5	15	19,364½	61,905
Hæmatite ore	..	..	..	..	76½	444
Mixed minerals	*3,469½	22,104	†2,088½	22,202	36,783½	261,494
Coal (New Zealand) exported	223,918	205,008	277,011	259,562	3,095,914	2,834,381
Coke exported	..	..	6	10	16,435	24,877
Coal, output of mines in Dominion (less exports)	1,842,155	921,078	1,920,351	960,175	30,187,285	15,001,525
Shale	..	..	..	..	14,423	7,215
Kauri-gum	7,587	395,707	8,693	465,044	314,087	15,809,152
Total quantity and value of minerals	2,077,149½	1,543,993	2,208,154½	1,707,008	33,695,501½	34,113,134
Value of gold and silver, as above ..	..	1,948,369	..	2,067,890	..	81,004,022
Total value of minerals produced, including gold and silver	..	3,492,362	..	3,774,898	..	115,117,156

* Including stone, 34 tons; greenstone, 1 ton 19 cwt.; auriferous ore, 138 tons; mercury-ore, 2 tons; scheelite-ore, 139 tons; unenumerated, 3 tons; pumice-stone, 3,151 tons; pyrites, 2 tons. † Including auriferous ore, 100 tons; scheelite-ore 143 tons; unenumerated, 13 tons; pyrites, 2 tons; stone, 35 tons greenstone, 3 tons 9 cwt.; pumice-stone, 1,792 tons.

No. 2.

TABLE SHOWING THE QUANTITY AND VALUE OF GOLD ENTERED FOR EXPORTATION FROM NEW ZEALAND FOR THE YEARS ENDED THE 31ST DECEMBER, 1911 AND 1910, AND THE TOTAL QUANTITY AND VALUE FROM 1857 TO THE 31ST DECEMBER, 1911.

District and County or Borough.	Year ending 31st December, 1911.		Year ending 31st December, 1910.		Increase or Decrease for Year ending 31st December, 1911.		Total Quantity and Value from January, 1857, to 31st December, 1911.	
	Quantity.	Value.	Quantity.	Value.	Increase.	Decrease.		
AUCKLAND—	Oz.	£	Oz.	£	Oz.	Oz.	Oz.	£
County of Coromandel	6,311	26,521	3,259	13,558	3,052	..	..	..
County of Thames	5,375	21,023	2,160	8,320	3,215	..	..	..
County of Ohinemuri	75,616	282,947	57,235	202,259	17,381	..	..	..
County of Piako	29	123	..	..	29	..	..	..
Borough of Thames	2,488	10,098	4,054	15,760	..	1,566	..	..
Great Barrier Island	3	12	2	7	1	..	..	..
Borough of Waikato	173,969	708,480	219,816	896,153	..	45,847	..	..
	263,791	1,049,204	286,526	1,136,057	..	22,735	5,426,341	20,675,662
WELLINGTON	..	..	..	..	..	..	188	706
MARLBOROUGH—								
County of Marlborough	229	867	53	212	176	..	90,512	352,602
NELSON—								
County of Waimea	70	281	..	..	70	..	..	..
County of Collingwood	1,995	7,971	117	466	1,878	..	..	..
County of Takaka	24	95	..	..	24	..	..	..
County of Murchison	60	239	..	..	60	..	..	..
	2,149	8,586	117	466	2,032	..	1,726,506	6,844,862

No. 2—continued.

TABLE SHOWING THE QUANTITY AND VALUE OF GOLD ENTERED FOR EXPORTATION, ETC.—continued.

District and County or Borough.	Year ending 31st December, 1911.		Year ending 31st December, 1910.		Increase or Decrease for Year ending 31st December, 1911.		Total Quantity and Value from January, 1857, to 31st December, 1911.	
	Quantity.	Value.	Quantity.	Value.	Increase.	Decrease.		
WEST COAST—	Oz.	£	Oz.	£	Oz.	Oz.	Oz.	£
County of Buller ..	2,921	11,480	3,837	14,975	..	916	..	..
County of Inangahua ..	63,217	251,488	62,278	238,816	939	..	..	..
County of Grey ..	15,561	62,604	15,431	62,106	130	..	..	..
County of Westland ..	9,816	39,420	8,812	35,489	1,004	..	..	..
Hokitika Borough ..	..	..	5	20	..	5	..	..
Ross Borough ..	888	3,553	1,673	6,693	..	785	..	..
	92,403	368,545	92,036	358,099	367	..	5,690,246	22,621,813
CANTERBURY—								
County of Ashburton ..	..	..	..	..	..	..	99	387
OTAGO—								
County of Taieri ..	475	1,860	1,274	5,019	..	799	..	..
County of Tuapeka ..	16,820	67,832	15,755	64,038	1,065	..	..	..
County of Vincent ..	30,792	124,440	29,823	119,992	969	..	..	..
County of Maniototo ..	5,105	20,282	4,534	17,957	571	..	..	..
County of Waihemo ..	1,145	4,420	731	2,858	414	..	..	..
County of Waitaki ..	2,189	8,535	1,262	5,004	927	..	..	..
County of Bruce ..	832	3,284	372	1,508	460	..	..	..
County of Lake ..	3,480	14,055	3,751	15,064	..	271	..	..
County of Wallace ..	3,601	14,440	4,643	18,776	..	1,042	..	..
County of Fiord ..	18	71	151	593	..	133	..	..
County of Southland ..	31,024	125,684	35,855	144,897	..	4,831	..	..
County of Clutha..	667	2,711	1,376	5,685	..	709	..	..
	96,148	387,614	99,527	401,391	..	3,379	7,230,343	28,754,942
Unknown ..	506	1,966	29	103	477	..	753	2,939
Totals ..	455,226	1,816,782	478,288	1,896,328	..	23,062	20,164,988	79,253,913

No. 3—continued.

GOLD PRODUCED, 1857 TO 1911—continued.

TABLE SHOWING THE TOTAL QUANTITY AND VALUE OF GOLD ENTERED FOR EXPORTATION FROM THE 1ST JANUARY, 1857, TO THE 31ST DECEMBER, 1911. (This Return shows the Output of the various Goldfields. Gold entered at Nelson from Hokitika, Greymouth, and Westport is put under the Head of "West Coast," and Gold from Invercargill and Riverton under the Head of "Otago")—continued.

Year.	Auckland.		Nelson.		Marlborough.		West Coast.		Otago.		Wellington.		Canterbury.		Grand Totals.	
	Oz.	Value.	Oz.	Value.	Oz.	Value.	Oz.	Value.	Oz.	Value.	Oz.	Value.	Oz.	Value.	Oz.	Value.
1896	92,346	350,355	2,753	10,333	916	3,588	79,317	317,161	88,362	359,991	..	..	..	..	263,694	1,041,428
1897	105,477	392,337	1,892	7,055	810	3,195	58,817	235,430	84,649	342,187	..	..	..	..	251,645	980,204
1898	142,388	527,786	1,720	6,882	781	3,003	79,948	319,789	55,843	323,231	..	..	..	..	280,175	1,080,691
1899	168,769	624,737	419	1,571	..	..	90,031	360,149	130,311	526,605	..	..	..	..	389,558	1,513,173
1900	166,342	605,398	3,718	14,605	535	2,147	73,923	295,733	129,075	521,629	..	..	28	111	373,616	1,439,602
1901	191,968	695,551	7,212	28,138	133	513	113,286	454,006	142,940	575,492	..	..	23	90	455,561	1,753,783
1902	201,583	721,977	5,947	23,649	601	2,404	118,796	475,272	181,116	728,124	..	..	22	83	508,045	1,951,433
1903	232,681	832,334	7,962	31,710	972	3,845	125,241	501,090	166,458	668,852	..	..	2	7	533,314	2,037,831
1904	223,010	791,529	5,049	20,141	473	1,890	122,310	489,177	169,478	684,764	..	..	..	..	520,320	1,987,501
1905	232,215	935,602	6,469	25,862	..	..	109,704	438,258	172,098	694,214	..	..	..	..	520,486	2,038,936
1906	295,417	1,195,541	2,944	11,746	..	..	104,743	414,232	160,739	649,325	..	..	..	..	563,843	2,270,904
1907	298,101	1,187,079	3,893	15,274	795	3,009	87,069	343,146	118,352	478,982	..	..	..	..	508,210	2,027,490
1908	296,971	1,171,375	3,196	12,783	297	1,145	86,052	335,722	119,907	483,900	..	..	..	..	506,423	2,004,925
1909	288,614	1,142,098	2,572	10,286	39	155	95,014	369,930	120,132	484,431	..	..	..	..	506,371	2,006,900
1910	286,526	1,136,057	117	466	53	212	92,036	358,099	99,556	401,494	..	..	..	..	478,288	1,896,328
1911	263,791	1,049,204	2,149	8,586	229	867	92,403	368,545	96,654	389,580	..	..	..	..	455,226	1,816,782
Totals ..	5,426,341	20,675,662	307,087	1,213,705	90,358	352,025	7,109,819	28,253,547	7,230,987	28,757,447	273	1,044	123	483	20,164,988	79,253,913

NOTE.—In 1871 and 1872 the gold duty was 1s. to 2s. 6d. per ounce; in 1873 and succeeding years the duty was 2s. per 20-carat, and in like proportion for gold of less value. From the 31st March, 1891, the gold duty was abolished in the South Island.

No. 4.

TABLE SHOWING THE TOTAL QUANTITY AND VALUE OF MINERAL ORES OTHER THAN GOLD (THE PRODUCT OF NEW ZEALAND MINES), COAL, COKE, AND KAURI-GUM EXPORTED FROM THE DOMINION UP TO 31ST DECEMBER, 1911.

Year.	Silver.		Copper-ore.		Chrome-ore.		Antimony-ore.		Manganese-ore.		Hematite Ore.		Mixed Mineral Ores.*		Coal.		Coke.		Kauri-gum.		Totals.			
	Oz.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Oz.	Tons.	Value.	
1853	..	£	..	£	..	£	..	£	..	£	..	£	..	£	..	£	..	£	830	15,972	830	15,972	£	
1854	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,661	28,864	1,661	28,864	28,864	
1855	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	355	4,514	355	4,514	4,514	
1856	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,440	18,591	1,440	18,591	18,591	
1857	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,522	35,251	2,522	35,251	35,251	
1858	..	5,000	351	25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,811	20,037	2,167	25,066	25,066	
1859	..	2,605	245	8	120	..	..	..	..	..	..	..	..	..	..	..	..	..	2,010	20,776	2,263	23,501	23,501	
1860	..	1,590	137	116	1,440	..	..	..	..	..	..	..	..	..	..	..	..	..	1,046	9,851	1,300	12,883	12,883	
1861	..	1,300	110	52	530	..	..	..	..	..	..	..	..	..	..	..	..	..	856	9,888	1,018	11,708	11,708	
1862	..	1,024	51	3,843	24,719	..	..	..	..	..	..	..	..	..	..	..	..	..	1,103	11,107	3,997	36,850	36,850	
1863	..	..	..	768	4,818	..	..	..	..	..	..	..	..	..	..	..	..	..	1,400	27,026	1,935	31,344	31,344	
1864	..	..	..	..	4,910	..	..	..	..	..	..	..	..	..	..	..	..	..	2,228	60,590	2,996	65,500	65,500	
1865	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,867	46,060	1,867	46,060	46,060	
1866	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,535	70,572	3,077	72,287	72,287	
1867	..	2,700	246	281	1,315	..	..	..	..	..	..	..	..	..	..	..	..	..	2,685	77,491	3,904	81,419	81,419	
1868	..	977	84	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,690	72,493	3,801	74,680	74,680	
1869	11,063	2,993	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,850	111,307	11,063	115,100	115,100	
1870	37,123	11,380	7	..	120	..	..	..	..	..	..	..	..	..	..	..	..	..	4,391	175,074	37,123	6,070	188,082	188,082
1871	80,272	23,145	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5,054	167,958	80,272	6,750	192,715	192,715
1872	37,064	9,910	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4,811	154,167	37,064	5,882	164,982	164,982
1873	36,187	9,850	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,834	85,816	36,187	3,558	96,321	96,321
1874	40,566	10,380	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,569	79,986	40,566	4,119	91,957	91,957
1875	29,085	7,569	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3,231	138,523	29,085	6,631	149,272	149,272
1876	12,683	3,171	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,888	109,234	12,683	7,975	129,372	129,372
1877	33,893	7,556	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3,633	118,348	33,893	8,682	137,711	137,711
1878	23,019	5,755	6	115	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3,445	132,975	23,019	12,120	154,687	154,687
1879	20,645	4,512	55	1,105	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3,229	147,535	20,645	12,732	168,001	168,001
1880	20,005	4,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4,725	242,817	20,005	17,177	275,799	275,799
1881	18,865	4,236	5	36	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5,533	260,369	18,865	15,538	271,623	271,623
1882	5,694	1,286	9	41	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5,694	336,606	16,826	14,953	350,086	350,086
1883	16,826	3,785	46	678	..	..	..	..	..	..	..	..	..	..	..	..	..	..	372	342,151	24,914	13,071	353,024	353,024
1884	24,914	5,125	20	106	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5,875	299,762	16,624	51,468	362,779	362,779
1885	16,624	3,169	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4,920	257,653	12,108	52,409	318,783	318,783
1886	12,108	2,946	30	390	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6,791	362,449	20,809	51,686	419,844	419,844
1887	20,809	3,453	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8,482	380,933	403	79,147	459,301	459,301
1888	403	71	2	75	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7,519	329,590	21,105	97,828	439,260	439,260
1889	24,105	4,043	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7,438	378,563	32,637	80,287	467,465	467,465
1890	32,637	6,162	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8,388	437,056	32,637	104,164	541,633	541,633
1891	28,023	5,151	0	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9,658	517,678	22,053	92,891	614,360	614,360
1892	22,053	3,996	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5,691	517,678	22,053	92,891	614,360	614,360

TABLE SHOWING THE TOTAL QUANTITY AND VALUE OF MINERAL ORES OTHER THAN GOLD (THE PRODUCT OF NEW ZEALAND MINES), COAL, COKE, AND KAURI-GUM, EXPORTED FROM THE DOMINION UP TO 31ST DECEMBER, 1911—continued.

Year.	Silver.		Copper-ore.		Chromite-ore.		Antimony-ore.		Manganese-ore.		Hematite Ore.		Mixed Mineral Ores.*		Coal.		Coke.		Kauri-gum.		Total.	
	Oz.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Oz.	Tons.	Value.
1893	63,076	9,743	..	£	331	8,467	319	943	..	..	..	£	37	650	59,136	72,699	51	53	8,317	63,076	78,191	598,390
1894	54,177	6,697	..	..	44	761	534	1,156	..	..	..	..	35	353	75,004	73,438	107	160	8,338	54,177	84,052	487,132
1895	85,024	10,679	..	..	54	1,486	210	525	..	..	..	..	62	880	85,987	83,342	288	715	7,425	418,766	85,024	516,398
1896	94,307	10,589	..	..	21	450	65	205	..	..	..	..	37	1,335	79,324	71,984	105	263	7,126	431,323	94,307	516,149
1897	188,892	20,872	..	2	10	157	180	541	..	..	..	..	1,561	5,892	76,073	69,535	..	..	6,641	398,010	188,892	495,069
1898	263,851	33,107	..	..	..	..	217	703	..	..	..	..	1,838	4,792	56,332	50,381	9	14	9,905	586,767	293,751	675,894
1899	349,338	40,838	..	..	..	..	135	407	..	..	..	..	1,309	6,591	89,480	83,085	18	..	11,116	607,919	349,338	738,849
1900	326,457	38,879	12	45	3	101	166	588	..	..	..	..	2,126	12,751	112,707	98,136	..	..	10,159	622,293	326,457	772,908
1901	571,134	65,258	3	105	30	136	208	614	..	..	..	..	696	7,775	159,543	142,176	..	..	7,541	446,114	571,134	662,178
1902	674,196	71,975	..	..	..	..	..	..	..	..	..	..	415	4,422	188,677	154,747	..	..	7,430	450,223	674,196	682,008
1903	911,914	91,497	6	123	..	..	70	210	..	..	..	..	635	7,014	182,832	128,927	..	..	9,357	631,102	911,914	658,874
1904	1,094,461	112,875	..	..	..	..	196	570	7	96	..	..	1,404	10,168	165,220	139,898	..	..	9,203	501,817	1,094,461	765,424
1905	1,179,744	120,542	4	17	..	..	55	165	..	..	..	..	632	8,136	123,817	107,062	..	..	10,883	561,444	1,179,744	797,381
1906	1,390,536	143,572	..	..	..	..	16	40	..	..	..	..	1,297	18,421	141,641	122,614	..	..	9,154	522,486	1,390,536	807,139
1907	1,562,608	169,484	56	595	..	..	5	26	..	..	..	..	1,492	30,448	128,950	114,737	..	..	8,708	579,881	1,562,608	897,316
1908	1,731,336	175,337	13	275	..	..	..	..	..	..	..	..	1,690	16,179	100,502	85,846	2	4	5,530	372,798	1,731,336	650,512
1909	1,813,830	180,872	5	100	..	..	..	..	..	..	..	..	1,836	11,709	201,685	183,961	22	23	8,250	552,698	1,813,830	929,452
1910	1,711,235	171,562	..	..	..	..	5	15	..	..	..	..	2,088	22,202	277,011	259,562	6	10	8,693	465,044	1,711,235	918,395
1911	1,811,043	191,587	..	..	..	..	..	4	..	..	..	..	3,460	22,104	233,918	205,008	..	..	7,587	395,707	1,811,043	754,502
Totals	16,006,840	1,750,109	1,495	19,198	5,869	88,002	3,768	61,905	76	444	..	..	36,783	261,494	3,095,914	2,894,381	16,435	24,877	15,809	152,006	3,493,793	20,854,509

* The following are the principal minerals included under this heading :-

Year.	Scheelite-ore.		Auriferous Ore.		Sulphur.		Mixed Minerals.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
1898	..	£	22	380	1,765	4,097	..	£
1899	32	2,788	5	153	1,227	3,483	..	315
1900	54	2,635	219	4,450	1,692	4,824	..	167
1901	2	83	390	6,663	143	360	..	842
1902	39	1,200	231	2,560	100	475	..	659
1903	42	1,439	472	4,449	..	..	..	187
1904	17	791	977	8,898	..	..	..	1,126
1905	28	1,848	585	5,997	..	..	..	479
1906	55	3,407	1,186	13,940	..	..	..	391
1907	137	15,486	1,244	14,650	..	..	..	1,074
1908	68	6,055	654	6,993	..	..	..	312
1909	58	4,263	182	2,450	..	..	..	3,131
1910	143	15,070	100	1,538	..	..	..	4,996
1911	138	11,853	138	1,419	..	..	..	5,594
Totals	813	66,918	..	..	..	..	..	8,392

No. 5.

RETURN SHOWING THE QUANTITY AND VALUE OF COALS IMPORTED INTO NEW ZEALAND DURING THE QUARTER ENDED THE 31ST MARCH, 1912.

Country whence imported.						Quantity.	Value.
						Tons.	£
New South Wales						53,421	53,170
Total						53,421	53,170

No. 6.

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

Year.	Coal raised in the Dominion.		Coal imported.		
	Tons.	Yearly Increase or Decrease.	Tons.	Increase over Preceding Year.	Decrease over Preceding Year.
Prior to 1878	709,931	..	..	..	..
1878	162,218	..	174,148	..	..
1879	231,218	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	50,952	110,939	..	17,124
1891	668,794	31,397	125,318	14,379	..
1892	678,315	4,521	125,458	135	..
1893	691,548	13,233	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	124,038	24,378	..
1901	1,233,686	145,696	149,764	25,726	..
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	237,808	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	223,918	..	8,460

No. 7.

TABLE SHOWING THE OUTPUT OF COAL FROM THE VARIOUS COALFIELDS, AND THE COMPARATIVE INCREASE AND DECREASE, FOR THE YEARS 1910 AND 1911, TOGETHER WITH THE TOTAL APPROXIMATE QUANTITY OF COAL PRODUCED SINCE THE MINES WERE OPENED.

Name of Coalfield.	Output of Coal.		Increase.	Decrease	Approximate Total Output of Coal up to 31st December, 1911.
	1911.	1910.			
	Tons.	Tons.	Tons.	Tons.	Tons.
Kawakawa and Hikurangi	105,201	107,866	..	2,665	2,126,083
Whangarei, Kamo, Ngunguru, and Whauwhau	33,958	46,931	..	12,973	782,173
Waikato	252,262	228,962	23,300	..	2,848,408
Mokau	3,811	4,405	..	594	77,798
Miranda	2,640	12,344	..	9,704	117,226
Drury	..	156	..	156	1,196
Pelorus	..	120	..	120	831
Collingwood	23,325	28,600	..	5,275	194,702
Buller	770,291	831,200	..	60,909	10,652,523
Reefton	13,896	14,451	..	555	204,840
Grey	411,181	466,661	..	55,480	6,346,977
Canterbury	18,812	23,708	..	4,896	640,277
Otago	282,870	291,441	..	8,571	7,364,536
Southland	147,826	140,517	7,309	..	1,925,579
Totals	2,066,073	2,197,362	..	131,289	33,283,199

No. 8.

TABLE SHOWING THE DIFFERENT CLASSES OF COAL FROM THE MINES IN THE DOMINION.

Name of Coal.	Output of Coal.		Increase.	Decrease.	Approximate Total Output of Coal up to the 31st December, 1911.
	1911.	1910.			
	Tons.	Tons.	Tons.	Tons.	Tons.
Bituminous and semi-bituminous	1,358,357	1,495,709	..	137,352	19,908,445
Pitch	4,411	6,068	..	1,657	1,987,082
Brown	601,093	594,995	6,098	..	9,905,417
Lignite	102,212	100,590	1,622	..	1,482,255
Totals	2,066,073	2,197,362	..	131,289	33,283,199

No. 9.

RETURN SHOWING THE QUANTITY AND VALUE OF COAL IMPORTED INTO AND EXPORTED FROM NEW ZEALAND DURING THE YEAR ENDED THE 31ST DECEMBER, 1911.

Imported.			Exported.		
Countries whence imported.	Quantity.	Value.	Countries to which exported.	Quantity.	Value.
	Tons.	£		Tons.	£
United Kingdom	..	..	United Kingdom	145,107	143,680
New South Wales	187,911	186,140	Victoria	4,459	2,704
Victoria	3	9	New South Wales	31,347	25,375
South Australia	..	..	Queensland	4,018	2,789
Queensland	154	114	South Australia	2,990	2,800
U.S.A. West Coast	..	..	Western Australia	5,486	3,771
			Tasmania	5,441	4,508
			Fiji	8,488	7,149
			Canada	710	708
			Chile	240	240
			South Seas	15,632	11,284
Totals	188,068	168,263	Totals	223,918	205,008

No. 10.

NUMBER OF PERSONS ORDINARILY EMPLOYED IN MINING DURING THE YEARS ENDED 31ST DECEMBER, 1910 AND 1911.

District.	Alluvial Miners.		Quartz-miners.		Totals.		Grand Totals.	
	European.	Chinese.	European.	Chinese.	European.	Chinese.	1910.	1911.
GOLD-MINES.								
AUCKLAND—								
Coromandel	..	..	135	..	135	..	209	185
Thames	..	..	416	..	416	..	504	416
Paeroa	..	..	764	..	764	..	482	764
Te Aroha	..	..	28	..	28	..	14	28
Waihi	..	..	1,600	..	1,600	..	1,979	1,600
	..	..	2,943	..	2,943	..	3,188	2,943
MARLBOROUGH—								
Blenheim and Havelock	29	..	22	..	51	..	35	51
NELSON—								
Wangapeka, Takaka, and Motueka	..	..	..	..	..	..	13	..
Collingwood	..	..	17	..	17	..	38	17
Inangahua	..	..	953	..	953	..	1,040	953
Ahaura	250	35	..	..	250	35	303	285
Westport, including Charleston, Addison's, Northern Terraces, Waimangaroa, North Beach, Mokihinui, Karamea, and Lower Buller Valley	121	..	2	..	123	..	84	123
Lyell	5	..	17	..	22	..	17	22
Murchison	35	12	..	..	35	12	138	47
Owen	..	..	..	..	..	..	..	..
	411	47	989	..	1,400	47	1,633	1,447

No. 10—continued.

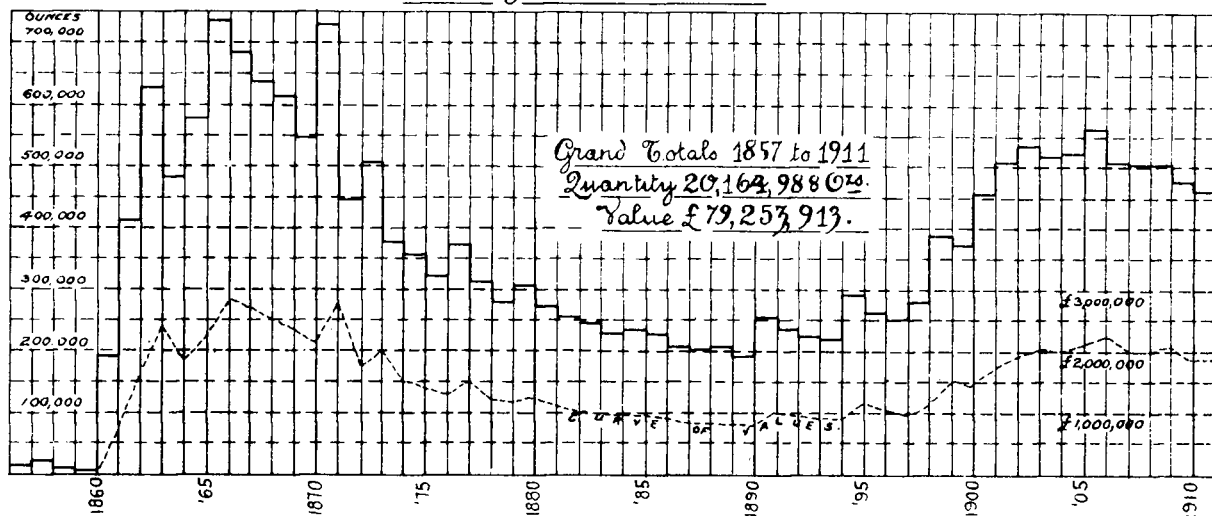
NUMBER OF PERSONS ORDINARILY EMPLOYED IN MINING DURING THE YEARS ENDED 31ST DECEMBER, 1910 AND 1911—continued.

District.	Alluvial Miners.		Quartz-miners.		Totals.		Grand Totals.	
	European.	Chinese.	European.	Chinese.	European.	Chinese.	1910.	1911.
GOLD-MINES—continued.								
WESTLAND—								
Ross	12	..	2	..	14	..	54	14
Stafford and Goldsborough	150	20	..	..	150	20	91	170
Hokitika and Kanieri	162	11	9	..	171	11	201	182
Kumara	67	12	..	..	67	12	68	79
Greymouth	294	47	15	..	309	47	369	356
Arnold	5	..	..	..	5	..	..	5
Okarito	..	..	..	..	..	..	..	..
	690	90	26	..	716	90	783	806
OTAGO—								
Hindon	16	1	..	..	16	1	..	17
Tuapeka	..	..	..	..	..	..	..	..
Lawrence, Roxburgh, Black's, Alexandra, and Clyde	675	33	40	..	715	33	762	748
Cromwell	287	15	12	..	299	15	316	314
Tapanui	..	..	..	..	..	..	..	..
Waikaia	200	20	..	..	200	20	346	220
Wyndham	6	..	..	..	6	..	10	6
Waiau	..	..	..	..	..	..	..	..
Orepuki and Preservation Roundhill	249	24	6	..	255	24	309	279
Wakatipu Goldfields—Arrow, Macetown, Cardrona, Kawarau, Bracken's, and Motatapu	70	4	16	..	86	4	65	90
Queenstown	121	7	..	..	121	7	138	128
Naseby	..	..	..	..	..	..	..	..
St Bathans	56	11	84	..	140	11	306	151
Hyde	..	..	..	..	..	..	..	..
Macrae's	..	..	..	..	..	..	..	..
Gore	165	..	..	..	165	..	190	165
	1,845	115	158	..	2,003	115	2,442	2,118
SUMMARY.								
AUCKLAND, NORTHERN INSPECTION DISTRICT								
MARLBOROUGH } WEST COAST	29	..	22	..	51	..	35	51
NELSON } INSPECTION DISTRICT	411	47	989	..	1,400	47	1,633	1,447
WESTLAND } TRIBUT	690	90	26	..	716	90	783	806
OTAGO, SOUTHERN INSPECTION DISTRICT	1,845	115	158	..	2,003	115	2,442	2,118
Totals	2,975	252	4,138	..	7,113	252	8,081	7,365

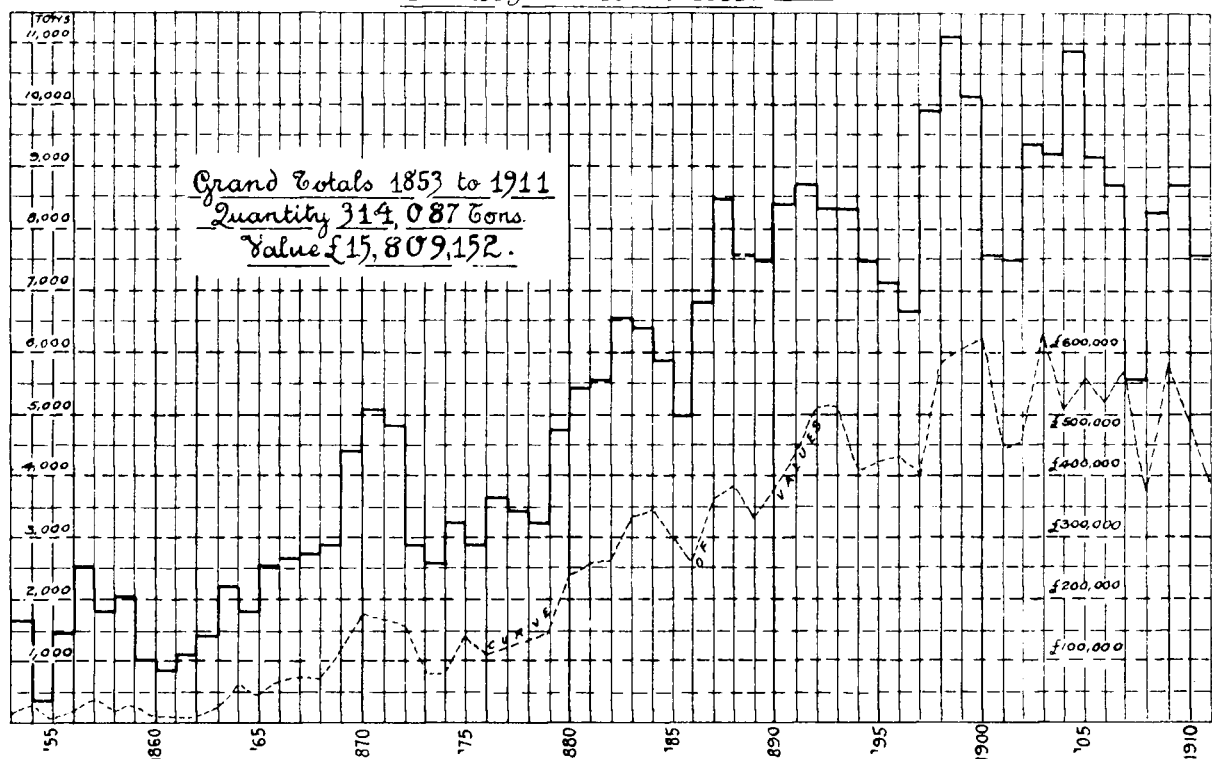
SUMMARY OF PERSONS ORDINARILY EMPLOYED IN OR ABOUT NEW ZEALAND MINES DURING 1911.

Gold-mines	7,365
Other metalliferous mines	35
Coal-mines	4,290
Total	<u>11,690</u>

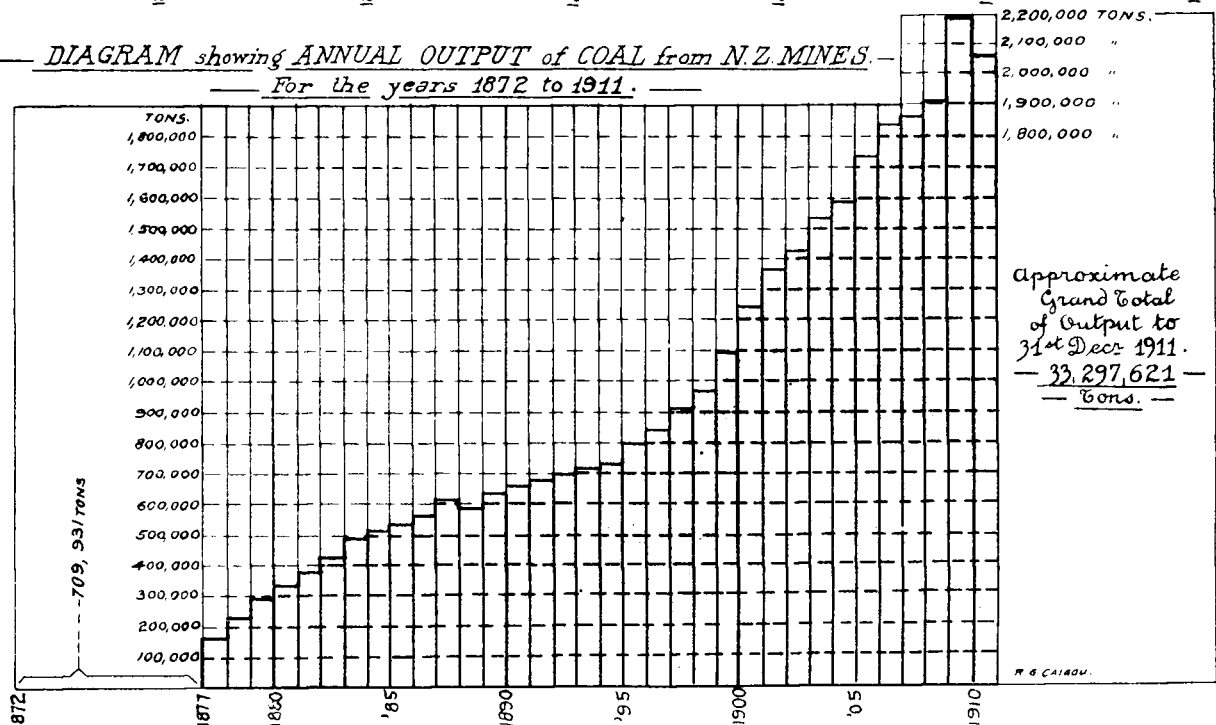
— DIAGRAM showing QUANTITY & VALUE of GOLD exported annually from N.Z. —
— For the years 1857 to 1911. —

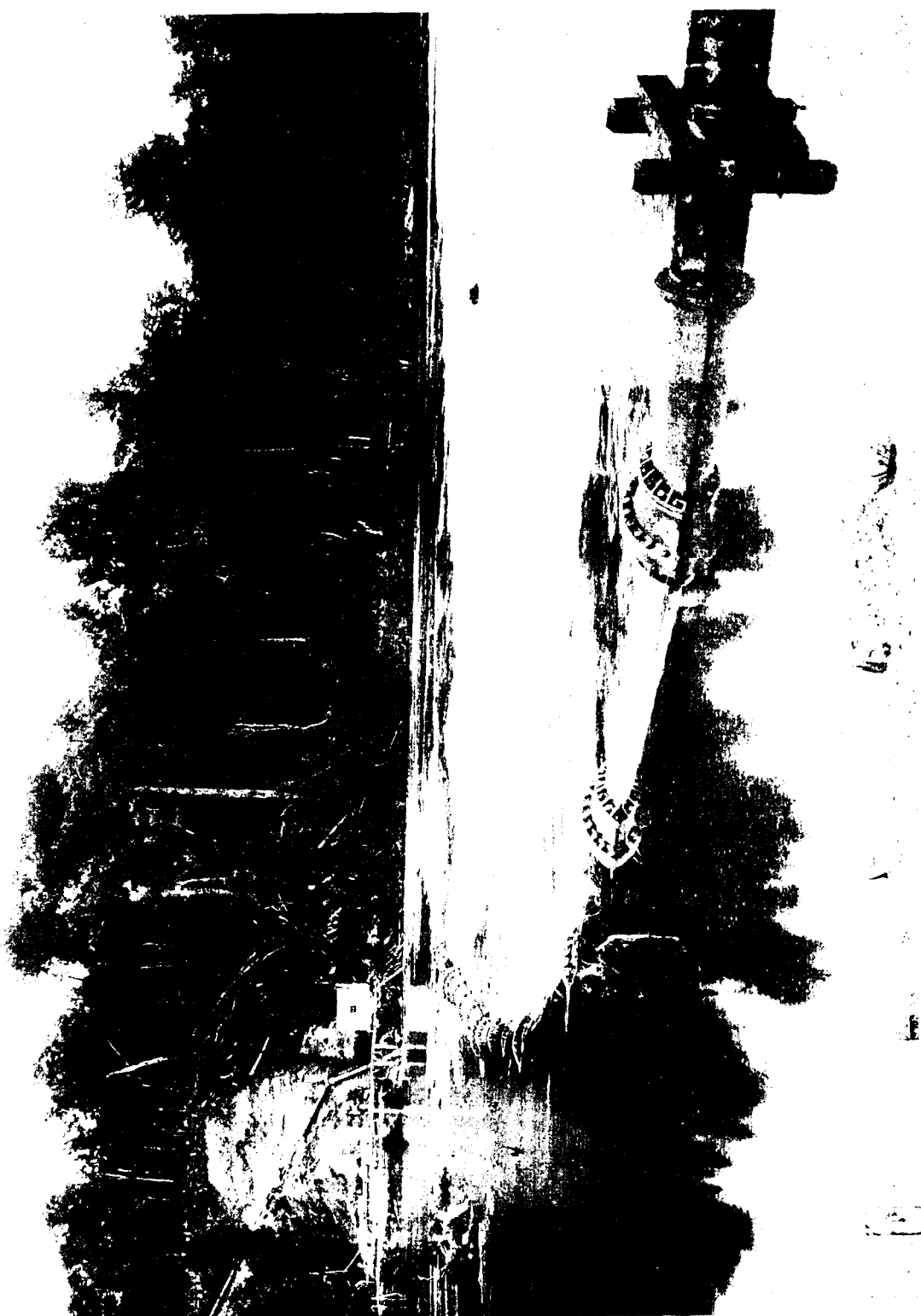


— DIAGRAM showing QUANTITY & VALUE of KAURI GUM exported annually from N.Z. —
— For the years 1853 to 1911. —



— DIAGRAM showing ANNUAL OUTPUT of COAL from N.Z. MINES. —
— For the years 1872 to 1911. —





THE 30 INCH CAST IRON FLEXIBLE JOINT STEAM CROSSING THE RIVER TARAVAKA FROM THE SHIP ON THE NORTH BANK.



THE 30-INCH CAST-IRON FLEXIBLE-JOINT SIPHON CROSSING THE RIVER TARAPIAKA, FROM THE SOUTH BANK.

Siphon ends



KUMAYA GOVERNMENT MINING WATER PACE EXTENSION. INVERTED SIPHON OF 30 INCH BORE, 2 MILES
1 CHAIN IN LENGTH, CROSSING THE VALLEY OF THE RIVER TARAMALAI, WESTLAND.

APPENDICES TO THE MINES STATEMENT.

APPENDIX A.

REPORTS RELATING TO METALLIFEROUS MINES.

Mr. FRANK REED, M.Inst.M.M., Inspecting Engineer, to the Under-Secretary of Mines.

SIR,—

Mines Department, Wellington, 7th June, 1912.

I have the honour to present the annual reports of inspection of mines, together with reports of Wardens and other officers, accompanied by statistical information in regard to the goldfields and the metalliferous mines of the Dominion, for the year ended 31st December, 1911.

In accordance with the usual practice, the tables showing expenditure through the Mines Department on roads, bridges, tracks, prospecting operations, &c., are for the period covered by the financial year—viz., from the 1st April, 1911, to the 31st March, 1912.

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

- I. Production of Minerals.
- II. Persons employed.
- III. Accidents.
- IV. Gold-mining.
 - (1.) Quartz.
 - (2.) Dredging.
 - (3.) Alluvial.
- V. Minerals other than Gold.
- VI. Ventilation and Hygiene.
- VII. State Aid to Mining.
- VIII. Schools of Mines.

Annexures.—Reports of—

- (a.) Inspectors of Mines.
- (b.) Wardens.
- (c.) Directors of Schools of Mines.
- (d.) Water-race Managers.
- (e.) Mining Statistics.
- (f.) Examinations under the Mining Act, 1908, and Lists of Certificate-holders.

I. PRODUCTION OF MINERALS.

The following statement shows the value of the exports from metal-mines and kauri-gum fields from the 1st January, 1853, to the 31st December, 1911.

Classification.	1910.	1911.	Increase or Decrease.	Total from the 1st January, 1853, to the 31st December, 1911.
Gold	£ 1,896,328	£ 1,816,782	£ 79,546†	£ 79,253,913
Silver	171,562	131,587	39,975†	1,750,109
Other minerals	22,227	22,200	27†	463,076
Kauri-gum	465,044	395,707	69,337†	15,809,152
Totals	2,555,161	2,366,276	188,885†	97,281,250

* Increase.

† Decrease.

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, 1911.
	Northern.	West Coast.	Southern.	
Gold and silver	2,943	2,304	2,118	7,365
Iron	...	11	...	11
Scheelite	...	...	24	24
Totals for 1911	2,943	2,316	2,142	7,400
Totals for 1910	3,190	2,468	2,463	8,121

III. ACCIDENTS.

The following is a classification of fatal and serious mining accidents that have occurred during the year at all metalliferous mines :—

Inspection District.	Explosions.		Falls of Ground.		In Shafts.		Miscellaneous Under-ground.		Surface.		About Dredges.		Total.	
	Fatal.	Serious.	Fatal.	Serious.	Fatal.	Serious.	Fatal.	Serious.	Fatal.	Serious.	Fatal.	Serious.	Fatal.	Serious.
Northern	1	5	2	5	...	...	...	2	...	3	...	...	3	15
West Coast	...	1	...	1	...	...	...	...	1	...	...	1	1	3
Southern	...	...	...	...	...	...	...	...	1	1	...	...	1	1
Totals	1	6	2	6	...	...	...	2	2	4	...	1	5	19

Being at the rate of 0·67 fatalities per 1,000 persons employed.

TABLE SHOWING NUMBER OF DEATHS FROM ACCIDENTS AT NEW ZEALAND METAL MINES AND DREDGES DURING THE YEARS 1906 TO 1911.

Cause of Accident.	1906.	1907.	1908.	1909.	1910.	1911.
Explosion	3	...	3	2	2	1
Fall of ground	3	2	2	1	1	2
In shafts	1	...	1	3	5	...
Miscellaneous : Underground	...	...	2	1	...	...
" On surface	1	2	6	5	3	2
About dredges	6	3	1	2	4	...
Total killed	14	7	15	14	15	5
Number of employees	8,716	9,389	8,880	7,651	8,121	7,400
Rate of persons killed per 1,000 employed	1·60	0·84	1·69	1·83	1·84	0·67

SUMMARY OF PERSONS KILLED AT METAL MINES AND DREDGES DURING ELEVEN YEARS ENDED 31ST DECEMBER, 1911.

Year ended 31st December.	Number of Persons.		Rate per 1,000 employed.
	Killed.	Employed.	
1901	14	12,732	1·09
1902	14	11,398	1·04
1903	19	10,210	1·86
1904	15	10,898	1·37
1905	21	9,362	2·24
1906	14	8,716	1·60
1907	7	9,389	0·84
1908	15	8,880	1·69
1909	14	7,651	1·83
1910	15	8,121	1·84
1911	5	7,400	0·67

The decrease of fatal accidents during 1911 is very gratifying, and may to some extent be reasonably attributed to greater vigilance as the result of the investigations of the Royal Commission on Mines, which visited all the most important of the mining centres, where inspections were made and voluminous evidence was taken.

Among the most important of the additional precautionary measures recommended by the Commission in their report are the following: The maximum height of stopes shall be $8\frac{1}{2}$ ft., measured from the working-floor. Sufficient space shall be made in all levels, at convenient intervals, to protect men from trucks. Chambermen and bracemen shall be always at their posts, but chambermen are not compulsory at each level. All ladders in mines shall extend for at least 3 ft. above the top of the shaft, platform, or landing-place. Two outlets from a mine to the surface shall be maintained, except under certain specified conditions. Shift bosses shall examine backs and sides, irrespective of the examination by miners. No tamping other than plastic clay or water shall be allowed. Where rock-drills are installed, a James or other water-blast or atomizer shall be used to allay smoke and dust caused by blasting. No greater number of holes shall be charged than it is intended to explode at one time. Pent-houses shall be provided in sinking-shafts. No person shall carry tools or timber in a ladder-way or throw the same down any ladder-way. Explosives shall not be carried with men in cages. All winding-engine drivers shall be medically examined annually. In addition to the tests and examinations at present provided for, all safety appliances used on or in connection with cages shall be examined and tested quarterly by a mechanical expert, and the result entered in a special report-book. Every winding-rope shall be recapped at intervals of not more than six months. No machinery about a dredge shall be oiled, repaired, or adjusted when in motion, except those parts which cannot be so attended to except when in motion. No person engaged near to dredge or other mining machinery shall wear loose outer clothing. All mine windlasses shall be fitted with pawls and ratchet wheels.

IV. GOLD-MINES.

The following statement shows the value of the bullion-production and dividends declared, also the number of persons ordinarily employed, and number of gold-mines and dredges working during the year:—

—		Production of Bullion, 1911.* (All mines.)	Dividends paid, 1911. (By registered com- panies only.)	Number of Persons ordinarily em- ployed.	Number of Working Mines, Dredges, and Claims.
		£	£		
Quartz-mining ...	...	1,375,253	451,969	4,138	156
Dredge mining ...	...	297,900†	45,318†	775	93
Alluvial mining ...	...	275,216‡	7,508‡	2,452	277
Totals, 1911	...	1,948,369	504,795	7,365	526
Totals, 1910	...	2,067,890	610,866	8,081	555

* In addition to the gold produced from the gold-mines, silver was obtained from them, hence the word "bullion" is used in preference to "gold."

† The bullion production is from 93 dredges, but the dividends given are only from 31 of these, the property of registered companies. The profits of privately owned dredges and mines are unobtainable, which renders this statement incomplete.

‡ The bullion-production is from 277 alluvial claims, but the dividends are only ascertainable from those that are the property of registered companies.

The production from the gold-mines of New Zealand, in common with those of all the States of Australia, continues to decrease.

From the foregoing table it will be seen that there has been a decline of £119,521 in the value of the bullion-production from our gold-mines, such decline being confined to quartz and dredge mines. The alluvial mines, owing to the exceptional rainfall, have been able to work for a longer period than usual, and, as a result, there has been a considerable increase in their gold-production.

The decline in dividends, amounting to £106,071, may be attributed solely to the Waihi Mine, from which the dividends during 1911 were £123,978 below those of the previous year.

(1.) QUARTZ-MINING.

The production of bullion from the quartz-mines of the Dominion during 1911 amounted in value to £1,375,253, as the result of treating 645,991 tons of ore, being a decline in both tonnage and value when compared with the production during the previous year; there has been, however, a slight increase in the average yield per ton of ore reduced.

The decrease in production above recorded is confined to the mines within the boroughs of Waihi and Thames, and to the Province of Otago; the quartz-mines of Ohinemuri have slightly increased their annual production, and those of the west coast of the South Island have maintained their position.

The following is a statement showing the tons of ore treated, the value of bullion produced, and the amount of dividends paid by quartz-mining companies in each of the inspection districts during the years 1910 and 1911.

Inspection District.	Tons of Ore treated. (2,240 lb.)		Value of Bullion.		Dividends paid. (By registered companies only.)	
	1911.	1910.	1911.	1910.	1911.	1910.
Northern ...	507,280	556,169	£ 1,141,235	£ 1,324,456	£ 401,273	£ 494,325
West Coast ...	128,244	121,832	228,512	230,807	50,696	53,212
Southern ...	10,467	10,658	5,506	8,926	...	...
Totals ...	645,991	688,659	1,375,253	1,564,189	451,969	547,537

The following is a statement of the production, working-cost, dividends declared, and the number of persons employed at the principal quartz-mines during 1911.

Name of Company.	During 1911.				Dividends paid.		Number of Persons ordinarily employed.
	Quantity of Quartz treated.	Value of Bullion.	Average Value per Ton.	Total Cost per Ton.	1911.	Total to End of De- cember, 1911.	
Northern District—	Long tons.	£	£ s. d.	£ s. d.	£	£	
Waihi Gold-mining Com- pany (Ltd.)*†	316,349	670,179†	2 2 4-4†	0 17 9-4	272,748	4,230,585	1,030
Waihi Grand Junction Gold-mining Company (Ltd.)†	94,603	150,729	1 11 10-4	1 1 10-1§	19,218	19,218	528
New Zealand Crown Mines (Ltd.)	20,835	45,030	2 3 2-7	¶	..	70,000	184
Talisman Consolidated (Ltd.)	47,550	222,058	4 13 4-8	1 5 10	109,307	560,291	360
Komata Reefs (Ltd.) ..	7,580	17,112	2 5 1-8	2 3 0	..	33,333	68
Old Hauraki Gold-mining Company (Ltd.)	569	4,019	7 1 3-1	¶	..	2,625	37
West Coast District—							
Keep-it-Dark Quartz- mining Company (Ltd.)	7,212	7,943	1 2 0-3	¶	..	158,666	56
Progress Mines of New Zealand (Ltd.)	41,596	42,832	1 0 7-1	1 5 6	..	326,562	320
Consolidated Goldfields of New Zealand (Ltd.)	24,968	49,635	1 19 9	0 18 5-1	..	..	150
New Big River Gold- mining Company (Ltd.)	6,913	28,062	4 1 2-2	¶	13,200	51,600	54
Blackwater Mines (Ltd.)	44,038	92,062	2 1 9-7	1 1 6	37,496	87,496	281
Other quartz-mines through- out New Zealand	33,778	45,592	1 6 11-9	¶	..	¶	1,070
Totals, 1911 ..	645,991	1,375,253	2 2 6-9	¶	451,969	¶	4,138

* The total value of the output of this company at the end of the year was £9,785,431. The dividends here given are free of income-tax.

† In previous years the quartz crushed at these mines has been stated in short tons of 2,000 lb. This year the output returned has been adjusted to a long-ton basis.

‡ In the annual report of the directors of this company for 1911 the value of the bullion-production is stated to be £679,113, but the figures given in the table above are the official returns from the company to the Inspector of Mines. The discrepancy occurs owing to the actual value of the bullion not being known until it is refined in England.

¶ Including 4s. 5½d. Development Account.

|| Including 8s. 10d. Development Account.

¶ Unknown.

Northern Inspection District.

Waihi Goldfield.—Waihi Gold-mining Company (Limited): Owing to impoverishment of the lodes at levels Nos. 9 and 10 (respectively 1,000 ft. and 1,151 ft. in depth), there has been a considerable decline in the production below that of the previous year, the decrease amounting in value to £255,921. At the deepest, or No. 10, level an enormous amount of development has been carried out during the year. The Martha, Empire, and Royal lodes have been driven upon, and have generally been found too low in grade to be payable. Better value was proved by development at the No. 9 (1,000 ft.) level, although the ore was of much lower grade than in the level above. For the development of the lodes at greater depth, shafts Nos. 4 and 5 are being sunk below No. 10 level, and during the current year will probably reach a depth of 1,300 ft., where another level will be commenced. The normal flow of water during sinking has been estimated at about 1,200 gallons per minute, which is dealt with by the B (17 in.) plunger pump installed at level No. 10 (1,151 ft.). This delivers water to Hathorn-Davey electrically-driven three-throw (12 in.) ram pumps, which work in two stages from chambers at the 1,000 and 540 ft. levels.

One of the geological hypotheses advanced (considerably after the event) as a reason for the decline in value is that the country immediately adjoining the lodes has changed from massive into bedded dacite, distinguished only by a coarse texture and interbedded seams of carbonaceous matter; but from actual observation, having recently inspected the mine, I am satisfied that the impoverishment is due rather to the leaching of the ore by percolating water; but whether by descending meteoric water or ascending thermal solutions or as steam I am unable to venture an opinion. One thing is certain, however—namely, that the quartz bodies at the No. 10 level have been severely leached, and show advanced oxidation, the calcites being in a metamorphose state, and only remnants exist of the rich sulphide shoots which occurred in the upper levels. The future prospects of this famous mine depend entirely upon the result of further sinking and crosscutting.

The Waihi Grand Junction Mine has at last reached the dividend-paying stage, the sum of £19,218 having been so declared during 1911.* From this mine there has been an increase of tonnage and gold-yield, although the ore treated is still of lower average value than that from the adjoining Waihi Mine. Development of the deepest or No. 6 (1,082 ft.) level during the year was very satisfactory, as will be seen by the report of Inspector M. Paul (Annexure A). Three lodes have been driven upon at this level—namely, the Dominion, Republic, and Empire—and the average assay value from each shows the ore to be payable. The ore mined was obtained from eight separate lodes; during the year 8,751 ft. was driven for development. Sinking operations are being carried out at No. 1 shaft below the 1,082 ft. level, and a new shaft (No. 3), situated about 1,150 ft. to the east of No. 1, has been commenced. Extensive additions and alterations have been made for the purpose of improving the mechanical handling of ore at the mill.

The operations at the Waihi Extended Gold-mining Company's mine have consisted in the sinking of the shaft to the No. 6 (1,100 ft.) level. At this depth a promising lode 6 ft. wide was proved by a short drive to the westward. At the No. 5 (960 ft.) level, development on the south-east lode proved quartz of low grade. From No. 2 drive a crosscut intersected the south section of No. 2 reef, but upon development the quartz was proved to be unprofitable.

At the Waihi Reefs Consolidated Mine the main shaft was continued to a depth of 914 ft. in favourable country, but operations were suspended owing to lack of money.

The Waihi-Paeroa Gold-extraction Company (Limited), formed for the purpose of extracting bullion from the tailings deposited from the Waihi and Karangahake Mines into the Ohinemuri River, having completed their large treatment plant on the river near Paeroa, the first return was obtained on the 23rd March. As the result of fourteen days' operations, £1,412 14s. 10d. was obtained from 3,845 tons of tailings treated.

Karangahake Goldfield.—The Talisman Consolidated (Limited) have again improved upon their previous annual production. From 47,550 tons treated, bullion to the value of £222,058 was obtained, of which £109,307 was paid in dividends. The history of this mine during the past nine years under the superintendence of Mr. Stansfield has been a continuous success, and the developments of recent date furnish satisfactory evidence that this success will continue. At the deepest, or No. 14, level the rich ore-bodies existing in the levels above are again exposed, and carry high values. Winzes from this level have been sunk to a further depth of 62 ft. (or 762 ft. below the Waitawheta drainage adit), and drives therefrom at that depth expose high-grade ore. From the evidence obtained at the deepest workings during my recent inspection of this mine, there is every appearance of the rich shoots of ore living to a considerable depth. Sinking at the Woodstock shaft is proceeding with expedition. The new Cornish electrically driven pump is working satisfactorily, but it will be a considerable time before this shaft reaches No. 14 level, where it is proposed to make a through connection between the Talisman and Woodstock shafts.

New Zealand Crown Mines (Limited): The results obtained from this mine during 1911 show a considerable improvement when compared with the returns for the previous year. Operations during 1911 have been mostly confined to the upper levels of the Welcome and Crown reefs, and but little deep development elsewhere has been carried out. The machinery in connection with the treatment plant is now all electrically driven, and the Waitawheta main adit is lighted by electricity for 1,700 ft.

* During the early part of 1912 another dividend was declared.

Thames Goldfield.—Mining operations at the once-famous Thames Goldfield during 1911 have not been very satisfactory, and the annual decline in the value of gold produced has continued. The most important operations consist in the crosscut now being driven at the 1,000 ft. level to connect the Queen of Beauty and Kuranui-Caledonian shafts. At the beginning of June of the current year this crosscut had been driven 2,000 ft., being a distance of 400 ft. within the boundary of the Waitotahi Company's ground, and leaving a further 670 ft. to be driven to complete the crosscut to the terminal point, which at the present rate of progress should be arrived at during 1912. From the 1,000 ft. crosscut, levels have been driven upon small quartz-veins intersected in the Saxon and May Queen ground, but, although gold is reported to have been seen in the quartz, the results hitherto have been unimportant. The country, however, appears to be of favourable character, and some important development may at any time be announced.

On the **Coromandel Goldfield** a number of small mines produced a little gold. From the Old Hauraki Gold-mining Company's mine bullion to the value of £4,019 was obtained as the result of stoping on the new reef at the 300 ft. and 400 ft. levels.

In both the Thames and Coromandel Counties mining is slowly being superseded by agriculture. Dairy-factories have been established, and the occupation of the people formerly engaged in mining is undergoing a gradual change. The same feature is observable on many other of the older mining-fields of the Dominion which are approaching depletion—notably, on the West Coast, in Otago, and in Southland.

West Coast Inspection District.

New Big River Gold-mining Company (Limited): This company experienced a very successful year. From 6,913 tons of ore £28,062 was obtained, and £13,200 was paid in dividends. Mining operations were chiefly confined to the No. 10 (1,575 ft.) level, and at its south-easterly end a short crosscut developed a lenticular ore-body of somewhat limited extent. At the northern end of the same level the reef was intersected and driven upon. Stoping was also carried out at upper levels.

Progress Mines of New Zealand (Limited): The most important operations at the Progress Mine during the year have consisted in underground exploration for the recovery of the lost lode at the No. 11 (416 ft.) level, which operations have been planned, and are being carried out, in a systematic and scientific manner; and there appears to be a reasonable prospect of success.

Operations at the **Wealth of Nations Mine (Consolidated Goldfields of New Zealand (Limited))** were confined to development at levels Nos. 9 and 10 (1,611 ft. and 1,736 ft. respectively), and to stoping between levels No. 7 (1,365 ft.) and No. 10.

Blackwater Mines (Limited): The result of the year's operations has been very satisfactory, a slight increase in the production being recorded. As the result of treating 44,038 tons of ore, £92,062 was obtained; £37,496 being paid in dividends. The total cost of production was extremely low—namely, £1 1s. 6d. per long ton—comparing favourably with the cost at any mine in the Dominion. The main shaft has been sunk to the sixth level. Levels Nos. 4 and 5, 615 ft. and 765 ft. respectively, have been extended, proving the lode to maintain its average width and assay value.

In **Otago and Southland** auriferous quartz-mining operations have been unimportant. The principal lode-mining work has been confined to scheelite, although gold also is found in the scheelite-bearing quartz. A brief report on such operations is contained in this report under the heading of "Scheelite," and a more detailed account is presented by Mr. T. Thomson, Inspector of Mines (Annexure A).

(2.) DREDGE MINING.

From the following table, showing the result of gold-dredging during the past six years, it will be noted that, although there is a decline in the total gold-production and in the number of dredges in commission, the value of the production per dredge is higher than usual:—

Year.	Total Number of Dredges working.	Value of Production.	Average Production per Dredge.	Dividend-paying Dredges owned by Registered Companies.		Number of Persons employed.
				Number.	Dividends.	
		£	£		£	
1906 ..	167	505,199	3,025	66	103,722	..
1907 ..	128	419,634	3,278	65	89,707	1,150
1908 ..	123	373,818	3,039	47	75,800	1,013
1909 ..	111	327,676	2,952	37	56,788	893
1910 ..	104	315,237	3,031	35	51,918	838
1911 ..	93	297,900	3,203	31	45,318	775

Of the above ninety-three working dredges, fifteen are operating on the west coast of the South Island, and seventy-eight are in Otago.

The dividends paid by thirty-one dredges, the property of registered companies, amounted to £45,318 during 1911; the profits of privately owned dredges are unobtainable.

The following is a statement regarding the most productive dredges owned by registered companies:—

Name of Dredge.	Production during 1911 of all Dredges.	Dividends paid by Dredges owned by Registered Companies.	
		During 1911.	To 31st December, 1911.
West Coast District—	£	£	£
Stafford	3,723	404	3,287
Hessy, Cameron, and Tacon (Limited) ...	3,859	1,470	4,695
Worksop	16,284	9,300	15,900
No Town Creek	7,486	5,400	34,200
Pactolus	5,144	1,875	62,500
Blackwater River	6,728	2,605	11,494
Southern District—			
Crewe (2)	3,908	250	6,375
Waikaka Syndicate	5,180	2,450	22,750
Koputai	4,338	1,235	12,537
Earnsclough (3)	9,193	550	24,750
Masterton	3,767	1,250	31,500
Hartley and Riley	3,559	650	83,687
Golden Bed	5,896	1,922	15,269
Rise and Shine (2)	8,607	1,200	35,100
Rising Sun	6,439	2,200	16,000
Magnum Bonum	4,368	1,812	8,875
Electric (2)	10,922	3,250	126,092
Paterson's Freehold (2)	7,244	1,800	15,000
Otago (2)	4,512	250	17,375
Manuherikia	4,924	1,058	33,445
Dredge No. 909	7,251	2,250	3,750
Willowbank	4,491	1,600	2,000
64 other working dredges (registered or privately owned)	158,586	417	...
Totals	296,409	45,198	...

The fifteen West Coast dredges are situated in the following localities—namely, eight on tributaries of the Grey River, two on the Buller River, and one at each of the following places: Capleston, Cronadun, Brennan's Creek, North Beach (Cobden), and Waimea. The most profitable dredging operations in the Dominion were carried out by the Worksop dredge at Antonio's Flat, which obtained gold to the value of £16,284, and paid £9,300 in dividends. The No Town Creek earned £7,486, of which £5,400 was distributed in dividends.

In Otago and Southland the fleet of seventy-eight dredges is distributed as follows: Waikaka Valley, 17; at or near Alexandra, 14; Waikaia, 8; at or near Cromwell, 5; Miller's Flat, 4; Lowburn Ferry, 4; Nevis, 4; Charlton, 3; two at each of the following places—Chatto Creek, Waipori, Glenore, Cardrona, Roxburgh, and Ettrick; and single dredges are working at Island Block, Shingle Creek, Bald Hill Flat, Poolburn, Kyeburn, Waimumu, and Kelso. None of the southern dredges, the property of registered companies, were so profitable to their owners as the two West Coast dredges quoted. The most noteworthy feature of the year in connection with the dredging industry in the south has been a renewal of activity in the Waikaka Valley, where a deep lead has been located by keystone drilling, and a dredge is being constructed by the Waikaka United Company to work the deep ground thus proved. This dredge is designed to operate to a depth of 55 ft. below water-level.

At Waikaia, in Otago, the Mystery Flat Gold-dredging company is engaged upon operations which constitute a departure from former gold-dredging practice. After dredging all the available river-flat, this company's dredge is now working its way up the gentle slopes of the surrounding foothills and terraces. To do this, water has been brought on to the claim by a race of about two miles and a half in length, and at an elevation of about 50 ft. above the river-level. The dredge floats in a "paddock" supplied by this race, and continually stacks its tailing behind, forming a dam to maintain the level of the water in the paddock. As the ground is shallow, a tailing-elevator is not required, the material being passed through a sluice-box. When first attacking the slopes it was found that the tailing embankment could not be raised with the ascent of the ground until a low dam was first built to hold the bulk of the tailing. Once started in this manner, the tailing keeps building an efficient embankment for the paddock. At present the dredge is about 30 ft. above the river-level, and it is proposed to work up to the water-race. After reaching that level, pumping will be necessary to keep the paddock full, for the proposed scheme is, if possible, to work over a low saddle at an elevation of about 50 ft. above the level of the water-race, and so into another gully down which the dredge will work its way to the river again. From the progress already made it would appear that this method of working is quite feasible, and, though in this case it is intended to rise only about 100 ft., there is no reason why this method should not be applied to even greater heights, and so render available ground hitherto considered unworkable owing to the lack of high-pressure water for sluicing. The immediate future of these operations will be watched with interest.

(3.) ALLUVIAL MINING.

The abundant rainfall during 1911 permitted more continuous sluicing operations than have been experienced during recent years, with the result that there has been an increase in the value of the gold-production from this source amounting to £86,752, the total production being £275,216, obtained from 277 claims, upon which 2,452 persons were ordinarily employed.

On the West Coast the Mont d'Or Mining Company, at Ross, was unfortunate, owing to the collapse of a tunnel conduit, which delayed sluicing for a lengthy period. Notwithstanding this, however, from between three and four months sluicing subsequently, gold to the value of £3,493 was obtained, and £1,800 was distributed in dividends. The total dividends paid by this company now amount to £51,600.

In the neighbourhood of Kumara, at Westbrook and Maori Point, the claim-holders have been engaged in making preparations for the utilization of a greatly increased water-supply, owing to the extension of the Kumara (Government) Water-race by inverted siphon of 30 in. bore across the Tara-makau Valley, a distance of 2 miles 1 chain. This siphon delivers 36 cubic feet of water per second into the distributing water-race, which traverses the higher terraces above the claims, and with its high-level storage-dam will be capable of supplying 50 cubic feet of water per second for twelve hours each day. The sluice-gates admitting water from the head-race to the siphon were officially opened on the 12th April, 1912, by the Hon. James Colvin, Minister of Mines. Some illustrations of interesting features in the main accompany this report.

Details as to the year's operations at the respective alluvial claims throughout the Dominion are contained in the reports of the Inspectors of Mines (Annexure A). The following is a list of the most profitably worked alluvial gold-mining claims the property of registered companies, also the production therefrom and the amount of dividends declared :—

Name of Company.	During 1911.	
	Value of Gold produced.	Dividends declared.
	£	£
Mont d'Or Gold-mining Company	3,493	1,800
Round Hill Mining Company	6,743	1,130
Nokomai Hydraulic-sluicing Company	9,007	600
Undaunted Gold-mining Company	2,054	375
Ladysmith Gold-mining Company	1,935	496
Golden Crescent Sluicing Company (Limited)	2,400	875
Havelock Sluicing Company	3,989	1,400
Deep Stream Gold-mining Company	928	312

From the foregoing it will be seen that the profits from alluvial mines are generally inconsiderable. The theory frequently advanced that poor ground may be worked profitably if only a large volume of water is conveyed thereto has frequently proved fallacious. The construction of large and sometimes lengthy conduits to the claims often necessitates a greater capital-expenditure than may be recovered from the low-grade wash, and work is frequently intermittent, owing to the irregularity of a large water-supply, which is always dependent upon copious rainfall.

V. MINERALS OTHER THAN GOLD.

SHEELITE.

The quantity of scheelite exported during the year amounted to 138 tons, valued at £11,853, as compared with 143 tons, valued at £15,070, in 1910. The main sources of supply are Glenorchy (Lake Wakatipu) and Macrae's (Otago). The following statement shows the quantity and value of scheelite exported since the year 1899 :—

Year.	Quantity.	Value.	Year.	Quantity.	Value.
	Tons.	£		Tons.	£
1899	32	2,788	1907	137	15,486
1900	54	2,635	1908	68	6,055
1901	2	83	1909	58	4,263
1902	39	1,200	1910	143	15,070
1903	42	1,439	1911	138	11,853
1904	17	791	Total ..	813	66,918
1905	28	1,848			
1906	55	3,407			

The Glenorchy Mine produced 63 tons, valued at £6,080, and the Golden Point Mine (Macrae's, Otago) produced 20 tons, valued at about £1,800.

The Dominion Consolidated Developing Company, near Wakamarina, Marlborough, produced scheelite to the value of £225.

During 1911 there was a marked decrease in the production of tungsten throughout the world, due largely to the lack of a wide market for tool-steel, in which tungsten finds its chief use. In the United States there was produced 1,125 short tons of 60 per cent. concentrates, which compares with 1,821 tons marketed in 1910. In New South Wales the output declined from 150.6 to 108.45 tons over the same period. During 1911 the prices varied from 18s. 9d. to £1 15s. 5d. per unit, depending upon quality, quantity, and individual bargaining. At the close of the year £1 0s. 10d. per unit was offered.

In Canada, the United States, and New South Wales scheelite is found in pockets, from which the ore is gouged. In New Zealand, especially in the Macrae's district, well-defined scheelite-quartz reefs of varying thickness have been discovered, and the scheelite is generally associated with gold; but where the finest deposits occur gold is scarce.

During the year the Highlay Tungsten Mine, which was developed and successfully operated for several years by Messrs. Donaldson Bros. (the pioneers of the scheelite industry in this Dominion), was sold to a Christchurch syndicate, who have since carried out operations on a larger scale.

Owing to the activity now being displayed in the development of scheelite-producing mines, a considerable increase in the production of scheelite may be anticipated, unless the market-price continues to fall.

IRON.

With the exception of a few men employed putting in short drives to ascertain the thickness of limonite at Parapara, little or no development was carried out on any of the ironstone leases. During the current year an experimental plant was installed at Moturoa, Taranaki, for the Paparoa Iron Company for the treatment of the black-sand from the sea-beach. The plant consisted of a small blast-furnace equipped with a Root's blower driven by gas-engine, also a small briquette plant which was to be used in the preparation for the furnace of the iron-sand mixed with clay as a bond and flux.

KAURI-GUM.

The quantity of kauri-gum exported during the year amounted to 7,587 tons, valued at £395,707, as compared with 8,693 tons, valued at £465,044, in 1910. The total production of this fossil resin to the end of 1911 amounted to 314,087 tons, valued at £15,809,152.

The market price for this mineral continues to decline slowly, and as the demand for general labour in New Zealand increases, the occupation of gum-digging upon the barren country north of Auckland becomes less attractive, and but few men are now so occupied in comparison with the number engaged during former years.

PETROLEUM.

The development of the oilfields in the Taranaki, Lake Brunner, and Poverty Bay districts has been energetically pursued, but the evidence obtained has not yet been conclusive that petroleum exists in sufficient quantity to be remunerative. The most promising developments have been obtained upon the areas at Moturoa, controlled by the Taranaki Petroleum Company (Limited). In addition to the flowing wells Nos. 2 and 3 (3,030 ft. and 3,797 ft. deep respectively), at No. 5 well (2,280 ft.) oil was tapped in the early part of the current year, and from the quantity already yielded by it, this appears to be the most productive well hitherto drilled.

On the 3rd May, 1911, I gauged the oil won by this company and found that 266,392 gallons of crude petroleum, containing an average of 97 per cent. of distilled oils, had then been impounded. The company thus succeeded in winning the bonus of £2,500 offered by the Government for the first quarter million gallons of crude petroleum of specified quality won within the Dominion. On the 25th March, 1912, the quantity of oil won was again gauged by me, and it was found to have increased by 155,583 gallons, the yield having averaged for 325 days 479 gallons per day, equivalent to 11½ barrels. This oil was produced by wells Nos. 2, 3, and 5, but the latter well only became productive a few weeks before the last official gauging took place. Between the date of my last gauging on the 25th March and the 16th May, 1912, from all three wells 39,653 gallons was yielded, which represents an average of 18 barrels per day.

This company has recently been refloated in New Zealand and renamed the Taranaki Oil-wells (Limited), with a capital of £400,000, 275,000 shares of £1 each at par being subscribed for. The proposed operations consist of the erection of a refinery, drilling additional wells, and the conversion of a small local industry into a modern oilfield business, with head offices in London.

The above development is extremely satisfactory, but before a profitable oilfield business may be established it will be necessary to prove that oil in large quantity exists. Hitherto the development has proved that oil of excellent quality exists in moderate quantity; but there is reasonable possibility that an increased supply will be tapped.

Drilling operations by the Kotuku Oilfield Syndicate, near Lake Brunner, have not been so successful. At a site selected by Dr. J. Wanner, an oil geologist, and recommended by the Geological Survey Department,* a hole was drilled during the year through rocks of Miocene age to a depth of 952 ft., at which depth primary rocks were reached, and drilling was discontinued, as any further attempt to secure oil at that locality would be futile. Small but regular quantities of petroleum are still yielded along the banks of Deep Creek, within the territory of this syndicate.

Oil-drilling operations during the year by the New Zealand Oilfields (Limited) at Poverty Bay have not produced successful results.

From the foregoing it will be seen that the oil industry in New Zealand is still in the exploration stage.

* Bulletin No. 13, "The Geology of the Greymouth Subdivision," by P. G. Morgan, Director, pages 148-149.

VI. VENTILATION AND HYGIENE.

With the attainment of considerable depth in metal-mining operations, and consequent increasing underground temperatures, together with the more extensive use of rock-drills and explosives, the necessity for a stricter standard of ventilation than that at present established by statute appears to be necessary, and this view has been taken by the Royal Commission on Mines, which presented its report during the early part of the current year.

Samples of mine-air taken by officers of the Mines Department from the most important mines throughout the Dominion, and analyzed by the Dominion Analyst, have shown that, as regards purity of the air, the conditions are generally satisfactory in New Zealand metal-mines. It was found that under the most unfavourable mining conditions—namely, when shovelling commenced after blasting—the maximum quantity of carbon-monoxide obtainable was—at the Waihi Mines, 0.0025 per cent., and from the Reefton Mines, 0.008 per cent.; and as Dr. Haldane, the recognized British authority, has stated that noticeable symptoms of carbon-monoxide poisoning were never produced with less than 0.02 per cent., since absorption ceased when the blood became saturated to a comparatively slight extent, it may reasonably be concluded that this gas is not produced in our metal-mines, under normal conditions, in hurtful quantities, and is never produced unless accompanied by carbon-dioxide.

The highest percentage of carbon-dioxide—namely, 3.31 per cent.—was obtained at Thames from a sample taken at the 1,000 ft. crosscut, where this gas occasionally issues from the rocks in considerable quantity. The maximum percentage of carbon-dioxide obtained elsewhere was 0.97 per cent., being less than the standard, 1.25 per cent., recommended by the British Royal Commission on Mines as a proportion up to which men may be permitted to work.

It will be seen, therefore, that from the point of view of noxious gases, New Zealand metal-mines are generally satisfactory.

The question of underground temperatures, however, is, on the Hauraki Goldfield, becoming of more importance as depth is attained. It has been found that the rock-temperature at Thames and Waihi is high, equal, in fact, to that of Comstock, United States America, being at the 1,000 ft. level about 83° Fahr., and the increment of temperature about 1° Fahr. for every 33 ft. descended.

As regards humidity, official observations taken at the surface over an extended period show the atmosphere at Waihi and Thames to be often highly saturated, and observations taken underground by officers of the Mines Department show the mine-air to be generally saturated to the extent of 90 per cent. or more. On occasions when the air at the surface is saturated to a similar extent, the impossibility of reducing the humidity in the mine is apparent.

For the purpose of reducing the temperature of rock-surfaces, a greater volume of air is necessary than is required to produce, from a quality standpoint alone, adequate ventilation; but the extent to which underground temperature may be reduced by this means has its limits, although, if the upcast shaft is centrally situated with regard to the mine-workings, much may be attained. The beneficial effect of constant mechanically produced ventilation has been amply proved by the reduction in the temperature of the rock-surfaces in the lowest levels of the Grand Junction Mine, Waihi, where a Sirocco fan, having a capacity of about 40,000 cubic feet of air per minute, was recently installed to supplement intermittent natural ventilation; similar beneficial results have also been obtained at Thames Goldfield deep levels, where there has been installed a Roots blower, of 12,000 ft. capacity.

For the reduction of humidity at the Comstock mines, in addition to the introduction of large volumes of fresh air, the underground crosscuts and levels in which water existed were frequently lined with timber, and the drainage-water was conveyed in boxes, which measures were found beneficial. With the attainment of depth it may eventually be found necessary to adopt similar methods here.

The following proposed standard of ventilation has been recommended by the Royal Commission for metal mines in New Zealand:—

“An adequate amount of ventilation shall be constantly produced in every mine to dilute and render harmless noxious gases to such an extent that all shafts, crosscuts, levels, stopes, stables, and all working-places shall be in a fit state for working and passing therein.

“The quantity of air in the main current and in every split, and at such points as may be determined by the Inspector, shall at least once in every month be measured and entered in a book to be kept for the purpose at the mine, and the ordinary number of persons and horses in each split at one time shall also be entered in such book.

“For the purposes of this section a place shall not be deemed to be in a fit state for working or passing therein if the air contains more than 1 per cent. of carbon-dioxide or less than 19 per cent. of oxygen: Provided that the Minister of Mines may exempt any mine or mines from the foregoing provision on the ground that they are liable to unavoidable vitiation by carbon-dioxide from the rocks during the early stages of development.

The maximum temperature of the air in any working-place, measured by a wet-bulb thermometer, shall not exceed 80° Fahr., unless firing of explosives has occurred in such place not more than twenty minutes previous to the observation of the thermometer, but the Inspector may, in writing, allow a higher limit of temperature if satisfied that it is impracticable to maintain the temperature below the above-mentioned standard, in which case the Inspector shall notify the manager in writing to reduce the temperature of the air below the standard, and if such is not complied with within seven days he shall determine the number of hours, not exceeding six, for which any person shall be employed in any such working-place within eight consecutive hours, and the number of hours so determined shall not be exceeded for a period of three calendar months whatever the temperature may be during that period.

“Regulations under the Mining Act shall provide for the classification of mines according to the amount of noxious gases in the working-places and to the temperature of the surrounding rocks, and the amount of air passing into a mine shall be such amount proportionate to the number of men and animals employed underground in the mine as may be prescribed by the regulations respecting mines of the class to which the mine belongs.

"All air-measurements for the purpose of this classification shall be taken at the entrance to each ventilating-section, and shall there be no less in volume than the minimum statutory allowance per man and horse per minute. The total number of men ordinarily employed in any ventilating-section shall not exceed fifty.

"The obligation imposed by this section shall be in addition to, and not in substitution for, the obligation to provide an adequate amount of ventilation imposed by the foregoing paragraphs.

"Proposed Regulations under the Mining Act.

"These regulations to classify mines as follows:—

"Class A: All mining operations on Thames and Waihi goldfields below the 800 ft. level, 200 cubic feet of air per man per minute minimum, 500 cubic feet per minute for each horse.

"Class B: Other metal-mining operations, 150 cubic feet per man per minute minimum, 500 cubic feet per minute for each horse."

Change and Bath Houses for Miners.—With regard to the question of providing change and bath houses at mines, the Royal Commission report that they found the request for the same to be quite unanimous. The medical evidence also emphasized the necessity for such a provision in the interests of the general health and as a particular preventive against miners' phthisis. The constant exposure of men to warm temperatures underground renders a sudden change, in wet clothing, to colder conditions above ground injurious to health. It is therefore of primary importance that men should be able to change their wet clothing immediately on coming out of the mines under conditions of reasonable comfort. In mining communities it is, for the most part, impossible for miners' dwellings to be supplied with bathing-accommodation. To meet this want the Commission recommend that both change and bath-houses be provided at mines.

The Commission also report that the suggestions as regards baths and change-houses given in evidence by the miners throughout the Dominion were generally favourably received by the mine-owners and managers, who recognized that the benefits accruing to the men from such facilities are in the interests of the industry. The consensus of opinion among the witnesses who represented the workers was, however, adverse to the proposal that the use of baths should be made compulsory. In order that small mines should not be unduly burdened, the Commissioners recommend that a limit should be made in the number of men employed to define where bath-accommodation should be provided, but that there should be no limit so far as change-houses are concerned.

The following are the final recommendations of the Commission as regards bath and change houses:—

- "That bath-houses be erected at all metal-mines, excepting those employing ten men or under and all open alluvial mines.
- "That change-houses be provided at all mines.
- "That change and bath houses to be erected be in accordance, as near as possible, with the plan annexed to the Commission's report.
- "That the hook-and-pulley system is the best design from a hygienic point of view and as a means of keeping each man's clothes separate.
- "That the floor-space in every change-room be not less than 12 square feet for each man.
- "That where change-houses already exist they be fitted with hooks and pulleys within eighteen months.
- "That bath-houses be fitted with hot and cold showers, hand-basins, with an adequate supply of water, and suitable tubs for the men to wash their clothing.
- "That there be one shower-bath and one basin for every five men employed underground on the largest shift at one time.
- "That two-fifths of such shower-baths be partitioned off to secure complete privacy.
- "That the floors of every bath-house shall be of concrete and properly drained.
- "That the cost of erection, care, and management of change and bath houses be borne by the mine-owners.
- "That the change and bath houses be under the control of a caretaker, whose duty it shall be to keep the same clean and attend to the drying arrangements.
- "That no mine-owner shall be compelled to erect bath-houses until a vote be taken of the miners working underground in the mine, nor unless 75 per cent. of the men where the number is twenty or under, 50 per cent. where the number is fifty or under, and 30 per cent. where the number is over fifty, request the erection of the same.
- "That if satisfactory use is not made of the baths the manager may give notice to the workmen's inspector that he proposes to take a tally of the men using the baths for a period of one month, and if it is found that the total number using the baths is less than 20 per cent. of the men employed underground where the number does not exceed fifty, and 30 per cent. of the number who voted for the erection of the baths when the number exceeds fifty, it shall be optional with the manager whether he keeps the baths open or not.
- "That if the baths are closed under the powers of the preceding clause no vote shall be taken to reopen the same for at least three months.
- "That if a tally be taken under clause 14 by the manager full facilities shall be given to the workmen's inspector to take a similar tally over the same period."

Miners' Phthisis.—From the evidence given before the Commission by medical men and by miners, also from official statistics, the Commissioners reported that it is apparent that miners' phthisis has not in New Zealand assumed such proportions as indicated by the returns from Cornwall, Bendigo, Queensland, West Australia, and the Transvaal, and they believed that if the remedial measures recommended by them were adopted the disease might be much reduced, if not entirely eradicated from the Dominion.

The following is a return from the Registrar-General's Department showing the mortality per whole population of males from pneumoconiosis and miners' phthisis:—

	1910.	1909.	1908.
Pneumoconiosis	9	6	1
Miners phthisis	1	10	2
Totals	10	16	3
Proportion per 10,000 males	0.19	0.29	0.059
Assuming all deceased were quartz-miners (surface or underground workers) the proportion per 10,000 would be	23.1	42.9	7.2

Preventive Measures.—Under the existing statutes the compulsory use of sprays or water-jets is necessary where machine drills are used. Improved ventilation of mines is elsewhere recommended, as is the use of bath and change houses. The prevention of indiscriminate spitting and the destruction of tuberculous sputum should be compulsory. Definite treatment of those affected with tuberculosis of the lungs in an advanced form is already provided for in this Dominion; and the exclusion from work underground of all persons infected with tuberculosis of the lungs is advisable.

In addition to the foregoing measures already in existence or considered advisable, the Commissioners were of opinion that every working-place where rock-drills are in use should be furnished with an approved waterblast or atomizer for laying the dust, smoke, and gases after a blast, and that no man should return to an end, rise, winze, or other close place until the air is free from dust, smoke, and fumes caused by blasting.

Measures of Relief.—The following additional measures of relief were recommended by the Commissioners:—

“That miners suffering, or suspected to be suffering, from fibrosis or superimposed tuberculosis of the lungs shall have free medical advice from the Government, such advice to be given by a medical expert appointed for the purpose.

“That in addition to the homes and sanatoria already established, adequate relief be provided from the Gold-miners' Relief Fund for those suffering from miners' phthisis, which for that purpose shall be subsidized £1 for £1 by the Government.

“The qualifications for the above measures of relief to be five years' residence in New Zealand immediately prior to the application for relief, two years and a half of which shall have been occupied in mining underground or working at a crushing-mill in New Zealand.”

VII. STATE AID TO MINING.

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, 1912:—

	Subsidies.			Direct Grants.		
	£	s.	d.	£	s.	d.
Whangaroa County	..	..	..	100	0	0
Coromandel County	..	..	..	3,485	5	2
Thames County	262	15	0	4,959	1	5
Thames Borough	350	0	0	537	10	2
Ohinemuri County	130	0	0	2,684	12	0
Piako County	..	..	..	78	6	3
Pelorus Road Board	..	..	..	555	13	0
Collingwood County	..	..	..	1,303	2	0
Takaka County	..	..	..	1,321	8	3
Waimea County	..	..	..	100	0	0
Buller County	75	0	0	8,511	5	3
Inangahua County	139	13	2	2,257	17	11
Murchison County	..	..	..	553	9	10
Grey County	65	0	0	1,858	10	0
Brunner Borough	..	..	..	331	0	9
Westland County	17	15	0	4,777	17	2
Ross Borough	..	..	..	429	8	8
Mackenzie County	196	0	0	..	..	..
Tuapeka County	100	0	0	800	0	0
Vincent County	250	0	0	904	10	2
Lake County	..	..	..	939	0	0
Wallace County	..	..	..	442	0	0
Southland County	200	0	0	976	18	5
Public Works Department	..	..	..	974	5	10
Land and Survey Department	..	..	..	400	0	0
	1,786	3	2	39,281	2	3

PROSPECTING FOR GOLD.

The following statement shows the expenditure on authorities issued in subsidies to prospecting associations and parties of miners in the different counties for the year ended the 31st March, 1912 :—

Name of County, &c.	Expenditure for the Year ending 31st March, 1912.		
	£	s.	d.
Coromandel	463	15	0
Thames	11	0	0
Ohinemuri	415	17	3
Whakatane	24	0	0
Inangahua	232	15	0
Takaka	49	0	0
Grey	260	2	6
Westland	1,349	7	0
Ross Borough Council	327	12	6
Waihemo	18	7	6
Lake	10	8	0
Prospecting associations, &c.	371	10	3
	£3,533	15	0

GOVERNMENT PROSPECTING DRILLS.

Three diamond drills of Schram-Harker type, with a boring-capacity of 2,500 ft., 1,500 ft., and 500 ft. respectively, also two Keystone traction placer drills of 350 ft. capacity, are lent out by the Government to mining companies and local bodies free of charge. The borrowers have, however, to keep the machines in good order, and pay all expenses and wages in connection therewith, including those of the Government Superintendent of the drill.

There has been a considerable demand for these machines, and their introduction has been amply justified. Another diamond drill, of Sullivan (C.N.) type, having a capacity of 800 ft., is under order from America for this Department.

The following table shows the work done by Government prospecting drills during 1911 :—

Type of Drill.	Name of Superintendent.	To whom lent.	Minerals sought for.	Number of Holes drilled.	Approximate Depth drilled.	Diameter of Hole.	Character of Country penetrated.	Average Total Cost per Foot, including Transport.
No. 3—Diamond (Schram-Harker type)	W. Warburton	Seddonville State Colliery	Coal ..	7	Ft. 978	In. 2½	Mudstone and grit	s. d. 11 0½
No. 2—Diamond (Schram-Harker type)	W. Carter ..	Romulus Syndicate, Waihi	Gold ..	3	523	4½	Crushed dacite (would not core), extremely difficult drilling	20 11
		Westport Harbour Board	Coal ..	1	334*	5½	Blue clay, containing boulders (will not core)	..
No. 1—Keystone	T. McMath ..	Various Central Otago dredging claims	Gold, alluvial	23	1,161½	6	Gravel, mostly of schist; easy to drill	2 7½
No. 2—Keystone	G. E. D. Seale		Ditto ..	14	668	6		3 9
	G. E. D. Seale		North Westland alluvial-mining claims	44	1,964	6	Gravel, consisting of grauwacke and large granite boulders; very difficult to penetrate with drive-pipe	4 5

* Still in progress.

VIII. SCHOOLS OF MINES.

The decline in the number of students attending the schools of mines still continues. This is especially noticeable in the colliery districts, where but few young men attempt to better their position by a course of lectures and study. The advantages to be gained by attending the excellent schools of mines in New Zealand are clearly shown in the report of Professor James Park, Director of the Otago School (see Section VIII, Annexure C, accompanying this report). Professor Park states that at the present time thirty-seven of his old students are profitably employed in mining and engineering in New Zealand. Of these, no less than fourteen hold official appointments in connection with the Mines and Geological Department of the State. Professor Park also gives a list of nineteen old Otago graduates who are at present holding high positions in the mining industry in foreign parts. For two years in succession the forty-guinea premium presented by the Institution of Mining and Metallurgy, of London (the most exclusive mining institute in the world), has been won by his ex-students—namely, Dr. A. Moncrief Finlayson, in 1911, and Mr. Alexander McLeod, in 1910. This is one of the principal awards given by this institution, and is open to its members and associate members. To those at all sceptical as to the benefits of the training to be obtained from our schools of mines I strongly recommend perusal of the report by Professor Park.

The Government annual examinations of the students attending the schools of mines throughout the Dominion (excluding the Otago School, which, being connected with the University of Otago, holds separate examinations) were held in December, 1911, the following being a summary of the results by senior students from each school, arranged in order of seniority in average marks obtained:—

Locality of School of Mines.	Average Marks awarded per Paper submitted.	Number of Students examined.	Number of Papers submitted.	Total marks awarded.
	Per Cent.			
Karangahake	62.43	12	30	1,873
Reefton	59.75	10	16	956
Waihi	52.59	26	47	2,471
Thames	48.81	24	44	2,148
Coromandel	48.54	4	11	534
Totals, 1911 ..	53.93	76	148	7,982
„ 1910 ..	57.9	112	186	10,774

Upon comparison with the results obtained at the examination for the previous year, it will be seen that the quality of the work has been about maintained, but there has been a decline of 30 per cent. in the number of students presenting themselves for examination.

EXPENDITURE ON SCHOOLS OF MINES.

The following table shows the expenditure by the Government on schools of mines since their inception, exclusive of subsidies paid to the University of Otago towards the School of Mines in connection with that institution:—

Financial Years.	Subsidies towards the Erection of Schools of Mines, and Maintenance.	Chemicals and Apparatus, also Mineralogical Specimens supplied to Schools of Mines.	Scholar- ships.	Salaries of Teachers, and Travelling- expenses, &c.	Total Sum paid by the Depart- ment towards the Schools of Mines.
	£ s. d.	£ s. d.	£	£ s. d.	£ s. d.
1885-86	...	36 19 9	...	1,223 9 10	1,260 9 7
1886-87	257 16 6	409 1 4	...	2,716 9 3	3,383 7 1
1887-88	253 15 9	253 14 1	...	1,714 9 6	2,221 19 4
1888-89	42 10 0	6 12 9	...	1,139 4 1	1,188 6 10
1889-90	142 2 0	181 14 10	...	716 3 10	1,040 0 8
1890-91	217 6 6	54 8 0	...	620 9 9	892 4 3
1891-92	181 14 0	...	...	689 5 9	870 19 9
1892-93	312 3 4	...	...	670 1 0	982 4 4
1893-94	197 0 5	...	...	858 19 4	1,055 19 9
1894-95	390 0 0	45 10 10	...	773 17 8	1,209 8 6
1895-96	820 0 0	...	50	849 3 0	1,719 3 0
1896-97	352 14 11	58 18 6	100	834 12 8	1,346 6 1
1897-98	1,089 18 6	29 19 9	100	780 19 0	2,000 17 3
1898-99	740 15 2	32 19 7	50	729 10 11	1,553 5 8
1899-1900	990 3 4	24 3 8	50	52 16 3	1,117 3 3
1900-1901	866 10 11	56 3 4	98	77 7 10	1,098 2 1
1901-1902	1,155 12 3	63 5 1	49	69 16 4	1,337 13 8
1902-1903	1,379 15 6	134 18 8	158	111 0 0	1,783 14 2
1903-1904	1,575 15 3	88 18 8	92	109 15 10	1,866 9 9
1904-1905	1,401 2 11	17 3 0	100	362 19 6	1,881 5 5
1905-1906	1,806 19 5	87 2 1	49	440 9 4	2,383 10 10
1906-1907	1,836 6 6	11 15 8	100	388 18 5	2,337 0 7
1907-1908	2,428 19 3	94 6 2	150	345 15 11	3,019 1 4
1908-1909	2,738 11 1	328 9 3	100	642 9 4	3,809 9 8
1909-1910	1,882 2 6	692 2 8	100	587 3 2	3,261 8 4
1910-1911	2,813 0 10	44 5 8	108	121 9 2	3,086 15 8
1911-1912	1,852 19 11	38 9 9	92	126 6 7	2,109 16 3
Totals ...	27,725 16 9	2,791 3 1	1,546	17,753 3 3	49,816 3 1

I have, &c.,

FRANK REED,

Inspecting Engineer of Mines.

ANNEXURE A.

REPORTS OF INSPECTORS OF MINES.

The INSPECTOR OF MINES, Waihi, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Inspector of Mines' Office, Waihi, 31st March, 1912.

I have the honour to present my report on the gold-mining industry in the Hauraki Mining District for the year ended the 31st December, 1911.

Waihi Gold-mining Company (Limited) (J. L. Gilmour, Mine-manager).

The following is a description of the most important works carried out on the Nos. 8, 9, and 10 levels during the year :—

No. 10 Level (1,151 ft.).—The north crosscut from No. 5 shaft was extended from 200 ft. to 1,120 ft. from No. 5 shaft. From 670 ft. to 700 ft. is the Empire lode (30 ft. wide). At 1,040 ft. the Martha lode was met and proved to be 45 ft. wide.

Martha lode, south section : A length of 274 ft. has been developed on this lode, 153 ft. of which is east and 121 ft. west of No. 5 shaft north crosscut. For the length so far opened up the Martha lode is poorer in quality, and much smaller in width, than the corresponding length on the No. 9 level.

Empire lode : A total of 290 ft. has been developed on this lode, 135 ft. being east and 155 ft. west of No. 5 shaft north crosscut. At 706 ft. in No. 5 shaft north crosscut an irregular body of ore, called the North Branch of Empire, was followed eastward for 85 ft. At 20 ft. east it joins the Empire, and at 70 ft. is separated again by a horse of country 6 ft. wide. At this point it is 14 ft. in width.

South-south-west crosscut from No. 5 shaft has been advanced from 32 ft. to 114 ft. At 107 ft. there is quartz about 2 ft. wide, and it is anticipated that the Royal lode is a few feet ahead of the face of crosscut. The country rock is of good class.

Royal lode : The level has been extended west of No. 5 shaft south crosscut from 483 ft. to 1,060 ft. No driving was done eastward, but the level has been widened for stoping from No. 5 shaft south crosscut to 325 ft. west of same. The level was also widened from 50 ft. to 110 ft. east of No. 5 shaft south crosscut. No stoping has yet been done. Frog, Boa, and Nite passes have been sunk varying distances in partly sulphide ore. Nite and Cobra passes were connected with No. 9 level (1,000 ft.).

Reptile south-east crosscut : This has been extended from a point 137 ft. south-east of Royal lode to 1,216 ft. Several leaders and reefs were intersected, one of which, cut at 1,100 ft., was a nice body of quartz 13 ft. in width. This reef carried very little water, proving that it had been drained in some way by the pumping operations at No. 10 level. Work has been intermittent during the last three months, owing to gas coming out of the reefs and cracks whenever the barometer fell, and, with the Roots blower giving 1,800 cubic feet of air per minute, the gas was not diluted sufficiently to allow candles to burn.

Adder east crosscut was driven a total of 118 ft. from Royal lode. At 20 ft. in, what is evidently the Rex lode was cut, but it was only 15 in. wide at floor of level, and a track of the fissure in the roof.

Rex lode : Cut at 92 ft. in crosscut at 350 ft. east of No. 5 shaft south crosscut. This lode was driven on 43½ ft. south and 24 ft. north.

Empire lode : East of No. 4 shaft north crosscut the level has been extended from 530 ft. to 699 ft. The face is within 63 ft. of the east boundary. Stoping is in progress between Ellis and Power passes at 70 ft. up, and also between Rolker and Paul passes at 40 ft. up from level.

Alexandra lode : East of Rata pass the level was driven a total of 94 ft., where a connection was made to Empire lode.

Edward lode : This lode has been developed for its full length from Welcome junction to Royal junction, making a total length of 820 ft., 600 ft. being south of Perch crosscut, and 220 ft. north of same. From 600 ft. the lode has a westerly course, and is evidently the Royal lode. The lode is about 4 ft. wide at this point. No winzes have been sunk throughout the length of the lode. The level has been widened out for full width of lode for 10 ft. high from the 250 ft. south crosscut to 390 ft. south. The west section of lode has been widened out to full width from Perch crosscut to 150 ft. south, and mostly timbered. South of Perch crosscut on east section a level was driven for 150 ft. north of perch crosscut to 170 ft. point, the level being widened out to an average width of 15 ft., and timbered. Stoping is now in progress south of Trout pass, the first stope over the timbers being in progress.

Welcome lode, south section : The level was driven from Edward junction to No. 2 shaft north crosscut, a length of 149 ft., close to south wall. At 10 ft. east of Edward junction, Rickard crosscut was run north-west a total of 99 ft., to prove the full width of the Welcome lode. The level has been widened out to 12 ft. for stoping.

Martha lode, south section westward : The level was extended from a point 843 ft. west of No. 4 shaft north crosscut to 1,010 ft., where a connection is made to No. 2 shaft north-west crosscut. Eastward the level was extended from 399 ft. to 472 ft. east of No. 4 shaft north crosscut. Stoping is now in operation between Horse and Wheel No. 2 passes over a length of 1,015 ft., and an average width of 18 ft. Most of the above stopes are being broken out on the rill method.

North section : The only work done on this section was to prove if there was any extent of payable ore at the crosscut 200 ft. east of No. 4 shaft. The level was driven east 25 ft., and west 34 ft.

Regina section : Stoping has been started, the first stope taken being 35 ft. east and 20 ft. west of Hedge pass.

No. 8 Level (850 ft.).—Royal lode: Shrinkage stoping-blocks. In the block east and west of Reptile pass the breaking of ore has been done up to 15 ft. of No. 7 level. In the block east of Lizard pass, breaking ore is completed, and the broken ore is being drawn off. All the broken ore has been drawn off in the block east and west of Boa pass. In the block east and west of Frog pass, breaking is completed, and the ore is being drawn off. Nite and Cobra passes have been connected to No. 9 level.

Scorpion south-east crosscut has been driven a total of 1,207 ft. from Royal lode. A Roots blower, with a capacity of 800 cubic feet of air per minute, driven by a motor, was used to ventilate this crosscut.

Edward lode: Stopping is in progress between Sprat pass and Welcome junction at 94 ft. up. In the shrinkage block north and south of Roach pass the ore was broken out to 15 ft. from No. 7 level, and is now being drawn off. Sole pass has been sunk to No. 8 level, the lower part being in payable ore.

Empire lode: Stopping is in progress in two blocks, and a third is about to be started.

Welcome lode: Stopping is in progress between Edward junction and Tulip pass at 99 ft. up. Also east and west of Thistle pass, at 75 ft. up.

Martha lode, north section: Breaking ore in the large shrinkage block east and west of Bullson No. 2 pass was completed in March, and drawing off the broken ore is now in progress. Manning pass was sunk 75 ft. in very hard partly sulphide ore.

South section: Stopping is in progress between Britannia and Wheel No. 2 passes, at 30 ft. up.

No. 7 Level (700 ft.).—Royal lode: The level has been widened out to full width of lode from 400 ft. west of north section junction to 535 ft. west. Reptile pass has been risen a total of 126 ft. The old shrinkage block between Nite and Toad passes is almost filled in.

On **No. 6 Level (550 ft.)** and the levels above the blocks of ground left in to support the levels are being removed. This is being done by driving a new level in the solid country, and the ore is taken out on square sets.

Shafts.—No. 2 shaft was put out of commission for hauling ore from 7th March to 5th August. The shaft was divided into two large winding compartments, so that the cage can take two trucks side by side. A new steel girder pattern head gear was erected, and the shaft is now well equipped, greatly facilitating mining operations. Telephones are installed at all the levels. A start will shortly be made to sink this shaft below No. 9 level.

No. 4 shaft: This shaft was sunk 135 ft. during the year, and is now $1\frac{1}{2}$ ft. below No. 10 level, or a total depth from surface of 1,149 $\frac{1}{2}$ ft. The electric pumps were put in commission on 15th May, and have run continuously since, in conjunction with the B pump. The further sinking of this shaft will shortly be resumed.

No. 5 shaft: Sinking was resumed on 24th October, and 25 ft. has been sunk, making the total depth from the surface 1,180 $\frac{1}{2}$ ft. During the early part of the year the B pump 19 in. plunger was installed at No. 10 level, and several adjustments made to the upper plungers, so as to make a water balance to the main rod above the 1,000 ft. level. On 25th May the pent-up water in the reefs was met, and with both pumps going at maximum safe speed, the water rose 46 ft. above No. 10 level. It was 7th July before No. 10 level was uncovered. The B pump is delivering water to the electric pumps at the 1,000 ft. level. The water has now been reduced to the normal flow, which appears to be about 1,200 gallons per minute.

No. 6 shaft: This shaft has been constantly hauling ore from Nos. 9, 8, and 7 levels. When No. 2 shaft was out of commission the ore was drawn by horses from No. 2 shaft supply to No. 6 shaft. The total depth of this shaft is 1,023 ft.

Approximately, 250,738 short tons of filling material have been obtained from the various filling cuttings on the surface for filling up the depleted stoping areas underground. Five passes are in use for conveying this filling underground, and Sole pass is being sunk to facilitate filling up the stopes on the south end of Edward lode and west end of Royal lode. This pass, which will be completed in a few months' time, is also necessary to improve the ventilation in the south-west part of the mine.

At No. 10 level a considerable amount of development has been done. The Martha, Empire, and Royal lodes have been intersected, but unfortunately the values show a decided falling-off. The Edward and other lodes have still to be developed, and the sinking of No. 5 shaft, which up to date has reached a total depth of 1,230 ft., is being pushed ahead with all speed, in order to test the mine at a greater depth.

At the mills very little alteration has been made, but, owing to reduced tonnage treated, the Union mill was closed down.

Waihi Grand Junction Gold Company (Limited) (W. McConachie, Mine-manager).

The following is a summary of the development-work done: Driving on lodes, 3,353 ft.; Cross-cutting on lodes, 849 $\frac{1}{2}$ ft.; rises on lodes and through country, 990 ft.; winzes on lodes and through country, 1,795 $\frac{1}{2}$ ft.; driving and crosscutting through country, 1,682 $\frac{1}{2}$ ft.; shaft-sinking, 80 $\frac{1}{2}$ ft.; total, 8,751 ft.

Main Shaft (No. 1).—Sinking was continued under difficulties to 1,089 $\frac{1}{2}$ ft., an advance of 69 $\frac{1}{2}$ ft. The inflow of water from the lode cut at 1,020 ft. exceeded 19,000 gallons per hour. A general average of samples taken during sinking gave £2 2s. 2d. per ton for a width of 9 ft. The lode dipped out of the shaft at a depth of 1,060 ft. Chambers were cut at No. 6 level, and the work of opening-up at this level was taken in hand.

No. 3 Shaft (new shaft).—This shaft is situated about 1,150 ft. to the east of No. 1 shaft, and has been laid out as a three-compartment shaft, two of which are winding-compartments and one a pumping and ladder way. The shaft has been sunk 11 ft., and timbered to that depth.

No. 6 Level (1,094 ft.).—The south-east crosscut was advanced to 176 ft. from the No. 1 shaft. At 19 ft. from the shaft it intersected the Dominion lode (Shaft reef), which proved to be 8 ft. in width, the average assay value being £2 17s. per ton. At 69 ft. another lode, the Republic, was met with, being 10 ft. in width, and with an average value of £3 1s. 8d. per ton. The footwall branch of the Empire lode was intersected at 165 ft. in the crosscut. The assays from this lode averaged £3 6s. 9d. per ton, for a total width of 7 ft. The north-west crosscut was driven to 108 ft. from the shaft, and at 21 ft. in, a lode (Wowser), 6½ ft. wide and assaying 17s. per ton, was passed through.

Dominion lode: The west drive was advanced 93 ft. For the first 11½ ft. the lode was 4½ ft. wide, and assayed £4 14s. 7d. per ton; from 11½ ft. to 68 ft. it was 5 ft. 2 in. wide; average, £1 4s. 7d. per ton; and from 68 ft. to 93 ft. it was 3 ft. 9 in. wide, and averaged 13s. 2d. per ton. At this point the reef narrowed to 3 in. A leading stope extending from 15 ft. to 40 ft. west of the chamber, and to 17 ft. above level, gave an average assay value of £5 2s. 3d., the average width of the lode being 6 ft. 4 in. The east drive was advanced 99 ft., the lode being somewhat irregular, and at times divided and mixed up with country rock. From chamber to 46 ft. the reef was 3 ft. 10 in. wide, averaging £1 13s. 1d. per ton, and from 46 ft. to 93 ft. it was 4 ft. 7 in. wide, averaging £1 14s. 10d. per ton. A crosscut from the footwall side at 45 ft. showed 4 ft. 3 in. quartz, assaying £2 10s. 9d. per ton; next 2 ft. country; next 8 ft. quartz, assaying £2 4s. per ton; next 2 ft. 6 in. country; next 2 ft. 2 in. quartz assaying £1 0s. 4d.

Republic lode: The west drive was advanced 56 ft., and the average assay values were—From south-east crosscut to 14 ft., reef 8 ft. wide, £2 18s. 3d.; and from 14 ft. to 56 ft., reef 4 ft. 8 in. wide, £1 18s. 2d. The east drive was advanced 61 ft. The average assay value from the south-east crosscut to 61 ft. was £3 3s. 2d., and the average width of lode 4 ft. 4 in. As the drive advanced east the lode narrowed quickly, the reef in the face being now 3 ft. 10 in. wide, and dipping flatly to the north-west.

Empire lode: The east drive (footwall branch) was advanced to 93 ft., and the average assay values for width of drive were—south-east crosscut to 22 ft., reef 5 ft. 3 in. wide, £2 11s. 9d. per ton; 22 ft. to 93 ft., reef 5 ft. 1 in. wide, £1 16s. per ton. The total advance in the west drive (footwall branch) was 71 ft. The average assay values for width of drive were—From south-east crosscut to 22 ft., reef 4 ft. 8 in. wide, £4 8s. 5d. per ton; from 22 ft. to 71 ft., reef 4 ft. 8 in. wide, £4 9s. per ton. No. 7 rise was connected with winze by rising 21 ft., the average value for width of rise being £2 10s. 4d. per ton.

No. 5 Level (944 ft.).—*Martha lode:* The east drive was advanced 28 ft., making a total of 1,164 ft. The ore passed through was low grade. At 820 ft. east a crosscut 400 ft. in length was driven from the Martha lode to the Empire lode (at 980 ft. east). This crosscut intersected a lode, known as the Grace lode, at 16 ft. south of hanging-wall of Martha. This lode was found to be 21 ft. 4 in. in width, of which 11½ ft. assayed £1 13s. 8d. per ton, the balance being low grade.

Grace lode: Driving on this lode advanced for 100 ft., connecting with the Martha 710 ft. crosscut. On driving east the lode faulted at 160 ft., but after crosscutting 20 ft. to the south it was again picked up. From 80 ft. east to 53 ft. west of the 820 ft. crosscut the average value for full width of drive was £2 10s. 2d. In the crosscuts at 80 ft. and 150 ft. east the lode was low grade. No. 1 rise was advanced to 50 ft. above the level, the first 35 ft. averaging £1 17s. for a width of 7 ft. 10 in., and from 35 to 50 ft. was low grade. No. 1 winze was sunk to 84 ft. below the level. The values for width of winze were—From 0 to 13 ft., £3 11s. 3d. per ton; 13 ft. to 39 ft., £1 18s. 2d. per ton; 39 ft. to 65 ft., £1 9s. 2d. per ton; 65 ft. to 84 ft., £1 10s. per ton. A crosscut at 40 ft. down showed 8 ft. on footwall, worth £1 16s. The next 5 ft. was worth 16s. 8d.; and the following 2 ft., 10s. 8d.

No. 2. lode: At 820 ft. east a crosscut was driven to the Martha lode, connecting at 1,040 ft. east. An intermediate drive at 80 ft. above the level was advanced from No. 7 rise to 49 ft. west of No. 5 rise. The average of assays from No. 7 to No. 6 rise was £1 7s. 6d. for a width of 5 ft., and from No. 6 rise to 49 ft. west of No. 5 rise, £1 8s. 11d. for a width of 4 ft. 2 in. No. 2 rise was risen 95 ft. above the level. This rise will be used as the main filling-pass. The reef in this rise was narrow and low grade. No. 5 rise was advanced 69½ ft., connecting with the intermediate stopes.

Empire lode: No. 1 winze was advanced 25 ft.; average assays, £1 3s. 6d. for width of winze. No. 2 winze advanced 83½ ft. The assays varied from £4 1s. 2d. to £2 5s. 2d. per ton. At 80 ft. below level the lode was crosscut, and proved to be 17½ ft. wide, averaging £1 17s. 10d. per ton. No. 4 winze was sunk 60½ ft., assays varying from £1 17s. 1d. to £1 7s. 5d. per ton. The crosscut at 80 ft. down showed lode 12¾ ft. wide; average value, £1 per ton. No. 5 winze advanced 93 ft., the lode averaging from £3 2s. 1d. to £2 14s. 10d., for an average width of 3 ft. 2 in. At 80 ft. down the lode was 29½ ft. wide, and assayed £3 10s. for the first 8½ ft.; 13s. for the next 16 ft.; and for the last 5 ft., 3s. No. 7 winze was advanced 90 ft., the assays varying from £7 3s. 8d. to £5 14s. 7d. per ton. At 80 ft. down the lode was crosscut, and proved that winze had been sunk on footwall branch or "dropper" from main lode. Measuring from the winze, 4 ft. 4 in. is worth £4 8s. 6d. per ton. No. 9 winze advanced 88 ft.; down to 62 ft. the values were low, from 62 ft. to 88 ft. assays averaged £2 7s. 4d. for a width of 3 ft. 7 in. No. 18 winze was sunk 96 ft.; the assay value varied from £7 18s. 7d. to £3 19s. 1d. per ton. A rise at 900 ft. east was advanced 34 ft. above the level; the average assay value from level to 30 ft. was £3 3s. for width of 6 ft. 4 in., with no values above this point.

Reef in 330 ft. crosscut west on hanging-wall side of Empire was followed for 61 ft.; width 11 ft.; values low. Drive east on Empire was advanced 92 ft.; total, 1,083 ft. The reef was 3 ft. in width and the values low.

Royal lode: The 690 ft. crosscut was advanced a further distance of 56 ft. in hanging-wall country, and found only a few stringers. The 810 ft. crosscut intersected a reef at 90 ft. in. The values were low, and the country unfavourable. No. 7 winze was sunk 68½ ft. A crosscut at 50 ft. down showed 11 ft. of quartz, and country with walls not properly defined, and assaying £1 11s. 1d. per ton. No. 9

winze—Crosscut at 80 ft. down proved lode to be 47 ft. wide; average value, £3 9s. 6d. per ton. No. 10 winze was advanced 81 ft., the assays averaging from £2 7s. 10d. to £1 13s. 8d. per ton. The crosscut 80 ft. down showed 36 in. of disturbed reef, the country being also disturbed.

George lode: The winze at 170 ft. east was advanced 43 ft., assays varying from £1 15s. 9d. to 14s. 7d. At 280 ft. east a crosscut was driven 85 ft. to the south. At 36 ft. from the George lode it intersected a reef 4½ ft. wide, averaging £2 3s. 6d. per ton, which, however, later on proved to be a portion of the George lode thrown to the south by a fault. This lode is now referred to as the George Extension, and was driven upon west for a distance of 89 ft. At this point the lode was cut off by a fault. For the distance of 89 ft. driven the lode averaged £2 9s. per ton. The drive east was advanced 98 ft., the country being very much disturbed. No. 1 winze was sunk at a depth of 35½ ft. below the level. The slide cut the lode off at 18 ft. below level. Assay values to this depth were £3 12s. 4d. for a width of 3 ft. 8 in.

No. 4 Level (794 ft.).—Mary lode: The west drive was extended a further 77 ft. The values varied from £1 9s. 6d. to £2 5s. 5d., and the lode varied in width from 7 ft. to 15 ft. The east drive was advanced 436 ft. making a total of 562 ft. The lode showed an average width of 10¾ ft. of payable ore.

No. 3 Level (650 ft.).—Mary lode: The west drive was advanced 89 ft. For 47 ft. the lode was mixed with the country, and assayed 15s. per ton for a width of 4 ft. 10 in. For the balance of the distance driven the lode was 18 in. wide, and low grade. The east drive was advanced 344½ ft. in payable ore.

No. 2 Level (500 ft.).—The crosscut to Mary lode was advanced 135 ft., making a total of 216 ft. At 179 ft. it intersected the Mary lode, 3 ft. in width. This was followed 34 ft. east and 10 ft. west, the lode being small and low grade.

Surface Filling Tunnel.—This was driven a total distance of 564 ft. and a rise put up to the surface, which greatly facilitates the handling of filling for the stopes underground.

Ore mined.—The ore mined came from the following lodes: Martha, 14,295 tons; Empire, 21,068 tons; Royal, 26,198 tons; No. 2 lode, 6,797 tons; Mary, 14,902 tons; George, 1,920 tons; George Extension, 577 tons; Grace, 1,233 tons; total, 86,990 tons. Development produced 19,266 tons of ore, making the total output of mine 106,256 tons. The total quantity of broken ore lying in the shrinkage blocks at end of year was 33,310 tons. The surface paddock contained 1,867 tons at end of year.

General Mine Equipment.—The installation of the winding-engine, winch, boilers, &c., for sinking No. 3 shaft has been completed. The erection of the large capstan engine was also completed. An electrically driven rock-breaker was installed to reduce mine samples before sending to the assay office. A new circular saw was erected in the mine carpenters' shop.

During the year under review a large amount of capital has been spent in improving the mechanical handling of the ore in the mill, so as to reduce manual labour to a minimum. It has been found after lengthy practical tests that a very large proportion of the comparatively coarsely crushed ore is sufficiently fine to liberate its value, provided proper hydraulic classification and concentration is adopted. As a result of these exhaustive trials, plant has been designed and erected to separate 20 to 25 per cent. of the total ore crushed as sand. It has been arranged that these sands, which are as poor as the ordinary slimes, are washed by percolation of water and then settled in extensive pits, and after thorough draining used for filling in the mine. During the year a considerable tonnage of sand was used as mine-filling.

Comparison of costs, &c.: Mining—1910, 7-59s.; 1911, 7-81s.; milling—1910, 6-24s.; 1911, 6-32s.; general expenses—1910, 1-39s.; 1911, 1-38s.; redemption of development account—1910, 4s.; 1911, 4s.; total—1910, 19-22s.; 1911, 19-51s. Ore milled: Value—1910, £1 15s. 10d.; 1911, £1 12s. 8d.; tons crushed—1910, 84,313; 1911, 105,956; extraction of gold—1910, 89 per cent.; 1911, 89-7 per cent.; extraction of silver—1910, 75-9 per cent.; 1911, 63-7 per cent.; extraction of value—1910, 87-5 per cent.; 1911, 87 per cent.; tons crushed per stamper—1910, 7-68; 1911, 9-35.

Waihi Extended Gold-mining Company (Limited) (F. Stewart, Mine-manager).

The principal development carried out in this mine for the year has been the sinking of the shaft to No. 6 level, 1,100 ft. from the surface. A large chamber was excavated, and the main south-east crosscut was driven for 90 ft. in good country. A drive has also been advanced west for 65 ft., and a lode 6 ft. wide has recently been cut. The lode looks very promising, and should open out better when driven on.

At No. 5 level (960 ft.) the drive on the south-east lode was extended to 175 ft. east of the main crosscut, proving the lode for a distance of 200 ft., the ore being low grade. A winze has been started on this lode, which will eventually be connected with No. 6 level, in order to assist the ventilation.

From No. 2 drive a crosscut was driven 120 ft. and the south section of No. 2 reef was met, and driven on for a distance of 90 ft. Although some value was obtained, it was not sufficient to be payable.

An average of fifteen men have been employed.

Pride of Waihi Gold-mining Company (Limited) (F. Stewart, Mine-manager).

This mine has been under protection for the past twelve months. The syndicate having an option over this property are endeavouring to raise capital in London for the purpose of developing it.

Waihi Reefs Consolidated (W. Morrison, Mine-manager).

Work in this mine during the year has been confined to sinking the main shaft, which at the end of September had attained a depth of 914 ft. The funds becoming exhausted, protection was applied for, and work has been suspended since the above date. The manager states that the bottom of the shaft is in a favourable class of country. Fifteen men were employed up to September.

Waihi Standard Gold-mining Company (James Thomas, Mine-manager).

This property, after lying idle for a number of years, was taken over by the present owners in July last. At that time there was a Tangye oil-engine for hauling water and quartz. After repairing the ladder-way in the shaft down to No. 3 level, 167 ft. from surface, it was discovered that there was 7 ft. of water in this level. Baling-operations were at once proceeded with, and it was found that about 700 ft. of driving had been done. This part of the mine was well sampled, and the results therefrom gave the present owners sufficient encouragement to procure a more powerful winding plant and boiler. New headgear was erected, and the equipment is working satisfactorily. New guides and cages have also been installed, and the shaft unwatered to No. 4 level, 257 ft. from surface. A start has been made to break out a trial crushing.

Waihi Beach Gold-mining Company.

This mine has been under protection during the year.

Romulus Syndicate (G. M. Stocking, Attorney).

This claim is owned by a syndicate, who have endeavoured to test the country and reef systems by a series of diamond-drill bore-holes. Several holes were put down shallow depths, but, owing to the broken nature of the country, the venture was not a success, and work was therefore suspended.

Waitekohe Syndicate.

Very little work has been done in this mine during the year. In the main drive another small vein was intersected showing gold, but, owing to the hard nature of the country, it would not be profitable.

OWHAROA.

Rising Sun Gold-mining Company (H. Goldsworthy, Mine-manager).

The low-level tunnel has been driven a total distance of 1,820 ft. Several lodes, carrying low values, have been intersected, but it will be necessary to drive a further distance of 160 ft. to connect with the winze sunk from upper level in which good ore was said to have been obtained. Seven men were employed.

WAITEKAURI.

New Waitekauri Gold-mining Company (B. Gwilliam, Mine-manager).

Owing to want of funds, very little work has been done during the year. The Horn level has been repaired and kept in working-order, in anticipation of further capital being raised to drive a crosscut to the eastern boundary. The property is at present under protection. The battery is used as a public crushing-plant when needed.

Maoriland Gold-mining Company (W. Christie, Mine-manager).

At the intermediate level, 75 ft. below No. 3 level, a distance of 83 ft. south has been driven on payable ore, and stoping commenced. The width of the lode in the stopes averages 18 ft. In a rise put up from the low or No. 4 level, a large body of ore was intersected and crosscut for 35 ft., giving an average value of 6s. per ton. The low level is being extended for the purpose of intersecting the Young New Zealand and No. 4 reefs. 1,272 tons of ore treated produced gold to the value of £2,834 1s. 5d.

Jubilee Mine (F. J. Hollis, Mine-manager).

Operations in this mine during the year have been devoted to prospecting on the different levels and repair-work. A good deal of trenching and open cutting has also been done on the surface, but nothing of importance has so far been discovered.

Scotia Mine.

This has been under protection during the year.

Golden Cross Mine (Thomas Johns, Mine-manager).

The No. 1 or battery level, on the west branch of the Golden Cross reef, has been extended 100 ft. and two rises put up to Corbett's level for ventilation, and the drive south on the Fiery Cross reef repaired and cleaned up. The lode averages 6 ft. in width. The outcrop of reef on surface has been stripped, and has been broken out for 40 ft. in length by 18 ft. in height by 9 ft. in width. A ten-head stamp battery, cyanide plant, hoppers, and water-race have been completed, and crushing operations commenced. 421½ tons of ore were treated, for a total of £1,457 17s. 11d. An average of eighteen men have been employed.

North-Western Syndicate (F. Butcher, Manager).

In this claim work has been confined to driving a low level for the purpose of intersecting the lode discovered on surface, and carrying payable values. A distance of 220 ft. has been driven, and fair prospects have been obtained in a lode passed through some distance back from the face.

Prospectors.

Two men (O'Brien and mate) are engaged prospecting between Waitekauri and Karangahake, but, so far, have not discovered anything of a payable character, although fair dish-prospects can be obtained.

A miner named William Nicholl has also been sluicing in Diamond Gully, for the purpose of tracing the source of gold found in the creek. The results are encouraging.

KARANGAHAKE.

Talisman Consolidated (Limited) (J. Rickard, Mine-manager).

No. 12 Level (200 ft. below Waitawheta adit-level).—The north drive has been extended to a point 1,332 ft. north of the Talisman shaft. This progress has disclosed a few shoots of payable ore, but the average for the whole distance traversed is low.

No. 13 Level (400 ft.).—The south drive was extended to a point 2,016 ft. south of shaft. The reef varies in width from 3 ft. to 10 ft., and for a horizontal length of 280 ft. the Dubbo ore-shoot gave good values. These values were followed upwards by No. 16 rise, and they persisted for 130 ft. above the level.

No. 6 winze was sunk to a depth of 135 ft. (the random of proposed No. 14 level). The vein for the distance sunk runs from 4 ft. to 5 ft. in width, and gives high values. From bottom of winze, drives have been put out north and south, showing good ore for the whole of the distance, the lode varying in width from 3 ft. to 5 ft. No. 12 winze is now 212 ft. below No. 13 level, and 62 ft. below the random of No. 14 level. The widths and values for the distance sunk during the year have been very satisfactory.

The drives off No. 12 and No. 6 winzes at the random of No. 14 level show an ore-body of good quality for a horizontal length of practically 1,000 ft.

An effort was made to sink the Talisman shaft during the latter half of the year, but after getting it down 31 ft. deeper, the water became too strong, and further sinking was stopped until No. 12 winze should get deep enough to take some of the water now making in the shaft.

The Woodstock shaft has been sunk 20 ft., and the first set of Cornish pump-workings is now practically in place. The boilers and engine for actuating the new pump are erected, and practically ready for work.

A new change-house, 30 ft. by 70 ft., has been erected at the mouth of the Woodstock No. 5 level, and will be equipped with hot and cold shower-baths and steam-heat for drying clothes.

During the ensuing year it is intended that the south drive off No. 12 winze shall be extended until the Dubbo ore-shoot is intersected. The north drive off No. 6 winze will also be carried into the Talisman section, and from this drive a crosscut will be put out to the No. 14 level chamber in Talisman shaft. (When this is finished the whole of the drives mentioned will constitute the No. 14 level.)

It is also intended that the Woodstock shaft shall be sunk to the level of No. 14 level, with a view of finally making a connection with same.

The only new treatment machinery installed during the year are two grinding-pans for fine grinding of the concentrates. These concentrates were formerly sent to London for realization, but are now being successfully treated here. An average of 360 men have been employed.

New Zealand Crown Mines (Limited) (G. N. McGreuer, Mine-manager).

The following shows the footage of development-work in this mine on the Welcome and Crown reefs :—

Welcome Reef.—From five levels above Waitawheta level and four levels (from main shaft) (450 ft.) below same, 1,586 ft. driving, 861 ft. rising, 76 ft. sinking, 491 ft. crosscutting and stoping produced 13,265 tons of ore.

Crown Reef.—From Nos. 1, 2, 3, and 4 levels above Waitawheta, 1,553 ft. driving, 1,022 ft. rising, 44 ft. sinking, 596 ft. crosscutting produced, with stoping, 6,677 tons of ore. Talisman section: In Nos. 1 and 2 crosscuts 380 ft. of crosscutting was done.

The total tonnage treated at the mill was 20,835 tons, and the yield of gold was £45,030 10s. 6d., which shows an average recovery of £2 3s. 3d. per ton.

During the year the following improvements have been carried out :—

Mine.—At the Waitawheta main adit-level the electric light has been installed for a length of 1,700 ft. along the level, and a horse is now used here for trucking purposes. In the main shaft the north skipway has been equipped from the brace down to No. 5 level, and both cages are now being run for general winding.

Mill.—All the machinery in the mill is now being driven by a 250-horse-power electric motor, which is working very satisfactorily. A transformer has been installed in the power-house, which enables the electric power to be used for working small motors, and a 9½-horse-power motor now drives all the fitting-shop machinery. Electric power is also used for hoisting ore from the tram-line to the top of the mill buildings.

Dominion Mine (H. J. Hyde, Mine-manager).

The eastern low level has been extended a further distance of 302 ft. in hard country. A considerable amount of water is issuing from the face, which the manager considers is an indication that the reef sought for is near at hand. The western low level is being continued for the purpose of intersecting the lode followed down by a winze, and in which good value is said to have been obtained for a width of 7 ft. in the upper level. The crosscut is now in a distance of 300 ft., and should, according to survey, intersect the lode sought for in another 150 ft. of driving. The country penetrated is of a very favourable nature.

Karangahake Mine (H. James, Mine-manager).

Work was suspended in this mine in the early part of 1911, as the prospecting-work in the Taukani section did not turn out as anticipated.

The *Comstock*, *Silver Hill*, and *Crown Royal* mines have also ceased operations.

Waihi-Paeroa Gold-extraction Company (R. M. Aitken, Manager).

A new plant has been erected at Paeroa, capable of treating 500 tons of coarse sands per day, and is practically an improved reproduction of the Waihi plant on a much larger scale. It has been designed to work the "all slime" cyanide process, all alterations and improvements added being the outcome of practical experience gained whilst working the company's Waihi plant. Care has been taken to save labour in every department, and at the same time maintain efficiency. Parts subject to breakage or wear are made easy of renewal, and duplicates stocked where necessary, to enable the plant to work continuously. A wharf, with a jib crane capable of lifting 10 tons, is erected on the river, and all plant and material may be landed by steamer at this site. Smithy, store-buildings, &c., are erected, and a complete system of tram-lines connects from wharf to main road, where unloading-gear is also provided. From the main tram-line branch lines run in and about the works, so that everything can be conveniently and cheaply handled.

Power.—The power plant consists of four Babcock and Wilcox boilers, fitted with mechanical stokers, Green's economizers, feed-water heater, feed-pumps, and other necessary accessories to work at a pressure of 160 lb. per square inch. The boilers are arranged in two batteries, slack coal being used as fuel. The boilers supply steam to two compound condensing-engines, No. 1 being a cross compound, of 630 horse-power, by Hicks, Hargraves, and Co., and No. 2 a 150 horse-power tandem by Yates and Thom. No. 1 will be capable of driving the whole plant, with a small overload, and the No. 2, besides acting as a spare, will be able (when the tube-mills are not running) to operate the balance of the machinery on Sundays. The shafting and clutches are so arranged that either engine will take the load exclusive of the mills, or both engines may be worked together. In the latter case the smaller, or No. 2, engine will drive the generator (for power-lighting), and air-compressing, and fitting-shop gear. The power is transmitted by cotton rope to two main lines of shafting, and also to the intermediate shafting. From each main line of shafting ten tube mills are driven, two by belting with fast and loose pulleys on the pinion shaft, and the other eight arranged in pairs, one on each side of the shaft, each pair being driven from one steel pinion with friction-clutch on the shaft for starting and stopping. The river plant consists of an air-lift dredger capable of lifting 80 tons of sand per hour, with four 65 ton barges for sand, which when filled are unloaded by means of double-bucket belt-elevators capable of lifting 100 tons per hour, and designed to be raised or lowered to allow for variable height of river or barges.

KOMATA.

Komata Reefs Gold-mining Company (Limited) (J. Benny, Mine-manager).

At No. 4 Level (600 ft.) crosscuts east and west were projected. In the eastern crosscut, at a distance of 405 ft., Livingston's reef was intersected, and proved to be 50 ft. wide, but unfortunately the ore was low grade. The western crosscut was extended a total distance of 234 ft., and cut two lodes, only one of which was of any value. Both crosscuts have been discontinued. A little work was also done on Hartridge's leader and No. 2 and 4 lodes on this level.

No. 5 Level (500 ft.).—Driving south on No. 2 reef was continued for 112 ft., when the reef pinched and became poor. A winze was also sunk south of the shaft, which proved the reef to be 3½ ft. wide, worth £8 10s. per ton. Stopping at this level produced 5,452 tons of ore from a reef averaging 6½ ft. in thickness. A little stoping was also done at Nos. 6 and 7 levels.

The average value of the ore before treatment was £2 6s. 11d. per ton, and the residue averaged 1s. 9d., which is equal to an extraction of 96·2 per cent. of total value. The average number of men employed was sixty-eight.

MAROTOTO.

Silver Stream Mine (T. Corbett, Mine-manager).

The Silver Stream lode was cut at a distance of 700 ft. in the low level. At the point of intersection, however, the lode was small, and the level was continued for another 50 ft., without any signs of quartz. The lode referred to has been driven upon for 250 ft., connections have been made with the upper level, and a stope carried for 90 ft. and 30 ft. in height. 7½ tons of selected ore, shipped to Australia, yielded bullion worth £209 3s. 8d. A crosscut is now being put in to intersect the Silver Queen and Comolla lodes, from the face of drive on Silver Stream reef.

Telluride Proprietary (J. Williams, Mine-manager).

The principal work carried out in this mine during 1911 has been the extension of the low level in the Gordon section. Four lodes have been intersected, varying from 1 ft. to 6 ft. in width, but in each case the value was low. The crosscut is still being continued for the purpose of intersecting the Silver Stream lode. A small air-compressor and drilling plant have been installed, which greatly facilitates the work, as the country is very hard. An average of twenty men was employed.

Walker's Marototo.

This claim has been under protection during the year.

TE AROHA.

Hurdy's Mines (Limited) (W. Greening, Mine-manager).

Work has been confined to driving 400 ft. a low level to intersect the Vulcan lode in the Premier section. The lode should be intersected in about another 150 ft., when it is intended to put up a rise, and connect with the winze from the upper level. 9 cwt. of ore from the winze treated at Thames produced gold to the value of £12 16s.

Bendigo Mine (T. Galvin, Mine-manager).

The new ten-head stamp battery was completed, and crushing operations commenced. The ore on hand, however, did not prove to be as good as the trial crushing. The mill also required certain alterations to secure a higher extraction. Work in the mine has therefore been suspended pending these alterations being made.

Westralia Mine (J. Tallentire, Mine-manager).

In this mine the No. 1 level was driven for 175 ft. on a reef of favourable appearance, and a rise put through to the surface, the stone showing gold freely. To facilitate the handling of the ore, a low level to connect with the county tram was also put in, and a rise connected with No. 1 level. The lode is between 6 ft. and 7 ft. wide, highly mineralized, and the ore is being stored for treatment. During the year the company purchased from Hardy's syndicate a 20-head battery with mill-site and water-races. This treatment plant is now being put in order, and cyanide-vats erected, and it is anticipated that the necessary alterations will be completed and crushing commenced early in April.

COROMANDEL.

Four-in-Hand Gold-mining Company (Limited) (T. Radford, Mine-manager).

At the low level a fair amount of driving was done on the lode worked with such successful results on the upper levels. The prospects met with, however, proved most disappointing, and work was suspended at the end of November. From 70 lb. of picked stone treated a return of £206 4s. was obtained.

Royal Oak Gold-mining Company (Limited) (G. Edwards, Mine-manager).

The upper levels in this mine becoming exhausted, work was confined to the lowest level, but the results did not come up to anticipations and, the capital being expended, work was suspended, and the mine let on tribute. An average of six men have been employed. 1 ton 1 cwt. 58 lb. of stone treated produced gold valued at £127 10s.

Pride of Tokatea Gold-mining Company (A. J. Prescott, Mine-manager).

During the year 600 ft. has been driven in the Harbour view section of this mine, on different leaders. Small pockets of payable ore have been met with, and 5 tons and 260 lb. treated, for a return of £429 19s. 3d. An average of three men was employed.

Exalt Mine.

Prospectors treated 1 cwt. of ore from this mine, valued at £4 2s. 6d. The lode operated upon is small, and encased in hard country, and being situated so far from a battery, would not pay to work.

Monte Christo Mine (F. Jones, Mine-manager).

The low level was extended and the Swedish Crown lode intersected, but as the ore won was of low value, and the funds became exhausted, work was suspended. 1 ton of general ore and 6 lb. picked stone produced gold valued at £18.

Mount Welcome Mine (J. W. Barker, Mine-manager).

The main drive has been extended a total distance of 656 ft., and a considerable amount of stopping done. The ore becoming low grade, it was then decided to sink a winze below this level, and at the time of my visit good results were being obtained. Gold valued at £815 was won during the year, from 18 tons of ore.

Kapanga Mine (S. Carlyon, Mine-manager).

The principal work undertaken in this mine was unwatering by baling down to the 1,000 ft. level. The 1,000 ft. level was repaired for a distance of 805 ft. Subsequently, the manager reports, the face was reached and the lode sampled. The results proved so disappointing that further capital was unobtainable. Protection was granted and the mine closed down. 7 tons of ore won from the 900 ft. and 940 ft. levels yielded gold valued at £17 8s. The tributers crushed 41 tons for a return of 78½ oz., valued at £229 3s. 4d.

Scotty's Claim.

This mine is owned and worked by McNeil Bros., who treated 2½ tons of ore from surface leaders for gold valued at £30 1s., and are now engaged driving a low level to get under the point where the gold was obtained.

Gallant Syndicate (A. H. McNeil, Mine-manager).

A winze was sunk to a depth of 55 ft. on Scotty's reef, and a drive south at this depth was driven 42 ft. with encouraging results. Four men were employed.

Venture Mine.

This claim is being worked by Regan Bros., and from a small leader 4 in. in width, discovered on the surface, half a ton of ore produced gold valued at £21 3s. 5d.

Success Mine (J. McGregor, Mine-manager).

Work in this mine has been chiefly of a prospecting character. The lodes being worked are small, and the values are contained in clay pockets. During the year gold valued at £16 7s. 3d. was obtained by puddling.

Old Hauraki Gold-mining Company (Limited) (H. F. Shepherd, Mine-manager).

During the year operations have been confined to developing and stoping on the new reef, on the 400 ft. and 300 ft. levels. On the 400 ft. level this reef has been driven on for 460 ft., making the total distance 800 ft., and 370 ft. of stoping has been done. At the 300 ft. level, 190 ft. has been driven, making the total length 420 ft. The stopes on this level are 260 ft. in length, and another block is being opened up. 569 tons of quartz and 1,039 lb. picked ore was crushed, for a return of 1,353 oz. 19 dwt., valued at £4,019 12s. 9d. The average number of men employed was thirty-three wages-men and four tributers.

Hauraki Reefs (Limited) (J. W. O'Sullivan, Mine-manager).

At No. 4 level (400 ft.) the main crosscut has been advanced 352 ft., and a number of reefs and leaders passed through. The principal reef, known as No. 4, has been opened up 100 ft. east and 20 ft. west, and strong dabs and colours of gold seen in the quartz, which, on the whole, has a very promising appearance. The other works in progress, from Welcome Find shaft, consist of driving and stoping on the Golconda reef, but the results, except in a winze sunk 26 ft. below the level, were unsatisfactory. An average of fourteen men has been employed, and 113 tons of ore and 103 lb. picked stone treated produced gold valued at £706 15s. 1d.

Golden Pah Mine (E. F. Reynolds, Mine-manager).

Work in this mine has been chiefly confined to prospecting at the 80 ft. level, from the Union Beach shaft, but as nothing payable was discovered, and the funds becoming exhausted, work was suspended.

Armstrong Gold-dredging Company (Limited) (S. L. Wilson, Dredge-master.)

This syndicate purchased a gold-saving dredge constructed to work to a depth of 35 ft. and remove 100 cubic yards per hour. Its erection was completed by 8th December, and a trial run was made, with, I am informed, satisfactory results.

Union Hauraki Gold-mining Company (A. Jamieson, Mine-manager).

At the 200 ft. level the crosscut was continued for the purpose of testing the country towards the Old Hauraki Mine. Several lodes were intersected, but in each case the value was low. Seven men were employed.

Bremner's Freehold (James Coll, Mine-manager).

The low level in this mine intersected No. 1 reef from which the winze sunk from the upper level produced rich specimen-stone. Unfortunately, the gold did not continue downwards, therefore the men were removed to the upper levels. Several lodes are being tried, and, although colours of gold are seen, little or no picked ore is being obtained. An average of six men were employed. Fourteen tons of ore and 200 lb. picked stone produced gold to the value of £263 11s. 3d.

Lucky Hit Syndicate.

Two men have been engaged prospecting, but so far nothing of importance has been discovered.

Coromandel Claim (J. P. Prescott, mine-manager).

A low level has been driven on the Magnet and Fitzgerald lodes. Colours of gold were seen, but nothing payable was discovered.

MATAMATAHARAKEKE.

Mills's Reward (J. Davis, Mine-manager.)

On Mills's Reward lode the drive has been extended 102 ft. north, and a winze sunk to a depth of 24 ft. The lode averages 1 ft. in thickness, and gold is freely seen in the ore broken out. Smith's lode has also been driven on for 90 ft., giving good dish-prospects, and a considerable amount of surface prospecting has been carried out during the year.

KUAOTUNU.

Handsworth United Gold-mining Company (J. S. Wilson, Mine-manager).

In the Otama section, a stoping-block 130 ft. in length has been opened up. Small pockets of rich specimen-ore are occasionally obtained. In the Handsworth and Irene sections a considerable amount of driving has been done on the different leaders, with encouraging results.

New Waitaia Gold-mining Company (R. Inglis, Mine-manager).

In the low level the reef was intersected early in March, after driving 1,155 ft., and has been driven upon 420 ft. north. By crosscutting the reef was located, carrying high-grade ore, which has been followed 50 ft. to the present face. In the upper level two winzes 300 ft. apart have been sunk to a depth of 76 ft. and 20 ft. respectively, gold being visible in the ore.

Mountain King Gold-mining Company (H. P. Hornibrooke, Mine-manager).

The new low level has been extended from the Waitaia No. 5 level. After driving 600 ft. the Mountain King boundary was reached. The reef varies from 8 in. to 3 ft. in width, and carries high-grade ore, gold being freely seen for the last 50 ft. driven. Stoping has also been done on the upper levels. Twenty men are employed, and 607 tons of ore treated during the year produced gold valued at £1,849 8s. 1d.

MERCURY BAY.

G. A. Jackson and son are prospecting north of Whenuakite River. South-west of Trig. D, Rangitoto, they have driven 100 ft. on a reef formation, without, however, discovering anything of a payable character.

New Discovery Claim.

This is situated at Mahakirau, and is owned by Cashel and party, who have been receiving prospecting aid. This party are working near the public battery, tracing the source of a small parcel of rich specimen-stone found by them on the surface.

GREAT BARRIER ISLAND.

Barrier Reefs Gold-mining Company (J. G. Vivian, Mine-manager).

Work in this mine has been confined to prospecting at No. 3 level, but, as nothing of a payable nature was discovered, it is now intended to at once proceed with a low-level tunnel to test the lodes at a greater depth.

MACKYTOWN.

Ascot Cinnabar Claim.

This company ceased operations early in 1911, in consequence, it is stated, of the unsatisfactory working of the reduction plant. It is now proposed to reconstruct, to enable certain alterations to be made to the plant, and a drive carried under the present workings. It is anticipated that a start will be made at an early date.

TARANAKI.

Taranaki Petroleum Company (Limited), New Plymouth.

Mineral oil has been known to exist at New Plymouth since 1838, the first bore being sunk in 1866. Several small companies have been formed since that date, but, owing to the want of sufficient capital, the results were practically nil. In 1906 the Taranaki Petroleum Company was formed, with a nominal capital of £150,000. This company put down five wells at Port Moturoa, New Plymouth, and oil was obtained from four of them.

This company obtained the Government bonus for 250,000 gallons of marketable crude petroleum of specified quality obtained in New Zealand, and have offered to sell the property to the British Empire Oilfields (Limited), who have proposed to immediately erect a refinery. The total quantity obtained, according to the latest information, is 421,975 gallons, and from present indications this company will shortly be in a position to claim the second bonus of £2,500 offered by the Government for the production of the first half-million gallons of marketable crude petroleum.

The depth of the three bores now flowing is as follows: No. 2 well, 3,000 ft.; No. 3 well, 3,500 ft.; No. 5 well, 2,280 ft.

INGLEWOOD.

A company was formed and registered in London in June last, with a capital of £100,000, to test what is considered by indications to be oil-bearing country situated about a mile from the railway-station. Some years ago a borehole was started, and put down to a depth exceeding 1,000 ft., but, owing to a mishap, it was abandoned. The present company had this hole cleaned out, and resumed boring, but after reaching 635 ft., owing to the nature of the country, it was considered advisable to suspend boring and procure casing. The management consider the indications favourable, and have acquired options over a large area.

ACCIDENTS AND FATALITIES.

FATAL.

Waihi Grand Junction Gold-mining Company (Limited).

16th January, 1911: A. C. Anderson killed by fall of stone in stope.

24th August, 1911: H. Bullock killed by explosion of gelignite in the bottom of a winze.

Waihi Gold-mining Company (Limited).

17th May, 1911: James Samson killed by fall of stone in stope.

NON-FATAL.

Waihi Grand Junction Gold Company (Limited).

19th January, 1911: W. Moran, both eyes destroyed, through drilling into unexploded charge.

15th April, 1911: T. Franklin, lost his left arm in blasting accident.

30th May, 1911: Peter Martin, had his leg broken by a fall of ground.

26th July, 1911: H. McKernon, skull fractured by a rock falling down a pass.

15th September: G. Pitcher, leg broken by a fall of quartz.

Waihi Gold-mining Company (Limited).

17th April, 1911: G. Faulder, badly cut about the back and head by a blasting accident.

18th April, 1911: D. Smeaton, had his leg broken by a fall of mullock on the surface.

24th May, 1911: W. Hill, lost sight of one eye, other seriously injured by blasting accident.

24th June, 1911: Sam Thornally, ribs broken by fall of earth in surface cutting.

18th October, 1911: W. Cardwell, eyesight injured by blasting accident.

22nd November, 1911: W. Ridings, skull fractured in the Waihi mill.

Four-in-hand Gold-mining Company.

7th August, 1911 : W. Jones, leg broken through slipping on ladder.

Old Hauraki Gold-mining Company.

10th May, 1911 : H. Colthurst, leg broken by fall of ground.

Rising Sun Gold-mining Company.

2nd November, 1911 : Thomas Goldsworthy, had his leg broken by a fall of ground.

I have, &c.,

MATTHEW PAUL,

Inspector of Mines.

The INSPECTOR OF MINES, Thames, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Thames, 27th March, 1912.

I have the honour to present my report on the gold-mining industry in the Thames district for the year ended the 31st December, 1911.

May Queen Mine (W. Baker, mine-manager).—No. 10 (1,000 ft.) level (Thames-Hauraki shaft) : Work at that level has chiefly consisted of driving on the Queen of Beauty reef, and cross-cutting to intersect the Bright Smile lodes. Driving has also been done on the Exchange reef. The Queen of Beauty reef was driven on for 300 ft. in a southerly direction, when the reef pinched to a few inches after having maintained a fairly uniform width of 4 ft. The ore is heavily mineralized ; but the indications were not favourable, and a crosscut was then driven a distance of 375 ft. in the direction of the old Bright Smile Company's shaft. So far no reefs of a payable character have been encountered, although the country passed through appeared favourable. The temperature in this crosscut is always high, averaging about 80° Fahr. (dry). The ventilation is, however, good, being maintained at the rate of 200 cubic feet of air per minute per man. The Exchange reef, which was cut through by the main deep levels crosscut, has been driven on for a distance of about 270 ft. The ore for the whole length has been gold-bearing, and a little picked stone has been occasionally secured. The drive is timbered, and stoping is now being done. With a view to testing the value of the ore-body, a rise is being made to connect with No. 9 (747 ft.) level, a distance of 253 ft. This will also provide a second means of exit from the deep levels. The temperature in the drive is 80° Fahr. (dry), and the number of cubic feet of air per minute per man is 171. No. 6 level (750 ft.) (May Queen shaft) : Stoping is being done on the quartz leaders on the walls of No. 4 reef, which reef has been worked out at this level. The working-places were found in good order by me. The temperature was reasonable, and the ventilation adequate. During the year the company treated 456 tons 1 qr. 23 lb. of quartz and specimen-ore for a return value of £1,971 11s. 8d. Twenty-five men were employed.

Thames Deep Levels (E. Cartwright, manager).—Good progress was made with the extension of the crosscut, which has now passed through the May Queen and Saxon grounds, and entered the Moana-taiari Claim. The distance driven at the end of the year was 1,591 ft., made up as follows : Main crosscut, 1,241 ft. ; subsidiary crosscut for the Saxon Company, 350 ft. The drive has passed through some very hard country. Since the installation of the Roots blower the ventilation has been very satisfactory, the quantity of air delivered in the face of the drive being at the rate of about 300 cubic feet per minute per man. The temperature averaged about 80° Fahr. (dry), and 78° Fahr. (wet). An analysis of the mine-air in the return gave as follows : CO₂, 2.71 per cent. ; oxygen, 20.44 per cent. An analysis of the air in the Saxon subsidiary crosscut resulted : CO₂, 0.55 per cent. ; oxygen, 20.89 per cent.

Thames-Hauraki Pump.—A. C. MacDiarmid (Manager and Engineer to the Thames Drainage Board) reports as follows : “During the year just closed the whole of the machinery has run in a most satisfactory manner. We have had no serious breakdowns or accidents. The most important incident was the discovery of fractures in the teeth of the large cast-iron pinion-wheel on the pumping-engine. In order to preserve the life of the pinion, we have lined up the engine crank-shaft, so as to take the stress off the portion of the pinion where the fractures have occurred. In January a new pulley, larger than the previous one, was installed at the collar of the shaft, to receive the capstan-rope ; by so doing, the life of the capstan-rope should be materially extended. In August the capstan-rope was replaced by another, which is giving every satisfaction. One of the large quadrants at the collar of the shaft was lifted out of its bearings, and its journals and bearings were overhauled and adjusted. The four bearings at the top ends of the pump-rods were opened up and adjusted, new oil-grooves being cut in all the brasses. The levers, links, and brasses, on the high-pressure valve-gear were overhauled, repaired, and adjusted. The links and brasses of the main air-pump were overhauled and adjusted. The main air-pump was cleaned out and overhauled, new valves being fitted wherever necessary. The slide valves of the high-pressure engine were examined and reset, and the condenser was washed out. One set of new brake-blocks was fitted to the winding-engine, and several small repairs were carried out. The cross-head brasses of the blower-engine were overhauled and adjusted, and several other small repairs were attended to. During the year ten pump-valves were changed and repaired, and on five occasions draw-lift buckets were changed and repaired. The speed of the blower-engine was forty revolutions per minute at the beginning of the year, but at the end of the year it was 200 revolutions per minute. At different times during the year the capstan and blowing-engines and the three cages were thoroughly overhauled and repaired.”

Saxon Mine (E. Cartwright, mine-manager).—The deep-levels main crosscut passed through the Saxon ground during the year, and a subsidiary crosscut has been driven for a distance of 350 ft. on the Saxon reef. The main crosscut was driven through several quartz reefs. Three reefs were driven on for short distances, and, I am informed, gold was seen in the quartz. It is the company's intention to continue their crosscut until it reaches a point under their shaft, when the shaft will be sunk to connect with the 1,000 ft. crosscut. The shaft has now been enlarged and retimbered down to within 30 ft. of the deepest level. The work has been hindered by occasional outbursts of CO₂. The engine, boiler, &c., have been put into working-order. Rules and signals posted. The average number of men employed was four.

Victoria Mine (G. W. Horn, mine-manager).—Work has been mostly of a prospecting nature to test the small quartz leaders in the hanging-wall of the No. 4 reef at No. 2 (143 ft.) level. The results were unsatisfactory, and, having tested the small reefs at No. 3 (243 ft.) level with no better success, the company applied for and was granted six months' protection. The company will assist the Waiotahi Company in sinking their shaft to the 1,000 ft., where a subsidiary crosscut will be started to connect with the shaft. The Victoria Company propose to drive from the Waiotahi shaft to cut a reef believed to exist in their claim at that depth. These companies will work conjointly for economy. During the year the company treated 13 tons of ore, for a return value of £16 2s. 7d. Six men were employed.

Waiotahi Mine (G. Warne, mine-manager).—The Waiotahi shaft has been sunk a further depth of 100 ft. At a depth of 522 ft. the No. 7 level chamber was opened, and a crosscut driven a distance of 300 ft., when the footwall dropper from the main reef was penetrated, and found to be 2½ ft. wide, and of hard quartz. Driving has been done on the reef from both sides of the crosscut, and colours of gold have been seen. The driving will be continued until a junction is made with the main reef; a rise will then be made to connect with No. 6 level (428 ft.). A little stoping has been done on the footwall dropper at No. 6 level. When the mine is drained by the passage of the main (1,000 ft.) crosscut, the company will deepen the Waiotahi shaft to 1,000 ft., and from thence prospect. The mine was inspected several times during the year and found satisfactory. Ventilation was fair. The manager is making arrangements for the installation of a Sirocco fan, with a capacity of 50,000 cubic feet of air per minute, to ventilate the mine-workings below No. 6 level, and the shaft while being sunk. Copies of rules and new signals are posted, and gates have been put on the cages. 204 tons of ore was treated, for a return of £640 14s. 2d. Eleven men were employed.

Moanataiari Mine (W. Baker, mine-manager).—The only work done at this claim was the extension of the deep-levels main crosscut through the ground, in which several reef-formations were intersected.

Kuranui-Caledonian Mine (G. W. Horn, mine-manager).—The mine has been protected for the year, pending the deep-levels main crosscut reaching the company's ground, when it is hoped that the ground will be sufficiently drained to permit of the shaft being sunk to the 1,000 ft. level. Four tributaries working in the mine secured 29 tons 2 qr. 27 lb. of ore, which yielded £266 16s. 3d.

Reliance (G. Comer, mine-manager).—Having exhausted their capital in unsuccessfully prospecting the Reuben Parr reef, the company was granted protection. The mine has been closed the whole year.

Thames Mine (James Sheehan, mine-manager).—Early in the year the mine-ventilation was found to be defective, and the company was prosecuted for a breach of the Mining Act. A large amount of capital had been expended on prospecting-work, and, being unable to raise further money to provide for adequate ventilation and to continue prospecting, the company was granted protection.

Point Russell (Christie, mine-manager).—After a considerable amount of unsuccessful prospecting to locate a reef, the company closed the mine.

Alburnia Mine (H. Kendall, mine-manager).—Prospecting has been done on the Sons of Freedom reef at the low levels (Alburnia shaft), also at a greater depth from the Moanataiari level on the same reef. A winze was sunk on the reef to a depth of 30 ft. below the floor of the tunnel; but, the ventilation proving defective, the company was prosecuted and fined. Being unable to provide the means of producing adequate ventilation, the company obtained protection.

Kuranui Mine (James Hayes, mine-manager).—Battery level (150 ft.): A rise was made on a well defined reef varying in width from 9 in. to 15 in. Gold was observed at times, but not in sufficient quantity to be payable. A crosscut was driven at a higher level, and the lode intersected and driven on for some distance, when a connection was made with the rise from the battery level. Towards the end of the year an old drive was reopened in the northern portion of the claim, which it is proposed to extend. Four tons of ore was treated, for a return of £31 13s. Six men were employed.

Waitangi Mine (W. J. Adams, mine-manager).—During the year the No. 4 Beach level (400 ft.) was driven a further 1,831 ft., making a total length of 3,010 ft. Two reefs have been cut, the first being 2½ ft. wide, and the second (the Waitangi reef) 60 ft. wide. This low level has been driven in less than two years, and is well timbered where necessary. Drainage and ventilation have been well attended to. At No. 3 level (150 ft.) the No. 2 winze has been sunk 29 ft. on the hanging-wall of the main reef. Rules posted at the mine, and reports entered in report-book regularly. Sixteen men were employed.

Watchman Mine (H. A. Hill, mine-manager).—Charter level (250 ft.): Crosscutting for the Windfall reef was stopped, and a rise was made to intersect the reef in the winze which was sunk from the Sunbeam Creek section. For the remainder of the year mining has been confined to driving on the Windfall and City of Dunedin reefs, the former being a strong body of quartz of satisfactory assay value. The Dunedin reef has been driven to connect with a crosscut drive driven from the Sunbeam Creek low level. A connection was made between the Charter and Sunbeam levels, where the ventilation is now good. The Dunedin reef is a strong, well-defined ore-body of considerable width. Early in the year the ventilation was defective, and the company was prosecuted and fined. 130 tons of ore was treated, for a return of £203 14s. 1d. Seventeen men were employed.

Bonanza Mine (W. J. Adams, mine-manager).—The Beach level (400 ft.). in passing through the claim, cut through several lodes, the largest of which was $2\frac{1}{2}$ ft., being a hard well-defined body of quartz containing colours of gold. It is proposed to prospect this and other lodes believed to exist in the property.

New Day Dawn and Norfolk Mines (W. J. McCormick, manager).—The drive on the City of Dunedin reef was extended 500 ft., making a total length of 4,300 ft. It is estimated that the Californian and Norfolk reefs will be met with when another 800 ft. has been driven. If reefs are encountered there may be a large block of ore for stoping up to the old mine levels. At a point 350 ft. from the face a rise was made connecting with the old level driven in from Tinker's Gully which permitted ventilation by a section of 9 in. air-pipes and exhaust air from the rock-drills. The drives are all in good order, and well timbered. 390 tons of ore was treated, for a return of £308 14s. 9d. Twelve men were employed.

Dixon's Consolidated Mine (Christie, manager).—Mining has been carried on at Nos. 1 and 2 levels. No. 1 level (100 ft.): 120 ft. of driving was done, when a strong lode formation was cut into and driven on some distance, when the Watchman boundary was reached. No. 2 level (180 ft.): A rise was put up to a height of 50 ft. on the reef. It is proposed to connect the two levels and improve the system of ventilation. Some general prospecting has been done, but no important discovery has been made. The claim is now under protection. 30 lb of stone was treated, for a return of £3 15s. 7d. Four men were employed.

New Sylvia Mine (S. G. Baker, manager).—Battery level (350 ft.): Rising, driving, and stoping have been done on the Sylvia reef for a distance of 360 ft., the width of the ore-body varying from 4 ft. to 6 ft. The quartz is soft and friable, and the stopes require close timbering. Stoping has also been done on the Cross reef for a distance of 60 ft. No. 3 level (200 ft.) has been repaired and the old mine-shaft relined. Low level (450 ft.): The total length of this level is 1,109 ft., towards the Sylvia reef. In order to reach a point under the battery level, a shaft will be necessary to connect the two levels. The low level will then be used as a drainage and ventilation drive. The company was prosecuted early in the year for the defective ventilation of the mine. The ventilation is still inadequate, but the manager is making an effort to improve it. 4,395 tons of ore was treated, for a return valued at £7,946 15s. 10d. Thirty-six men were employed.

Ajax Mine (E. O'Sullivan, manager).—An adit has been driven a distance of 120 ft., with a view to cutting into one or more of the reefs believed to exist in the claim. At the time of my visit the drive was passing through altered andesite rock. Several valueless stringers have been cut. Shortly after my visit the mine was closed down, and no work has been done since. Two men were employed.

Tararu Mines (J. Jobe, manager).—A considerable amount of work was done at the low level. The Vulcan reef was driven on for some distance, but the value was too low to meet working-expenses, consequently the mine was closed down.

Monowai Mine (J. Sheehan, manager).—No. 4 level (300 ft.): Stoping was done on the large reef. No. 4 level is being extended on the reef, which is strong and highly mineralized. The mine ventilation was good. I examined the surface tramway and the milling-plant, and found them in good order, the machinery being well fenced and ladders provided where necessary. 2,000 tons of ore was treated, for a return of £1,226 16s. 6d. Twenty-five men were employed.

Zeehan Consolidated (A. E. Plummer, manager).—The winze has been deepened, and a connection made between the new low level and the upper level. At the low level the reef had split into two strong veins. The quartz is highly mineralized, and said to carry good value. The company, having exhausted their capital, have been granted protection, with a view to reconstructing. Four men were employed.

Crown and Golden Crown Mine (S. T. Williams, manager).—The Big reef, 10 ft. in width, has been driven on for several hundred feet, and stoped to a height of 50 ft. The work proving disappointing, a cross-cut was driven about 200 ft., but the reefs were proved to be of little value. In the Consolidated section, which was worked by a previous company, Nos. 1 and 2 drives were cleared out and retimbered for about 500 ft. A winze was sunk from No. 1 level (70 ft.) to a depth of 30 ft. The reef will be prospected at No. 2 level (120 ft.) Several large trial samples have been put through the mill—270 tons of ore returned £50. Nine men were employed.

Portia Special Quartz Claim (W. Moorecraft, manager).—The reef is well defined, and varies in width from 9 in. to 15 in., carrying fair value. The ore is conveyed from the mine to the battery by aerial tram, one man keeping the battery supplied with material. 50 tons of ore was treated, for a return of £459 17s. 3d. Two men were employed.

Kapowai Mine (R. Tierney, manager).—The reef was cut into several times by driving, and 24 tons of payable ore was secured and treated, for a return valued at £62 5s. 3d. The company is now in liquidation.

Nonpareil Mine (A. Sawyer, owner).—The owner did a fair amount of prospecting-work and secured 20 tons of ore, which gave a return of £833 10s. 2d.

Ballarat Claim (M. Britt, manager).—The owner, by diligent prospecting, secured 3 tons 1 cwt. 8 lb. of ore, which gave a return of £310 19s.

Golden Drop Mine (G. Fisher, owner).—The owner has commenced a new adit level on the south-east of the claim, and hopes to cut a reef at a greater depth.

Good Hope Claim (C. A. Taylor, manager).—Work on the O'Sullivan reef at the Karaka level (250 ft.) having proved unprofitable, a winze was sunk on the reef a few feet when colours of gold were seen. The mine shaft has been cleaned and drained, and operations have been started at the low level, where the O'Sullivan reef has been driven on for some length. The drive will be continued on the reef until a point under the winze in the creek is reached, when rising and sinking will be done to connect the levels. At present the low level (350 ft.) is ventilated by a line of 9 in. air-pipes assisted by a water blast. 68 tons of ore was treated, for a return of £222 11s. 8d. Six men were employed.

New Magnet Claim (James, manager).—Stoping has been done on the main reef near O'Sullivan's rise from No. 2 level (250 ft.). Four men were employed.

Halcyon Mine (E. C. Keven, manager).—Driving and stoping have been done on the reef at the lowest level (250 ft.). In several places good value was obtained, and samples of ore were treated at one of the mills for a return of £77 17s. 9d. Two men were employed.

Karaka Mines (Limited) (E. A. Daldy, manager).—It is proposed to deepen the shaft, and commence prospecting. The Auckland level (80 ft.) has been restored, and a small reef driven on for some distance.

A steam winding-plant is being obtained, and a change-room and other buildings have been erected.

Occidental Mine (J. Caisley, manager).—To overcome the ventilation difficulty, the company cleaned up the main level for some distance, and sunk a winze on the Occidental reef, thereby establishing a connection with the Loyalty reef and the low-level crosscut. The work done on the Loyalty reef has been very satisfactory, and specimen ore has been occasionally secured. A new change-room, with sanitary arrangements, has been provided. 34 tons of ore was treated, for a return of £413 4s. 6d. Eight men were employed.

New Cambria Mine (W. T. McGregor, manager).—A strong quartz reef has been driven on in one of the surface levels, with encouraging results. Three men were employed.

Lord Nelson Mine (J. Middleton, manager).—Little work has been done, but some rich ore was obtained, which yielded £1,144.

Otanui Mascotte (R. Otto, manager).—Several quartz veins have been proved in the main crosscut from the shaft chamber. Work at the low level (100 ft.) proved very disappointing; the main reef either pinched out or was displaced by a fault. Ventilation was dull.

Champion Mine (J. Collins, manager).—Operations in the north section of the claim were suspended early in the year, and the mine was subsequently protected. Towards the end of the year work was started in another section, the battery level being opened. The milling-plant has been reconstructed, and has been working, but no returns are yet available. Twelve men were employed.

Kirikiri Consolidated (J. P. Williams, manager).—The low level (250 ft.) has been extended on the reef a further 100 ft., and a rise of 170 ft. has been made. At 70 ft. up the winze an intermediate level was driven 50 ft. on the reef, and the reef was stoped out for some height. The ore, however, proved unprofitable. Six men were employed.

Golden Belt Mine (A. A. Adams, manager).—Work has been confined to the main low level (250 ft.), where two rises were made. The place is ventilated by a line of 9 in. air-pipes. Near the rises a winze was sunk on the reef to a depth of 45 ft., and then stopped owing to an inrush of water. The milling-plant and aerial tram have been overhauled and repaired. 316 tons of ore was treated, for a return of £807 5s. 10d. Twelve men were employed.

Tairua Monarch (Charles Hansen, manager).—At the time of my visit in June four men were driving on a reef in the upper level (60 ft.), and the milling-plant was running. The results proved very disappointing, and the company applied for protection. 400 tons of ore was treated, for a return of £304 11s. Four men were employed.

Tairua Golden Hills (J. Jobe, manager).—No. 3 low level has been driven a short distance to a point when the reef should be intersected at any time. Owing to a serious defect in the machinery, the milling plant has been idle, and the engineers are reconstructing the greater part of the plant. The mine was in good order. Twenty-nine men were employed.

Tairua Mines (James Carroll, manager).—The Knight reef has been driven on at the shaft low level (350 ft.), and stoped out for some distance. The ore was treated at the battery, and having proved low grade, the company obtained six months' protection. 750 tons of ore was treated, for £718 15s. 6d. Twenty-five men were employed.

West Coast Claim (R. Ross, owner).—The present owner purchased the claim from the trustees of the estate of the late John Northy, and has done a limited amount of prospecting.

Thames Foreshore Dredging-works (H. H. Adams, supervisor).—The company have energetically worked their claim, but the returns are poorer than those for last year. 9,000 tons of tailings were treated by cyanide at the Moanataiari battery for a return of £881 14s. 1d. Ten men were employed.

Pukipuhi District.—A metalliferous quartz formation one and a half miles long and 20 chains wide was discovered by Mr. Mitchell about five miles from Whakapara. Picked samples were assayed at the Thames School of Mines, with the following results: Mercury, 8.96 lb. per ton; gold, silver, and manganese, traces; iron, 54 per cent. A parcel of iron-ore has also been sent to the smelter-works at Preservation Inlet for treatment.

Hunua (Waikato District).—A quartz reef was found outcropping on the property of Mr. Morrison, about five miles from the Township of Hunua. I examined this reef in July, and found that a tunnel had been driven a distance of 50 ft. on the reef; a lower level was being started to cut the reef at a greater depth. Mr. Morrison informed me that a sample of the ore had been assayed, and gave very good results. The drives were timbered, but not securely. Two men were working on contract.

I have, &c.,

B. BENNIE,

Inspector of Mines.

The INSPECTOR OF MINES, Reefton, to the UNDER-SECRETARY, Mines Department, Wellington.
SIR,—

Inspector of Mines' Office, Reefton, 23rd March, 1912.

I have the honour to present my report on the gold-mining industry in the West Coast Inspection District for the year ended 31st December, 1911.

QUARTZ-MINING.

MARLBOROUGH.

Dominion Consolidated Developing Company (Mr. Oats, mine-manager).—This company has claims situated two and a half miles from Deep Creek, Wakamarina, covering an area of 83 acres, which are held under special quartz claim license, also 100 acres held under a prospecting license. The capital of the company is £15,000, and the operations consist of mining for gold and scheelite. During the year an average of twenty-one men have been constantly employed. The total value of minerals won is £1,358 7s. 6d., as follows: Gold, £1,133 7s. 6d.; scheelite, £225. The total expenditure for the year was £3,517, which amount has been spent principally in development, as follows: Mine-development, £1,519; water-races, £490; mining and treating quartz, £1,108; sundries, £400. The value of equipment is estimated to be £1,780. The development for the year has provided an ore reserve, ready for stopping, which is estimated to be worth £3 per ton, gold and scheelite. The New Zealand Mines Trust (Limited), have been appointed consulting engineers to the company. During the last two months Mr. Hopkins, metallurgist of the Waihi Gold-mining Company, and Mr. Rhodes, manager of the Mine Trust, have visited the mine, and thoroughly inspected and sampled the various ores. On their advice, the installation of a twenty-stamp mill, capable of treating 1,200 tons per month, is being proceeded with, and provision will be made for further extension as developments warrant.

Jubilee Mine, Top Valley (owners, the Wairau Valley Gold-mining Company; manager, Mr. Jackson).—Two men have been employed for the year extending the low-level crosscut, the work being subsidized by the Government at the rate of 5s. per foot. No reef has yet been found at this level. The workings were safe when visited on the 5th August.

Morayshire Scheelite Claim (owners, Messrs. Dowman and Bradcock).—In this property a 3 ft. reef carrying scheelite is being developed, and prospects appear to be good.

NELSON.

Golden Blocks Mine (Mr. Annear, manager).—During the year a shaft has been sunk 90 ft. below No. 3 level, with satisfactory results. The battery was destroyed by fire, but was replaced by one of more modern type, and crushing was resumed in November. A 25 in. Sirocco fan has been installed at the mine for the purpose of ventilating the lower workings, and will be capable of providing efficient ventilation for a long time to come.

LYELL.

New Alpine Mine.—This mine is now the property of a private syndicate, Mr. D. Cadigan being in charge. During the year a rise was put up from the intermediate level above No. 7, and intersected a block of quartz in the footwall of the main reef. A trial crushing of 70 tons yielded very favourable results, and further work is now being carried on to prove the extent of ore available.

Victory Mine (owners, the Victory Gold-mining Company; manager, Mr. G. W. Turner).—This mine, which has lain idle for many years, is now being prospected at a deeper level, and the owners are also prospecting several other reefs which had not been previously tried. A Government subsidy at the rate of 5s. per foot for 1,000 ft. of driving (£250) has been granted for the purpose of opening these reefs by means of tunnels, and this work has been started. In the event of this prospecting proving successful it may lead to further operations in the practically untried field between the Lyell and Mokihinui.

WESTPORT.

No quartz-mining operations have been carried on in the neighbourhood of Westport during the year.

CAPLESTON.

Just-in-Time Mine (J. Bolitho, manager).—Operations have been confined to prospecting at the 400 ft. level. The main crosscut was driven east 120 ft., cutting two reef-tracks. The first of these was driven on for 322 ft. For the first 200 ft. boulders of gold-bearing quartz were met with, but for the last 100 ft. the quartz was poor. From the end of this drive a crosscut has been driven 125 ft. to the west, and is being continued.

Welcome and Fiery Cross Mines.—This group of once payable properties is still lying idle. It does not appear that anything less than 1,000 ft. of sinking would, if successful, open up the mines to any advantage, and so far the holders have not been successful in raising sufficient capital for this purpose.

Golden Arch Mine (Tripoli Syndicate, owners).—Two tributers were employed for a portion of the year, and treated 30 tons, for a return of £129. The reef is very small, and the value is uncertain. No work was done for the last few months of the year.

Victoria Range Syndicate.—Two men have been employed in the neighbourhood of the old Kirwan's Reward workings, and a drive was put in 500 ft. to intersect the solid reef, but met with no success, being in very faulted and disturbed country the whole way.

Knight and Party.—Two men were employed for the greater portion of the year driving on a reef outcropping on the ridge north of Kirwan's Reward. The reef was narrow and poor for the whole distance driven—350 ft.—and towards the end of the year work was suspended.

REEFTON DISTRICT.

Big River Mine (owners, New Big River Gold-mining Company; manager, J. H. McMahon).—During the year operations in the mine have been chiefly confined to No. 10 (1,575 ft.) level workings, and the rise from such level is now connected with the New Eastern level, thus assisting the ventilation of the mine-workings. In the south-eastern end of No. 10 level a crosscut was driven a distance

of 30 ft., and a block of quartz was cut, which is now termed the south-western block. This has been driven on for 90 ft., the reef varying from 1 ft. to 10 ft. in width. A winze has been sunk from No. 10 level on this block for a vertical depth of 23 ft., but the reef gave out, and the sinking was discontinued. From the 580 ft. flat sheet the No. 10 level was extended 25 ft. in a northerly direction, and the reef was cut (which is now termed the north block). This stone has been driven for a distance of 75 ft., the reef varying from 1 ft. to 28 ft. in width. A rise (from No. 10 level) on this block has been put up and connected with the north end of the western intermediate level a vertical height of 70 ft. Stopping has been carried out over the different levels of the mine, the reef varying from a few inches to 29 ft. in width. A tunnel, which will be 1,534 ft. in length, has been started on the Deep Creek side of the main shaft. When completed this tunnel will connect with No. 2 level. The battery crushed 6,913 tons of quartz, for a return of 6,626 oz. 18 dwt. of gold, valued at £25,927 12s. 2d.; 3,950 tons of sand treated at the cyanide plant yielded 680 oz. 9 dwt. of bullion, valued at £1,695 6s. 9d.; and 38 tons 10 cwt. 2 qr. of concentrates were sold for £526 10s. 6d.

St. George Gold-mining Company (J. Rodden, manager).—The following development-work has been carried out during the year: The main level has been continued along the central line of reef 884 ft., making a total length of 1,834 ft. Crosscuts have been driven east and west from the level 125 ft. and 180 ft. respectively. In the west crosscut, what is believed to be the west line of lode was cut at 106 ft., and this was driven on north for 40 ft. In the main level boulders of quartz were frequently met with, and nearly all carried values which would be payable in a solid reef, but, unfortunately, no continuous ore-body has been met with.

Big River South.—Two men were employed for the first half of the year in further prospecting in the low-level tunnel, but, no payable ore-body having been disclosed, operations were discontinued some months ago.

North Big River (W. Kirwan and party).—Prospecting operations were discontinued early in the year.

Progress Mine (R. R. Morrison, manager).—Development-work in this mine for the year has been chiefly devoted to the recovery of faulted portions of the ore-body in No. 11 level. A considerable amount of rising and driving has been done, but no information as to actual distances or result has been furnished by the management. From about the middle of the year the returns fell off considerably, and the number of men employed was largely reduced; but the mine still contains big reserves of low-grade ore, and has valuable assets in the shape of accumulated concentrates and slimes. There is every reason to believe that with good management the mine has still a long life before it. An average of 320 men were employed during the year. 41,596 tons of ore were treated, for a return of £42,832.

Bonanza (W. J. Morris and party).—Since operations were given up by an English syndicate, who held an option over this property, no further work has been done. A subsidy of 5s. per foot for driving was granted to the owners, but, so far, they have not commenced work. The claim has given prospects which appear to be worth following up, and no doubt work will be undertaken in this direction early in the new year.

New Discovery (Messrs. Billet and Bierwith, owners; manager, N. Lawn).—Early in the year the abandoned Morning Star Claim was taken up by Messrs. Bierwith and party, and a drive was started on the track of a small leader immediately under the old underhand stopes. Development-work, consisting of surface trenching, driving, and sinking, has been vigorously carried on; but, although the leader carried high gold-values in places, the amount of ore disclosed is very small, and the results have not been very encouraging up to date. Driving on the track of the reef is still being continued.

Keep-it-Dark (manager, John Ellery; information supplied by Mr. J. H. Hindmarsh, secretary).—After thirty-seven years of profitable work, and the payment of 184 dividends, amounting to £158,666 13s. 4d. on a paid-up capital of £8,708 6s. 8d. in cash, equal to 8s. 8-12d. per share, the shareholders of the company (the Keep-it-Dark Quartz-mining Company (Limited)) agreed to go into liquidation, and reconstruct the company under the name of the "Keep-it-Dark Mines (Limited)," with a nominal capital of £10,000 in 20,000 shares of 10s. each, and a sum of £2,750, or 2s. 9d. per share, has been called up, with the prospect of no further capital being required to carry on operations, and the payment of dividends in the near future. The new company, since its registration on the 8th February, 1911, has carried on the following work: Stopping from under No. 7 level on the block of quartz known as the Never Find uprise from No. 7 to No. 6 level for ventilating, and contracting for the sinking of the main shaft a further depth of 150 ft., making in all 1,190 ft. This work was expeditiously carried on by means of an air-winch, and the No. 8 chamber constructed, and No. 8 level extended to the line of reef. The company has crushed for the year, to the 31st December, 7,212 tons of quartz, the battery and cyanide returns giving a result of 2,415 oz. 15 dwt. of bullion, valued at £7,943 19s. 11d.

Wealth of Nations (R. A. Stewart, manager).—Development-work for the year was chiefly confined to the extension of Nos. 9 and 10 levels, and stopping was carried on at all levels between Nos. 10 and 7. An average of 150 men were employed for the year, and 24,968 tons of ore was treated, for a return of £49,635 8s. 4d.

Golden Fleece Mine (J. Oats, manager).—This mine (the property of the Consolidated Goldfields) was worked on tribute by J. Oats and party for the first two months of the year. Thirty men were employed, and 329 tons was treated, for £1,306 4s. 4d.

Bolitho Bros.—This party carried on operations during the year in their mine at Lankey's Creek. The auriferous material consists of a firmly compacted layer of conglomerate, which carries alluvial gold. This is crushed by means of a light five-stamp battery driven by water-power, and the gold is saved on mats. 981 tons were mined and treated during the year. Four shareholders work the claim, without employing labour.

Murray Creek Gold-mines.—Early in the year a company was formed in Wellington, with a capital of £12,000, to take over and reopen the Victoria-Inglewood group of mines. Mr. James Meehan was

appointed manager, and commenced work in July. A crosscut has now been driven 210 ft., and a chamber cut out 30 ft. by 10 ft., from which a main shaft is to be raised and sunk. A winding-engine, boiler, and air-compressor are now on the ground, and are being prepared for working.

Willis and party are still driving their crosscut from the Black's Point Road, in the hope of striking Anderson's reef, the work being subsidized by the Government and the Inangahua County Council. The total distance to be driven is estimated at about 1,000 ft., of which 500 ft. have now been completed.

New Ulster Quartz-mining Company.—During the year this company has been employing two men in extending the crosscut to the east from the No. 2 level. Nothing of value has been disclosed.

Golden Point (G. Perotti, owner).—The main shaft has been sunk 100 ft. during the year, and is to be continued to 200 ft. before a crosscut is driven to the reef.

Blackwater Mine (J. T. Hooker, manager).—During the year the main shaft was deepened to the No. 6 level, and Nos. 4 and 5 levels were driven, with satisfactory results, the reef maintaining its average width and value. An average of 281 men were employed; and 44,038 tons was treated, for a return of £92,062 0s. 7d.

Rise and Shine Claim, Blackwater Creek.—Donald McDonald and party have carried on prospecting operations during the year. The main crosscut has been extended, and now measures 253 ft. A promising reef-track, carrying up to 3 ft. of stone, was passed through at about 173 ft., and has been driven on for 140 ft. The main crosscut is to be further extended to intersect a reef which outcrops on the surface, and there are good reasons for believing that this property will develop into a mine.

Saraty Syndicate.—This party has been prospecting a reef in the Blackwater Creek to the west of the Rise and Shine; operations being hindered by the depth of alluvium which covers the rock. The outcrop of the reef at one point is 2 ft. wide, and it appears worthy of a little further development.

Eldorado Syndicate.—In this claim there is a reef 8 ft. wide, and a smaller one of from 6 in. to 2 ft. Both have been driven on during the year, but without disclosing payable values.

McVicar and party have driven two levels on a highly mineralized ore-body lying half a mile to the east of the Blackwater mines. Some fair assays have been obtained, but further development is required.

Blackwater South (Christchurch syndicate; D. Absalom, manager).—This claim adjoins the south boundary of the Blackwater mines, and efforts are being made to pick up the southerly extension of that highly payable reef. Some 400 ft. have been driven, and two reef-tracks have been passed through. One of these has been driven on for some 70 ft., and looks promising in the face. The main crosscut is to be driven another 50 ft., and at that point it is expected to meet the Blackwater line.

McColl and Absalom's Lease.—This claim lies to the east of the Blackwater South. An outcrop carrying good assay values was discovered by the prospectors, and an option over the claim was taken by the Blackwater Company, who installed drilling plant, and are now crosscutting to intersect the reef lower down.

Danks and Morgan (Millerton syndicate; W. Cartner, manager).—In this claim, situated about a mile to the west of the Blackwater mines, a promising reef has been discovered, and traced by surface-trenching for half a mile. It is of an average width of 2 ft. 6 in., and carries payable values in gold. A tunnel is now being driven from the level of the Snowy Creek along the strike of the reef, and is now in nearly 100 ft.

PAPAROA RANGES.

The *Minerva*, *Cræsus*, *Taffy*, and *Garden Gully Mines* have been practically at a standstill during the year, and nothing but surface prospecting has been undertaken in this locality except a little crosscutting at No. 4 level in the *Cræsus*. Reefs abound in these ranges, and every creek has yielded alluvial gold and rich quartz specimens, but as yet no payable reef has been discovered.

GENERAL REMARKS.

Early in 1911 the prospects of quartz-mining in the Reefton and Blackwater districts appeared to be brighter than usual. Extensive additions to plant were being made at the largest mines, and increased returns were confidently expected. At the same time, there was a keen interest taken in prospecting in the Blackwater district, and several new discoveries were reported. Unfortunately, about half-way through the year an attempt was made by some of the mining companies to introduce the system of working stopes by contract, and the refusal of the workmen to entertain the proposal led to very strained relations between employers and men; large numbers of men were discharged, and almost as many more left the mines of their own free-will. Without discussing the merits of the dispute, one cannot but deplore the effect it has had upon the industry and the prosperity of the district generally.

During the year there have been the usual number of slight accidents, but, happily, no very serious ones, and none fatal. The number of young men who became affected by miners' disease, however, calls for an improvement in the working-conditions of the mines, and with this object steps have been taken to enforce the provision of more adequate ventilation. In the writer's opinion, the Act might be amended so as to give Inspectors power to order water-jets to be provided for the purpose of laying dust in all dry mines, and not, as at present, only where machine-drills are in use.

ALLUVIAL GOLD WORKINGS—SLUICING AND HYDRAULIC ELEVATING.

MARLBOROUGH.

Larkin and Party, Enchanted Creek.—At this claim the water-race was completed, and the hydraulic elevator was started to work during the middle of the year. The race is a mile and a quarter long, and carries six heads of water 260 ft. above the surface of the wash. On the 6th August the lift was

43 ft., and the bottom was not then in sight. With such a small quantity of water the work was necessarily very slow, and the results proving unsatisfactory, operations were temporarily stopped, with a view to attaining a better method of working.

Nelson and Mayo, Wakamarina.—These two men have carried on sluicing operations during the year, with payable results. It is proposed to turn the claim over to a company who will open out on a larger scale.

COLLINGWOOD.

Quartz Ranges.—Five men were employed till June, 1911, since when no work has been done. The yield of gold for the period was only 27 oz.

Parapara Hydraulic Sluicing Company (J. Bassett, manager).—Operations have been steadily carried on throughout the year; ten men were employed, and the gold won amounted to £2,475 13s. 6d. The ground being worked is very deep, and the tailings have been elevated from 80 ft. to 90 ft. in one lift, using thirteen heads of water under a pressure of 350 ft.; five heads additional water being used to sluice down into the pit. Mr. Bassett estimates that he has been handling by this means 3,000 yards per week, and, taking into consideration the depth and nature of the ground, and the quantity and pressure of the water, this is very good indeed.

Aorere Hydraulic Sluicing Company (H. F. Logan, secretary and manager).—This claim of 87 acres at Slate River has given employment to five men for the year. Fourteen heads of water are used for sluicing from two nozzles under a head of 400 ft. The face is 50 ft. high, wash tightly cemented, and bottom stones very heavy. The tail-race discharges through a tunnel driven 270 ft. through very hard schist rock. Quantity of material operated on for the year, 47,875 cubic yards; average yield, 2,166 grains per yard; total yield, 216 oz., valued at £848.

Walker Maruia Sluicing Company.—This claim has been worked by the tributers, Mr. Dwan and party, throughout the year. The bottom wash is exceedingly heavy, and a tremendous number of stones have to be handled by means of a winch. The tributers are making fairly good wages.

Horse Terrace Claim (R. W. Richardson and party).—Three men have been steadily employed for the year, and 60,000 yards have been put through the tail-race. The value of gravel in the claim does not exceed 1·4 gr. per yard, but with a good water-supply and good methods of working, a payable result is obtained for the owners.

Matakitaki Sluicing Company, Mammoth Claim.—Sluicing was carried on only for three months of the year, and 15,000 yards were treated for a return of 46 oz. 7 dwt. 12 gr. of gold. Work is at present suspended, and it is proposed to extend the race five miles down the river, for the purpose of selling water to miners.

Rappahannoc Claim (Dr. Warneford and party).—Intermittent work has been carried out during the year, with unsatisfactory results.

Thompson Maruia Sluicing Company.—This company has acquired an area formerly held by Messrs. Thompson and sons. A water-race is being constructed nine and three-quarter miles in length, to carry thirty-five heads of water. It is hoped that by treating very large quantities of material this property can be made to pay a fair interest on the capital involved. If this can be done, there is a big area of ground of a similar nature available.

BULLER RIVER.

Very little sluicing is now being done along this river. A few small parties are making wages, but no work of any magnitude is going on. What little gold is being obtained is extremely fine, resembling that found on the sea-beach.

ADDISON'S FLAT.

Millikin and party have worked throughout the year on their cement claim, and crushed 5,000 yards, with payable results.

Addison's Long Tunnel Claim.—Four men were employed until August, when operations ceased, and the company went into liquidation.

McKnight and Party.—This claim has employed five men during the year, and sluicing operations have given fair results.

Carmody and Party.—This party (of eight men) has been continuously employed in sluicing and elevating, and has had fairly payable results.

McCann and Party, St. John's Terrace.—Sluicing has been carried on during the year, with three men.

Shamrock Claim.—Eight men have been employed in driving the tail-race tunnel, which, when completed, will be considerably over a mile in length. This is expected to be finished and actual sluicing started in a few months' time.

CHARLESTON.

No work of any importance has been carried on during the year. Powell's claim has been closed down, and only one or two fossickers have been at work.

GREY VALLEY.

Lake Hochstetter Water-race Syndicate.—The whole of the rights and properties of the syndicate have been under offer during the year to an English firm of brokers, and it was hoped a company would have been formed to construct the race, and that the large area of auriferous country in the Ahaura, Callaghan's, and Nelson Creek Valleys would have at last been brought under the command of an adequate water-supply. Unfortunately, the flotation has not been accomplished, and what appears to be a thoroughly legitimate undertaking is still awaiting the necessary capital.

Bell Hill Syndicate.—After lying idle for nearly the whole year this claim has now been let on tribute. No returns are yet to hand.

Gow's Creek Sluicing Company.—The driving of the tunnel tail-race has been continued during the year, but actual sluicing has not yet been started.

Healey's Gully.—Three men were employed during portion of the year, but with very poor results.

Montgomery's Terrace.—61,440 loads of wash were treated in the early part of the year for a very small return.

Sullivan's Lead.—This claim was worked by two men for the whole year, and gave a fair profit.

Grey River Sluicing Company kept three men employed for the year, and gave a fair return.

GENERAL REMARKS.

Alluvial-gold mining is very fast becoming a thing of the past throughout the district. The easily worked deposits have, of course, become exhausted, and the well-known diggings which supported thousands of men some thirty or forty years ago are now deserted, except for one or two isolated individual miners and a few Chinamen. Attempts have been made to work some of the extensive low-grade alluvial deposits by bringing a large volume of water to bear on them and operating on a large scale, but, unfortunately, none of these attempts has been an unqualified success. In some cases the ground has undoubtedly been too poor to be payable; in other cases the water-races, though large compared to those in olden times, have still been not large enough; and in almost all cases the management, legal, and other expenses have swallowed a large amount of the gold obtained, as is shown by the fact that several claims which never paid the companies who owned them have been very profitably worked by tributers. Notwithstanding these failures, there is still a large area of alluvial land which is sufficiently auriferous to be sluiced profitably on a large scale.

DREDGING.

In all, twelve dredges have been in operation during the year—two on the Buller River, one at Capleston, one at Cronadun, and eight on the tributaries of the Grey River. With the exception of one or two, these are all paying interest on the capital invested, the success being due to careful management, powerful machinery, and thorough prospecting of the claims before commencing dredging operations.

A fairly large amount of prospecting is now being done, and probably during the current year new machines will be put into commission.

METALS OTHER THAN GOLD.

As mentioned under the head of "Quartz-mining," the galena-bearing lodes of Wangapeka and Mount Owen are receiving attention from speculators. At Parapara some tunnelling has been done to prove the extent of the iron-ore body, some nine men being employed in this work. Copper and asbestos have been left severely alone for the year.

ACCIDENTS.

Only two accidents were reported, neither being fatal.

Two men, named D. Tennant and A. Neagle, working in the Progress Mine on the 2nd September, drilled on to a charge of gelignite. This exploded, but both men escaped with a few cuts and bruises.

James Cooper, dredge hand, while striking in the smith's shop at the Hessey-Cameron dredge, was injured by a small piece of steel, which, flying from the anvil, severed an artery in his thigh.

GOLD-MINERS' RELIEF FUND.

Sixty-one applications were dealt with under the Gold-miners' Relief Fund for the half-year that it was in operation, and certificates were issued totalling £287 5s. 2d. Most of these were on account of minor accidents, strains, bruises, &c. Three applications for the full sum of £50 were granted to sufferers from pneumoconiosis, and three other claims from the same cause are now being investigated.

I have, &c.,

T. O. BISHOP,

Inspector of Mines.

The INSPECTOR OF MINES, Hokitika, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Inspector of Mines' Office, Hokitika, 30th March, 1912.

I have the honour to present my report on the mines and oil-prospecting operations in my district during the year ended the 31st December, 1911.

PETROLEUM.

During December, 1910, a survey was made of the Kotuku district by Dr. Wanner, geologist, accompanied by Mr. P. G. Morgan, Director of Geological Surveys. As a result of this survey, a powerful drilling-plant and two Galician drillers were at once sent out to prospect the locality. In order to reach this depth in unknown territory, casing of large diameter had to be used, and the well was started with a diameter of 16 in. Before 600 ft. had been reached the hole had to be reduced to 12 in., on account of the difficult nature of the strata encountered. At a depth of 952 ft. the well was discontinued, the primary rocks being met with, and any further attempt to secure oil would have proved futile.

The shallow oil-wells situated along the banks of Deep Creek still continue to yield small but regular quantities of oil, and in the near future it is probable that the syndicate will turn its attention to this shallow production. At the present time the rig is being dismantled and will shortly be shifted to another site.

QUARTZ-MINES.

POERUA AND WILBERFORCE QUARTZ-MINE DISTRICTS.

Poerua Gold-mining Company (John Phibbs, mining-manager).—Throughout 1911 the leases have been further prospected with from six to twelve men, and, having proved sufficient quartz of payable grade, a ten-stamp mill was obtained and is now in course of construction. The method of treatment for the ore will be all sliming and cyaniding with air-agitation.

During the year the Department, through the Grey County Council, has constructed a dray-road to the battery-site. All development-work underground is of a substantial character. The management is to be complimented on providing such excellent ventilation.

King Gold-mining Company, Wilberforce (John Hewer, mining-manager).—The average number of men employed during the year is seven. 300 ft. have been driven, and fully timbered where required. Full ventilation has been maintained on a close day by the aid of a fan.

Wilson Reward Syndicate (John Hewer, supervisor).—Two men employed in prospecting operations.

Callaire and Bauke.—During the year, which has been a very unfavourable one, 110 ft. has been driven on a nice reef-track, but so far no gold has been found.

ROSS.

Osmers and Party.—This party have been engaged upon development-work, and have not produced any ore of sufficient value for battery treatment. The subsidized tunnel at Jones Creek driven by Messrs. Aitken and party has not as yet developed anything of a payable character, although on the surface the leader carries nice gold by dish prospects.

DREDGE MINING.

There were only three dredges actually employed during the year. On the North Beach dredge the regulations have received strict attention. The year's production has been curtailed, owing to the shortage of water during the dry season.

The Stafford dredge continues to yield a profit on the year's operations.

At the Success dredge the returns have not been as large as could be desired, but have been payable, and as dredging is carried up the creek the gold returns increase.

The Mining Regulations have been generally complied with.

ALLUVIAL MINING.

Gibbs and Friend, with two men, continue sluicing in their area at Omerua. As developments continue they prove very satisfactory. More capital is required for development.

On Peter Hende's area, situated at an altitude of 3,500 ft., owing to the very inclement season and the owner's ill health, little or no work was done.

CALLERY GORGE.

Only two miners ventured into this gorge this past season. They only remained three weeks, but were well repaid for their time, and intend returning next season if it is favourable.

FIVE-MILE BEACH.

Dominion Gold-mining Company.—For the first six months of the year this company had four men employed in preparing the pipe-line from the beach up to Lake Alfrine; also raising the bank of the lake. For reasons best known to themselves, work was suspended, and a suit for cancellation instituted. The cancellation was in favour of the applicants.

Other than three beachcombers, there is no gold-mining in the district.

OKARITO DISTRICT.

The three prospecting-areas recently held on the north bank of the lagoon have been surrendered, the holders having failed to form a company with sufficient capital to develop the areas.

OKARITO FORKS, SOUTH WESTLAND.

Messrs. Tait and Munn.—This party, assisted by Government subsidy, have succeeded in opening what to all appearances is a new gold-lead; they are now constructing a water-race thereto.

DUFFER'S CREEK.

Two men have been prospecting in this locality, but they have not met with any payable results.

ROSS.

John Smith and party, Cedar Creek, have had a more successful year for their sluicing operations. As developments are advanced the yield of gold per yard increases. The level from which they are now working is too high, so it is proposed to commence a low level.

Luckie and party, after having sunk their shaft and driven 200 ft. (assisted by a subsidy), found the water so heavy that they suspended operations, and have not restarted.

The Mont d'Or Gold-mining Company obtained gold to the value of £3,493, of which £1,800 was paid in dividends. A very bad start was made at the beginning of the year. A very long tunnel that connects the water-race with the main supply-pipes broke down completely, and slid away into the

gully, making it necessary to remove the connecting-pipes from Robinson's Creek side of the range to Jones's Creek side. This proved an expensive work, and prevented the use of the rainfall for a considerable time. Immediately the work was finished between three and four months of very dry weather was experienced. The expenditure on water-races has been heavy for the year. The washdirt in the faces is looking well. With a good supply of water a good return for the coming year may be expected.

Ross Goldfields.—No work was done this year, the company being in liquidation.

Trent and Eves.—After continuing their water-races and erecting Californian pumps they excavated a large paddock of washdirt considered to be highly payable; a drainage-tunnel was driven 250 ft. (assisted by Government subsidy), when some soft decomposed sandstone was met with, also a continual discharge of water. Driving is now suspended, pending the drainage of the water.

Richard and Denia, assisted by subsidy, drove a tunnel 700 ft., and passed through three different layers of payable wash. Having connected with the shaft, there is ample ventilation for driving and blocking-out.

Although the surrounding ground has all been applied for, real development has not been started.

RIMU AND BACK CREEK.

Hindman and Thorpe still continue to be very successful, each washing giving a nice profit.

J. E. Wells and party of three, after doing a good deal of preliminary work, have been sluicing satisfactorily.

Cooper and party, four men, still continue to work, blocking-out with payable results. All works are in a satisfactory condition.

Brooks and party, of four men, are working with profit, and could do much better if a better supply of water for sluicing purposes was available. These remarks apply to all the sluicing claims on this field.

Messrs. Boyd and party have been successful in opening up a payable body of washdirt. At present there are four men employed. All works are in a satisfactory condition.

Bryant and Party.—The development in this subsidized tunnel has been encouraging. Six men employed. All workings are in good order.

Knowles and party (four) were engaged developing an area of 11½ acres.

There are several other areas held in this district, where development is now being carried out.

KANIERI AND TUCKER FLAT DISTRICT.

Marks and Culson, G. Head and party, and MacLuggage and party are still driving their subsidized tunnels, which should soon reach their respective washdirt.

Hutcheson Bros. continue to carry on sluicing operations with profit.

The Kanieri Gold-mining Syndicate have taken up a claim of 42 acres and sunk three shafts, obtaining good prospects. They propose to further test the ground by Keystone drill, which, if successful, will greatly encourage other mining in the locality.

The Mahinapua Gold-mining Company have been engaged sluicing and elevating on their claim between the lake and ocean-beach.

BLUE SPUR DISTRICT.

Feeney and party, of five men, still continue to obtain payable returns when water is available for sluicing. Every precaution is taken to prevent any sudden falls from the high faces.

HUMPHREY'S GULLY.

J. Harris and party, of six men, are working on tribute, with fair results. A costly item is the maintenance of their very long tail-races.

There are still a few aged men fossicking about in the creeks and low terraces, who obtain a few pennyweights every year.

The Old Montezuma Claim has been taken up again by Lincoln and party, who have installed a Kirshaw pump. They have ample table-accommodation, and plenty of water for washing.

STAFFORD AND GOLDSBOROUGH DISTRICTS.

Red Jack's.—This ground is worked by Inge and party, of seven men. The returns have been indifferent. The great drawback is the want of a sufficient water-supply.

Munday's claim continues to employ three men. Operations at this claim have been badly hampered by inadequate dams for the storage of water during the rainy season.

Pimpernell and party employ six men, with profitable results. The extension of Government water-race has been a great success in the development of German Gully.

Sullivan and Party.—This party of five men worked for the first nine months of the year successfully, but, owing to some friction with the shareholders, work has been suspended for some time. The drainage-tunnel has just received a thorough overhaul by the Westland County Council; it is now in very good order.

James Shannon has had a successful year's sluicing. Being the only miner now sluicing into the Waimea main tail-race, he finds the upkeep a very serious item.

Coronation Claim.—Mr. Carmini has completed his long tail-race, and obtained three very successful washings.

CALLAGHAN'S.

J. Manzoni continues to drive his low level. This will be quite a boon to the district as soon as it is completed.

Havill Brothers are a very energetic party, and have brought in a long tail-race to enable them to work their deep ground.

Cook and Honey employ four men, which could not have been done had they not been assisted in their long tunnel tail-race.

DILLMAN'S, KUMARA, CAPE TERRACE, AND HAYES TERRACE.

Garner's Claim.—G. Garner employs four men sluicing. He is now opening up his face, and should be in a position to deal with the washdirt on an extensive scale. The channel works well.

The Kumara Long Tunnel Company, for the first part of the year, continued to sluice, with profitable results, employing five men; towards the close of the year the channel unfortunately collapsed.

Pug Hill continues to employ nine men, with payable results. Extensive repairs are being made to No. 4 channel, to permit of some of the deeper ground being worked.

Evendon and G. Lawrence continue to sluice with profit, employing three men.

Evendon and Court continue to sluice with profit, with three men. All workings are in good order.

Bell and party, of five men, when water is available, continue to sluice. As the water slackened off they made everything ready for a steady supply from the new Kumara water-race extension.

Fenson Brothers (three).—For the period when the water was available their washing was of a profitable character.

Loman and Party (five).—By conservation of water, this party has been enabled to work with profit. Since Loman purchased Burr's rights everything has worked much better.

DUNGANVILLE.

Irving and McCracken (subsidized tunnel).—The material passed through in repairing their tunnel and its extension yielded 28 oz. 8 dwt. 19 gr. of gold. The air became so impure that I had to order a cessation of work until proper ventilation was obtained. This is now being attended to.

There are seven other aged men known as "hatters" in this district getting a few pennyweights of gold annually.

BARRYTOWN.

This once rich district is now almost deserted by miners. They have given their attention to pastoral pursuits, with the exception of Messrs Kay and White, who, by dealing with the extensive deposit of sand on a large scale, find remunerative employment for fifteen men.

WHITCOMBE PASS.

The prospectors, Messrs. Singer and North, have dissolved partnership. After pegging out a prospecting-area of 100 acres they left the district, as they could not get capital to develop the property.

ACCIDENTS.

1st June, 1911.—Florence O'Brien wrenched his back whilst trucking in the Gold-mining Company's mine, Wilberforce. He was attended to by Dr. Teichelmann.

15th June, 1911.—Charles Heil was killed in the Wheel of Fortune Mine, Stafford, by the breaking of the elevator ladder. An inquest was held at the Courthouse at Stafford, the verdict being that death was due to an accident which could not be prevented, and that no blame was attached to any one.

10th July, 1911.—Enoch Growcott, miner, whitlow caused by a jar whilst lifting a stone at Back Creek.

29th August, 1911.—John Holley had his leg dislocated by a fall of *débris* whilst working in the mine with his brother, William Holley, South Spit.

6th September, 1911.—Albert William Upjohn, injury to side and chest by falling into washdirt paddock, claim known as Cooper's.

25th September, 1911.—Alfred Richards, whilst working in Havill's claim at Callaghan's, was injured by a stone coming out of the face.

18th October, 1911.—Walter Thomson was knocked into the race by a stone at Mont d'Or, Ross, and washed down to the tail. At first it was considered very serious, but the injured man recovered.

I have, &c.,

A. H. RICHARDS,

Inspector of Mines.

The INSPECTOR OF MINES, Dunedin, to the UNDER-SECRETARY, Mines Department, Wellington.
SIR,—

Office of Inspector of Mines, Dunedin, 30th March, 1912.

I have the honour to present my report on the gold-mining industry in the Southern Mining District for the year ended the 31st December, 1911.

QUARTZ-MINES.

Barewood Gold-mining Company (Limited), Barewood (H. S. Molineaux, mine-manager).—In the early part of the year the principal work in progress was the driving of the crosscut at No. 6 level a depth

of 400 ft. The crosscut was driven a distance of 110 ft. and cut the reef. The lode proved to be low grade, and after some distance was driven along the strike in both directions the mine was shut down. No further work has been done, and the water has been allowed to accumulate in the shaft-workings. The battery is now removed, and is in course of erection at the Maritana Claim, Macrae's Flat. No quartz was mined during the year. Three men were employed on surface and ten underground.

Mount Highlay Gold and Scheelite Mining Company, Hyde (Fink and Party; J. H. Evans, mine-manager).—Some work had previously been done on this property before it was acquired by the present owners. The battery is now located about three miles from the mine, and connected by a horse-tram line. A suspension bridge spans the gorge, over which the tramway is carried to connect with the mine. The reefs are very flat and ill defined, the quartz appearing to occur in bunches. Adit levels Nos. 1 and 3 have been driven in more or less quartz. The main battery supply was drawn from No. 3 level. What was supposed to be a new reef discovery was opened up, being driven on for some distance. This section is called the Lady Annie. The mine has not been worked for the last few months of the year, pending reconstruction of the company. Quartz crushed, about 400 tons; average number of men employed, 19.

Highlay Tungsten-mine, Mount Highlay (The Gold and Scheelite Proprietary Company (Limited), late Donaldson Bros., owners; D. B. Waters, mine-manager).—This property changed hands during the year, the company now in possession having purchased from Donaldson Bros. The ore required to keep the mill—ten stamps—going has been mainly procured from the surface cut on the outcrop. This supply is, however, becoming exhausted, and the present company are expeditiously prosecuting underground work necessary to create new supplies for the mill. The adit known as the tramway level is being driven to connect with a winze sunk from the level above preparatory to stoping out the block. The ore then available will be a block 100 ft. long, 40 ft. deep, and average reef-formation (quartz and mullock veins) of 20 ft. The ground is heavy, and requires to be securely timbered. Fourteen men employed on the average.

MACRAE'S.

Maritana Mining Company (Gold and Scheelite; D. B. Waters, mine-manager).—This company was floated during the year, and commenced operations on the property adjoining the Golden Point Mine. The outcrop of the lode was stripped for some distance, and then a level, No. 1, 50 ft. lower down, was driven 150 ft. and connected with the surface. No. 2 level was started 60 ft. below No. 1, driven 260 ft., and connected with No. 1. The lode-formation varies in width, assuming in some parts extensive dimensions. The company have purchased the Barewood battery, which is in course of erection. Four men are employed underground.

Golden Point Quartz-mine (The Gold and Scheelite Proprietary Company (Limited), owners; D. B. Waters, mine-manager).—A change has taken place in the ownership of this mine, the present holders having purchased from Donaldson Brothers. A considerable amount of driving has been done on the property, extending over many years of work. There are three known reefs in the ground, all running very flat, and separated by 40 ft. to 60 ft. of rock. All of these lodes have been more or less worked for ore of gold and scheelite, the main supply coming from No. 3 reef, where three stopes are in progress; and a large extent of blocked-out ground exists. Owing to a large proportion of pyrites, some difficulty is experienced in recovering the scheelite in a marketable state, owing to the almost equal specific gravities of the two. The ore is reduced, and treated in a ten-stamp battery and cyanide plant at the mine. The battery motive power is a gas-engine, the supply of gas being generated by a Cambridge gas-producer fed with lignite coals. The mining and treatment costs being low, due to cheap power and transport, and every advantage being taken of the natural facilities available, it is found possible to mine and treat ore of an exceptionally low grade. The quantity of auriferous scheelite-ore dealt with for the year was 4,798 tons, for a return of £2,340 18s. 11d., an average value of 10s. per ton. About thirty men find regular employment at this mine.

Goldfinch Quartz-mine (White and Party).—This syndicate, consisting of some six working-men, took up this property and did some prospecting on a reef 2 ft. thick. Two winzes were sunk on the reef to a depth of 30 ft. The prospects were so encouraging that mining ceased, and the whole efforts of the party centred on the construction of a mill to treat the stone. A ten-stamp mill driven by a Cambridge gas-producing plant has been installed, and just at the close of the year commenced treating the stone grassed by the preliminary prospecting operations. It is intended to recommence mining as soon as the reduction-works are in good running-order. The values are mainly gold.

Golden Bar Quartz-mine.—A company is supposed to be formed to open up this property, which is located six miles from Macrae's Township. Two men are employed making a road.

Coronation Reef (Thomas and Orr, owners).—This reef, discovered by Thomas and Orr, is located three miles from Mount Highlay. The outcrop has been stripped in places for a mile along its strike, and shows an average width of 2 ft. Two trial crushings were made, the ore being treated at Donaldson's Golden Point battery. The first, of 18 tons, gave a return of gold £3 7s. 6d. per ton, and scheelite £1 1s. per ton. The second, of 50 tons, taken from three different places extending over half a mile of the course of the outcrop, gave a return of gold equal to £2 6s. 6d. per ton. No development-work has yet been undertaken.

Fraser and Gaytan Scheelite-mine.—Four men are employed prospecting on a series of small leaders, 1 in. to 6 in. thick, carrying a high percentage of scheelite. The battery of six stamps at Golden Point is run at intervals. The ore is carted from the mine to battery.

WAIPORI.

Canton Reef, Mitchell's Flat (R. J. Cotton, owner).—This property purchased by R. J. Cotton from the original owners, adjoins the O.P.Q. lease. The shaft is down 180 ft., and is unwatered by a

6 in. pump operated by a water-wheel. Operations are carried on at the 70 ft. level, and consist of driving a level on the northern strike of the reef, which is 18 in. wide. There is a battery of five stamps, which is run at intervals, the number of men employed and quantity of ground opened not being capable of keeping it continuously running. The treatment process consists of crushing and amalgamation.

Cox's Reef.—This holding was sold by auction during the year, and purchased by Messrs. McKnight.

BALD HILL FLAT.

Advance Mine, Obelisk Range (R. T. Symes, owner).—The 4 ft. reef operated on lies very flat, and the country is much broken. The ground is heavy, and consequently requires careful timbering to keep it open. A small battery of three stamps and a Wifley table compose the reduction-works. Pyrites are saved, and shipped to Australia for treatment, and show a profit. Two men employed.

BANNOCKBURN.

Carrick Gold-mining Company (J. E. Iles, mine-manager).—This quartz claim is situated in the Carrick Ranges, about three miles from Bannockburn, and is being actively developed. Three reefs, averaging about 2 ft. in width, exist on the property, and are known as the Royal Standard, White Horse, and Caledonia. The principal mine-development consists in the driving of three low-level tunnels to cut the separate reefs. During the year reduction-works have been erected and the most modern appliances installed for the thorough treatment of the mine ores. Various attempts have been made in previous times to deal with these ores, but their refractory nature has baffled the means adopted to extract the values. The new crushing plant consists of a ten-head battery, stamps 950 lb. each, mortar-boxes of the Homestake pattern, and Hoscur self-feeders are employed. Electroplated-copper plates, 6 ft. by 12 ft., are used in front of the mortar-boxes, and inside amalgamation is dispensed with. The pulp, after passing over the plates, goes into a conical separator, 10 ft. deep by 6 ft. in diameter. This cone has a jet of water entering at the bottom, and a good separation is anticipated. From the cone the sand passes to the cyanide-tanks. There have been erected four leaching-vats, 6 ft. high and 25 ft. in diameter, two sumps, and one solution-tank, 3 ft. high and 20 ft. in diameter. These tanks are all made of mild steel, bottoms $\frac{1}{4}$ in. and sides $\frac{3}{16}$ in. plate, and are stiffened by $2\frac{1}{2}$ in. by $2\frac{1}{2}$ in. by $\frac{3}{8}$ in. steel angle irons. Two precipitation-boxes are in position, and preparations are made to place in position two tables to carry amalgamating-plates for the tailing to pass over before finally being deposited in the creek. Three pumps and a small vertical engine have been installed, but various details yet remain to be completed. The mine is connected with the battery by a tramway of about half a mile and a self-acting incline. A few hundred tons of old tips, sulphide, and about 70 tons of sulphide ore from the White Horse reef have been crushed, the treatment of which is not yet completed.

Evans and Ledingham's Quartz-mine.—This property on the Carrick Range has been developed to some extent with, it was understood, very encouraging prospects. A small battery, driven by an oil-engine, has been erected, and a small amount of stone treated. Small quantities of very rich specimen stone are supposed to have been obtained. 38 tons of ore was crushed for £130.

CROWMELL.

Cromwell Gold-mines Development Company (T. Cooper, mine-manager).—A low-level tunnel is being driven to cut the reef-system at depth. Several reefs are supposed to traverse the property, on which more or less work has been done at shallow depths. The tunnel, which will hole into the bottom of the existing shaft, will give free drainage, and enable the prospecting of the mine to be carried on at much less cost. The face is now extended to 600 ft., and two small leaders have been intersected. Nine men are employed.

MACETOWN.

New Zealand Consolidated Mines (Limited) (L. O. Beal, attorney, Dunedin).—No mining of any consequence has been carried out by this company during the year. A little work was done in the early part of the year in the Homeward Bound Mine. A battery from the O.P.Q. Mine at Waipori is erected on the property. The intentions of the company, it is understood, are to commence active mining operations for the development of their properties at no distant date.

Hamilton and O'Neil's Quartz-mine.—Preparations were made to convey 9 tons of stone from an outcrop on the property to the battery for a trial crushing.

General.—The other known reefs in the district were not worked during the year.

SHOTOVER.

The numerous mines in this district have commanded no attention throughout the year.

GLENORCHY.

Glenorchy Scheelite Syndicate (George Reid, managing director).—The mining properties held by this syndicate have been actively developed during the year.

Glenorchy lode: The principal work has been the extension of levels 5 and 6 and a rise from 3 to 5. This connection has made the ventilation very much better. The total amount of driving done in the mine is 2,400 ft., and rises and crosscuts aggregate 1,350 ft. The output from this lode was 33 tons scheelite concentrate (72 per cent. WO_3), most of which came from the stopes in No. 5 level. An average of ten men employed during the year.

Junction lode (J. J. Lynch, mine-manager): Very little work was done on this lode during the year, the total driving amounting to 400 ft. since the mine was opened. A fair body of low-grade ore

has been disclosed. Owing to transport difficulties, the ore cannot be properly worked at present. A short aerial tramway (20 chains) has been erected, and it is proposed to send the best ore for treatment.

Kelly's lode (J. J. Lynch, mine-manager): Prospecting has been carried on continuously during the year. About 300 ft. of driving has been accomplished, making a total of 617 ft. driven in the mine since commencement. No ore was sent to the mill for the period. The prospects are considered encouraging. Four men on an average were employed.

The Glenorchy Scheelite Syndicate's treatment plant has been in steady work during the year, dealing with the ore supplied from the company's own mines and that purchased from outside mining parties in the district. A total of 643 tons of ore was dressed, and yielded 63 tons 6 cwt. 78 lb. scheelite concentrate (72 per cent. WO_3), of an estimated value of £6,080. An average of five hands employed at the works.

Mount McIntosh Scheelite Syndicate (R. McIntosh, mine-manager).—This mine is located on the summit of Mount McIntosh, at an elevation of 4,000 ft. The ore, obtained from an outcrop of the reef on the property is sledged down the mountain-side, and carted into the Glenorchy Scheelite Syndicate's reduction-works. No permanent development-works have been undertaken by the party.

Bonnie Jean Scheelite Mining Company.—This mine has been idle during the year. The battery worked a short period to treat some 13 tons of ore brought from the Alaska Mine. The amalgamation of these two properties is considered likely to eventuate.

General.—Some six other parties are out prospecting on various lodes in the district. The ore produced by all operators is brought into Glenorchy and treated at the syndicate's mill. The output from these various and scattered propositions amounted during the year to about 30 tons of 72 per cent. WO_3 , valued, approximately, at £2,900.

SOUTHLAND.

Preservation Inlet.

Tarawera Gold-mining and Smelting Company (C. E. Storrie, mine-manager).—This company's property is situated on Isthmus Sound. A smelter has been erected for the reduction of the ores from the mine. The present holders have not done much development-work in the mine. The vendor company sunk a shaft 76 ft. deep, and crosscut into the reef. There was a trial run of 35 tons obtained from the outcrop, from which no return was made. The reef is 3 ft. wide on the surface. The works closed down indefinitely after the trial, and have not been reopened.

Alpha Gold-mining Company (Longuest and Party).—This syndicate are driving on a small leader varying in thickness from 1 ft. to 1 in. The drive is in 86 ft. Mortar tests of quartz show splendid prospects.

Morning Star Gold-mining Company (D. McKenzie, mine-manager).—This company has persevered with the prospecting of this one-time gold-producing mine. A low-level tunnel has been driven 1,000 ft. and a fine body of stone, 6 ft. wide, has been intersected. This level is 115 ft. below any of the existing old workings. Preparations are being made for a trial crushing, and sanguine expectations are entertained about the result. Seven men are employed.

GENERAL REMARKS.

Natural ventilation is the means adopted to ventilate the mines. Strict regard being had for close and rapid connections, the air in the mines is good. Other conditions are equally satisfactory.

HYDRAULIC SLUICING AND ELEVATING.

Concerning this branch of mining, the most notable feature is the total dependence on the water-supply. The early part of the year was exceedingly bad for water, but this last summer has been much more favourable, as copious rains have fallen. The expansion of the industry is somewhat hampered by the concentration of the available water on the deep alluvial beds that are being operated on. Large areas of auriferous ground still exist. The shallower portions have been exhausted, and the remainder is almost, generally speaking, deep ground; concentration of water is therefore necessary. During the year there were 160 elevating and sluicing plants at work throughout the district, employing 650 men. In the following reports only the more extensive mines are dealt with.

TUAPEKA.

Blue Spur and Gabriel's Gully Consolidated Gold Company (Limited), *Blue Spur* (J. Howard Jackson, general manager; J. Uren, mine-manager).—There is little of interest to report regarding the working of this mine during the last twelve months. It suffered disastrously from absence of water for the first seven months of the year, and for the remaining five months only a very moderate supply was forthcoming. This state of affairs was brought about by an inadequate snowfall in the catchment-area for five winters. The works have been carried to the gutter (bottom level) of the cement deposit, and this has necessitated the use of about 4 per cent. of the total water-supply for pumping to keep the works clear. The cement dealt with, owing to its hard character and level, is difficult and expensive to work.

Golden Crescent Sluicing Company, Wetherstones (W. R. Smyth, manager).—Sinking in the cement, a continuation of the Blue Spur deposit, is now being carried out. The demand for water for lifting purposes is rapidly increasing.

WAIPORI.

Bakery Flat Gold-mining Company (Limited) (J. T. Johnson, manager).—The change of weather supplying the much needed water has enabled the bottom (deep lead) to be taken up. Elevating has been carried to a depth of 90 ft. The deep levels have been uniformly remunerative throughout. The Golden Point Company's plant and water-race were purchased and added to the efficiency of the plant at this claim. The water-races in connection with the lately acquired rights have been completed to the Burnt Creek dam. The construction of the outflow-race from the dam is in progress, and will be completed during the autumn, when a permanent supply of about twenty-five heads is expected to be available.

Lammerlaw Flat Hydraulic Mining Company (Knight Bros.).—Owing to the continuous spell of dry weather during the first five months of the year, the output of gold for 1911 fell short of that for the previous year by £269. Fourteen paddocks, 17 ft. deep, and averaging 1 square acre each, have been taken out since operations were commenced on this property.

Three other plants are at work in this district.

ISLAND BLOCK.

Island Block Dredging and Sluicing Company (R. T. Stewart, manager).—The supply of water being too low to permit of work being carried on at the claim during the early part of the year, an extensive overhaul of the races, flumes, and dams was made. The principal sluicing operations were carried out on a strip of unworked ground lying between the old workings and the main road. The depth ranged from 40 ft. to 51 ft., the deepest ground being found nearest the road-line. The bottom, composed of a soft schist, continued to dip in the direction of the road. There still remains untested a width of 4 to 5 chains between the limits of the workings and the foothills. The gold is obtained from a thin layer of wash lying almost on the bottom, in many places not more than a few inches in thickness. This company hold the mineral rights over a very large area of freehold, and have entered into an agreement with the New Golden Run Dredging Company to work a portion of this area on a royalty basis. The use of the Keystone boring plant was obtained, and with it some very rich ground was located a short distance ahead of where the dredge now lies. The dredge, which was driven by water, has undergone the necessary alterations for the use of steam power.

ROXBURGH.

The large claims in this district continued to be worked as they have done for many years. Last year, however, did not prove so profitable, owing to the slackness of the water-supply. This is evidenced by the much reduced quantity of ground treated by the Ladysmith Gold-mining Company. The amount removed in normal years averages 5 acres, while only 3 acres were removed during the last period. The normal water-supply required is twenty heads. The gold won by this company for the year was valued at £1,883 4s. 6d., and the expenditure in wages totalled £1,131 15s.

GALLOWAY.

The Little Valley Sluicing Company have undertaken the construction of a water-race over five miles of very rough country; some three miles is about completed. The company was floated during the year.

CROMWELL.

The Quartz Reef Point Company went into liquidation owing to a shortage of capital with which to carry on, and the claim was purchased by a private syndicate in September. One or two wash-ups have taken place, and, though nothing sensational has been struck, the results are considered very encouraging.

LUGGATE.

The New Luggate Hydraulic Sluicing Company (H. Ravenwood, manager) was brought into existence during the year, and acquired the Luggate Creek Sluicing Company's claim and plant. It is expected that operations will be successful. The wash is very rough, and the consequent cost of removal high. Electric light is installed for use in night-work. The face is 36 ft. high, and the bottom is rock. Pressure used, 250 ft. Seven men employed.

ARROW RIVER.

Arrow Falls Sluicing Company (J. Hamilton, manager).—This claim and plant were at the end of the year put up to auction, and found a purchaser. The new party have not yet commenced operations.

New Arrow Gold-mining Company (Robert McIntosh, mine-manager).—This syndicate has brought water on to a claim situated in the river close to Arrowtown. Prospecting has been vigorously carried out, and an elevating plant erected.

ARROWTOWN.

Shamrock Sluicing Company (A. Hamilton, manager).—Sluicing operations are conducted on the usual lines. The face is 60 ft., and the available pressure is only 120 ft., as the claim is situated at a high elevation.

MACETOWN.

Macetown Sluicing Company (T. Reid, manager).—Face, 43 ft.; pressure, 150 ft. Four men. Other small alluvial claims are worked, more or less, in the district.

SHOTOVER.

Alluvial mining is carried on in parts over a long stretch of the course of the Shotover River, being mainly confined to the bed of the stream. The depth of alluvium to the rock bottom is, on an average, 15 ft., with occasional deeper patches. About forty men find employment. The most important features to be noticed are the deep terraces ground-slued by Davis Bros. and the Skipper's Sluicing Company, the height of face being considerably over 100 ft.

Arthur's Point Gold-mining Company have successfully diverted the river into the tunnel, and made available for working several chains of the original river-bed. A small paddock in which 60 square feet of bottom was cleaned gave a return of 90 oz. of gold.

CARDRONA.

The only mining of any importance is that carried out by the Criffel Lead Sluicing Company. The work is considerably hampered by the continual slipping-in of the back reef. The claim requires very careful management.

MATAKANUI.

Undaunted Gold-mining Company (Limited) (T. C. Donnelly, manager).—The ground worked is that overlying the Maori bottom. The face is 40 ft. in height, and the wash very stony. The water-pressure is 480 ft. Large areas of deep ground thought to be gold-bearing remain to be worked.

Tinker's Gold-mining Company (Limited) (W. Norman, manager).—This claim is deep and difficult to work. The ground is very stony, and the high back reef treacherous. Elevating 80 ft., with a pressure of 500 ft.

ST. BATHAN'S.

Scandinavian Water-race Company (Limited) (O. Moen, manager).—Very little work was done in the deep levels in the early part of the year, owing to the exceptionally dry weather. Since the winter the water-supply greatly improved, and a fair amount of work was done in the deep levels, with a fair remuneration. Elevating 120 ft. in one lift; water-pressure, 650 ft. Work at the Surface Hill section of the company's property has been confined to removal of headings in preparation for elevating at some future date. The works are carried on in a first-class manner, with due regard to safety and efficiency. Electric-lighting plant is in course of erection.

United M. & E. Water-race Company (Limited) (P. O'Regan, manager).—Work has been carried on as usual in this mine, which adjoins the Scandinavian property. It is assuming greater dimensions in depth.

Neil Nicholson is prospecting a piece of ground in the Muddy Channel.

LIVINGSTONE.

Mr. J. Christian still operates in this district. He has elevated and treated a considerable quantity of tailings from the old ground-slued, with profitable results. This is accounted for by the fineness of the gold, and the consequent loss that took place in first working.

MAEREWHENUA.

Thirteen claims are being worked in this area; all ground-slued, excepting one which is elevating as well. Thirty-seven men all told are engaged. The faces in most instances are fairly high, but the pressure afforded by the Mountain Hut Water-race allows of the directors being kept a good distance back from the face, and renders the working reasonably safe.

NASEBY.

There are upwards of forty men mining on this field. Twenty plants at work. The greater portion of the water is supplied from the Government water-race. The average depth of ground is 15 ft., and the working-requirements of each plant is five heads and a half, at the available pressure of 150 ft.

HAMILTON'S.

Hamilton's Sluicing Company (H. Eaton, manager).—The greater portion of the year has been devoted to stripping. The overburden is between 200 ft. and 300 ft. high. A paddock cleaned up in September gave a return of 200 oz. for a fortnight's work. Later returns maintained a fair average. Electric light is to be installed.

PATEAROA.

Two parties continued to obtain good returns for their work.

NEVIS.

Of the nine hydraulic claims at work in the Nevis Valley the most important from the point of magnitude of operations are Ellis and party's claim, which has a face 70 ft. high, and water-pressure equal to 425 ft.; and Graham and party's claim. The latter has a face of 20 ft., and is considered to be one of the richest claims in the district. This district has a good water-supply, work in normal times being suspended for only a few weeks in the middle of winter.

WAIKAIA.

Muddy Terrace Gold-mining Company (Limited) (C. C. Rawlins, superintendent; J. Moffat, mine-manager).—This company's operations are on an extensive scale. The lower ground on the flat is elevated, two elevating plants being installed, while the higher levels or terraces are ground-slued,

depository being found for the tailings in the worked-out portions of the flat. The treatment of 17 acres of ground varying in depth from 6 ft. to 60 ft. constituted the year's work. The average value per cubic yard was 1·88 to 3·5 grains. Twenty-five men were employed. During the first two months of the year the mine was totally idle for want of water; quarter-time was worked in the next four months, and for the remaining part of the year the mine was in full running. 174 full days' water (including Sundays) was obtained.

Argyle Sluicing Company (J. Bradbury, mine-manager).—This claim is worked very steadily, with varying success. Ground shallow.

Winding Creek Claim (Round Hill Mining Company, owners; J. Shanks, mine-manager).—The drought, unprecedented for the last three or four years, hampered this company's work to a great extent in the early months of the year. The depth of ground worked from surface to bed-rock is about 220 ft. The first 140 ft. is ground-sluced, leaving the balance to be elevated. About a quarter-acre of bottom was taken up. The auriferous wash runs in thickness from 5 ft. to 12 ft., but the best gold is found on the bed-rock. For the past two or three years the water-supply has been too limited to allow stripping and elevating to be carried on together.

Gow's Creek Sluicing Company (J. Allen, manager).—A good deal of prospecting-work has been done in the bed of the creek. As a result of this work, the company extended their water-race one mile, and purchased a complete new elevating plant. They are now engaged in opening out a paddock.

NOKOMAI.

Nokomai Hydraulic Sluicing Company (Limited) (G. Garrett, manager).—The three claims held by this company were worked as regularly as the water-supply would permit. The depth of ground varies from 62 ft. to 75 ft. Available pressure from the several water-races, 217 lb. to 278 lb. per square inch. Forty-one men employed. Work conducted in a very efficient manner.

The following information has been supplied by Inspector Green:—

ROUND HILL.

Round Hill Mining Company (Limited) (F. Hart, mine-manager).—Owing to the previous dry season and shortage of water, work in No. 1 paddock was suspended. About 16 acres have been worked in No. 1, and there is about six months' work left, after which the plant will be shifted on to the claim upstream. No. 2 paddock: Some 20 acres have been worked by hydraulic elevating, there being some twelve months' work left, after which the plant will be removed to the claim down-stream. (Both new claims have been tested by boring.) This paddock has one elevator working eighteen hours out of twenty-four. The average depth of the ground is 45 ft., and elevators are lifting 65 ft. to 70 ft. The auriferous wash occurs in seams, chiefly within 10 ft. of the bottom (diorite). In addition to the pipe-lines already in use (main line 64 chains of 27 in. and 26 in. pipes, and other lines of 120 chains), a new line of 50 chains of 18 in. 10-gauge pipes is being made at the workshops on the works. An average of thirty men usually employed. Magazine approved for storage of explosives.

Ourauera Gold-mining Company (Limited) (J. Couling, mine-manager).—Area of paddock, about 4 acres; face, 60 ft. to 70 ft.; and ground very rough, with boulder stones and buried timber. 574 ft. of new pipe-line laid. The water-driven aerial carriage stone-conveyer continues to do good work, and without it the claim would be unpayable. In common with other claims, the water-shortage is such that the paddock has scarcely been kept dry.

OREPUKI.

A. M. Dawson's Claim.—Five men sluicing on the site of old Undaunted Gold-mining Company. Magazine approved for storage of explosives, which are used for breaking up the hard clay seams overlying auriferous wash.

Fortune and Sons' Claim.—Two men sluicing. Explosives carefully handled.

Movatt and White's Claim.—This claim having been worked up to the road boundary, an adjoining property has been purchased, and future work will proceed in that direction. Explosives carefully handled.

The smelting-works erected at Orepuki some two years ago are still idle, and the expert, Mr. Wild, has left the district. As a consequence, the black-sand claims taken up along the western beach are now mostly abandoned. Little or no work was ever done on them.

DREDGING.

This branch of mining has maintained the even tenor of its way, without anything in the shape of new developments of a sensational character having eventuated. The public companies interested in this business are gradually becoming fewer, and the dredges are passing into the hands of small private parties. The state of the Molyneux River during the season has been exceptionally favourable for this work, consequently the dredges in the gorge below Alexandra have had a fairly good run. The greatest drawback to dredging in this part appears to be the inadequacy of the machines employed to cope with the changes of circumstances so easily and frequently brought about, a very small rise in the river putting the majority out of reach, and a period of enforced idleness follows until conditions are more favourable.

The most important development has undoubtedly taken place in the Waikaka Valley, where a revival is noticeable. No doubt this is the outcome of the success that has attended the efforts of Messrs. McGeorge in dealing with the deep lead long known to exist. The Waikaka United Gold-dredging Company have in course of construction a new and up-to-date machine, fitted with all the newest improve-

ments, to be engaged in deep dredging. The principal dimensions of the dredge are: Length of pontoons, 120 ft.; breadth over all, 30 ft. 6 in.; depth, 7 ft.; width of well, 5 ft. 6 in.; length of ladder, 89 ft. (c. to c.); height of poppet from deck to centre top tumbler, 24 ft.; freeboard, 3 ft. 3 in.; size of buckets, 7 ft.; number of buckets, 45; horse-power of Marshall's compound condensing-engine, 25; total weight of ladder when in working-order, with buckets, belt, &c., 66 tons. This dredge will be capable of dredging to a depth of 55 ft. below water-level, and is well lighted by electricity.

Messrs. McGeorge have been engaged boring to test deep ground in Paterson's Freehold, over which they hold an option, with a view to working the ground if prospects warrant. Boring prospecting has also been extensively carried on with the Keystone drill by the Golden Bed Dredging Company at Ettrick, and some rich ground has been located; also at the upper end of the Island Block Flat. The new Golden Run dredge is being converted from water-power to a steam-power dredge, with a view to commencing to work this ground on a royalty basis agreement with the Island Block Company, who hold the mineral rights over the freehold. A dredge was placed on the Dome Creek, Waikaia, during the year, but after a short run closed down. The Mystery Flat dredge, floated by race-water, has, by a system of locking, successfully dredged up the slope of the rising reef, elevating itself to a height of fully 35 ft. The very determined efforts to raise the sunken Rise and Shine dredge No. 1 at Lowburn have failed. The company are now considering a proposal to place another dredge on the claim. Probably the most noteworthy incident of the year was a return from the Electric No. 1 dredge, on the Kawarau River, of 326 oz. 18 dwt. for 117 hours' work.

Taking the industry as a whole, the regulations have been well complied with, and there has been no serious accident in actual dredge-work. During the year there were in active operation throughout Otago and Southland eighty-three dredges, affording direct employment to 640 men.

MINERALS OTHER THAN GOLD.

SCHEELITE.

The production of scheelite for the year amounts to 85 tons, valued at £8,034. Glenorchy and Macrae's districts are the main sources of supply.

COPPER.

Some little attention has been paid to the lode occurring at the head of Wet Jacket Arm, Dusky Sound, but no work has been done.

ANTIMONY.

The Antimony Mining Company's mine at Alexandra South was kept unwatered until August, 1911, when pumping was discontinued, and the water permitted to rise. Since then the company have realized on the property.

LIMESTONE.

51,100 tons of stone was produced from the Milburn Lime and Cement Company's lime-works at Milburn and Dunback.

MARL.

This is chiefly obtained from Burnside, near Dunedin, and the quantity produced during the year was 6,600 tons.

PHOSPHATE.

The Ewing Phosphate Company treated 10,000 tons of this mineral during the year.

ACCIDENTS.

HYDRAULIC AND ALLUVIAL MINES.

Fatal.

17th April, 1911: Joseph Bates and Francis George Smith, miners, accidentally drowned in Round Hill Mining Company's claim at Round Hill, through Bates's foot being caught in suction-pipe at elevator.

Non-fatal.

9th March, 1911: Martin Trainor had his leg broken by a rolling stone striking him while walking down the face at the Arrow Falls Sluicing Company's claim at Arrowtown.

GOLD-DREDGES.

Fatal.

10th January, 1911: Diver Tood, engaged by the Rise and Shine Gold-dredging Company to examine the sunken Rise and Shine dredge at Lowburn, lost his life while making an examination of the pontoons. The Coroner's jury brought in a verdict of "Death from natural causes (heart-failure)."

GOLD-MINERS' RELIEF FUND.

Since the commencement of this benefit, the amount of £120 3s. 2d. has been recommended for payment as relief to miners and dredgemen who have met with accidents.

I have, &c.,
THOMAS THOMSON,
Inspector of Mines.

ANNEXURE B.

REPORTS OF WARDENS.

Mr. Warden FRAZER, Whangarei, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

The Warden's Office, Whangarei, 22nd May, 1912.

I have the honour to present my annual report on the Puhipuhi Mining District for the year ended the 31st December, 1911.

There has been increased activity in the mining industry in this district. Twenty-nine miners' rights were issued, as against twenty for 1910, while nineteen ordinary prospecting licenses were issued, as against one ordinary prospecting license and one prospecting warrant during 1910. Three applications for special quartz claims were granted, as against none during 1910. The revenue from fees (exclusive of fees on the issue of miners' rights) increased from £1 14s. in 1910 to £10 3s. in 1911, and rents and royalties increased from £2 in the former year to £54 during 1911. In regard to coal-mining, however, there has been a fall in rents and royalties collected, the amounts being £324 16s. 6d. during 1910, as against £140 during 1911.

During the past year some attention was given to cinnabar, and samples have been forwarded for analysis. Some activity prevailed a few years ago in this branch of mining, but owing to lack of funds the work then carried out was inconclusive. More thorough investigation is now being undertaken.

I have, &c.,

F. V. FRAZER, Warden.

Mr. Warden FRAZER, Thames, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Warden's Office, Thames, 6th June, 1912.

I have the honour to present my report on the Hauraki Mining District for the year ended 31st December, 1911.

The result of the operations in the Hauraki district during the period under review shows an increase in the yield of gold in the Ohinemuri and Piako Counties, and a decrease in the yield in Coromandel County, Thames County and Borough, and Waihi Borough. There has been a decrease in the yield of the district as a whole, amounting to £183,220 13s. 4d. in value, the figures being—for 1910, £1,324,456 1s. 5d.; and for 1911, £1,141,235 8s. 1d.

Notwithstanding the above decline in gold-production, the position cannot be regarded as altogether unsatisfactory, for though the Waihi Company's mine alone shows a decrease of over £224,000, this amount has been set off to the extent of nearly £40,000 by the excess of increases over decreases in the yields of the other mines. The anticipation of a falling-off in the Waihi Company's yield, owing to the diminished richness of the famous Martha lode, has unfortunately been realized; but the £40,000 net increase in the production of the other mines is a source of gratification.

The most important development in the mining industry for the past year was the completion of the Waihi-Paeroa Gold-extraction Company's plant at Paeroa. The works are designed for the recovery and treatment of the coarse sands and tailings from the Ohinemuri River, and are most complete and modern in construction. They should add considerably to the output of the district.

In the Thames subdistrict the chief interest centres upon the deep-levels crosscut, which at the end of the year had progressed 1,241 ft., with a further 350 ft. on the Saxon Company's subsidiary crosscut. The completion of the crosscut will enable important work to be done in developing the lower levels of the field, and sanguine hopes are entertained of the results that will follow.

As I have only recently assumed the temporary charge of the district, I cannot furnish more than a general report, but from what I have been able to gather from a perusal of statistics and other documents at my disposal, and from my own observations made when visiting the different parts of the district, I am satisfied that the results of the year 1911, though not so successful as those of past years, afford justification for encouragement and hope for the future. Steady development is progressing, and interest in the field is well maintained.

I have, &c.,

F. V. FRAZER, Warden.

Mr. Warden EVANS, Nelson, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Warden's Office, Nelson, 10th May, 1912.

I have the honour to report on the mining industry in the Nelson portion of the Karamaea Mining District for the year ended the 31st December, 1911.

NELSON.

The only business transacted in the Warden's Court has been the granting of prospecting licenses in or about Wangapeka. Some of these are renewals of grants made last year. The total number granted during the year is eleven.

Prospecting has been carried on on these holdings, but none of the licenses have been converted into claims.

MOTUEKA AND TAKAKA.

In Motueka Court several prospecting licenses have been granted over lands in and about Mount Arthur. Prospecting-work is being carried on, but no permanent claims have been taken up. There is nothing at all doing in Takaka.

COLLINGWOOD.

In this Court the number of grants is small. The old-established claims in the district are carrying on apparently with payable results. The position of the Parapara Ironworks Company is the same as last year. The company is carrying on preparatory works with a reduced number of men, but no satisfactory progress can be made until a large amount of capital is forthcoming.

The Onekaka Iron Company (T. A. Turnbull and party) are moving in the direction of commencing operations. A mineral lease has been applied for over a large area, and next year should see something done in the way of erecting plant to treat the iron-ore with which the district abounds.

Generally, in the whole district more attention is being given to prospecting, but otherwise the industry is not very vigorous.

I have, &c.,

J. S. EVANS, Warden.

Mr. Warden FLORENCE, Blenheim, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Warden's Office, Blenheim, 2nd April, 1912.

I have the honour to report that during the year ended the 31st December last the quartz-mining in my district has not attained to much success, but work seems to be steadily proceeding, especially at Wakamarina Valley, where the claims hitherto held by Messrs. Humphries Bros. have now been amalgamated, and are being worked under the title of "The Dominion Consolidated Developing Company (Limited)," with a capital of £15,000, all shares in which are sold.

This company is mining for gold and scheelite, and is reported as having realized £1,358—i.e., £1,133 worth of gold, and the balance in scheelite. Their total expenditure for the year amounted to £3,517, of which over £1,500 has been spent in development.

This latter expenditure has resulted, it is stated, in the opening-up of a considerable ore reserve for treatment by a twenty-stamp mill, now being installed, having a capacity of about 1,200 tons per month.

Messrs. Nelson and Mayo are also constructing a considerable length of water-race for sluicing at their claim in the same valley. These two companies are showing considerable enterprise in their endeavours to develop their property. A few other quartz claims are held, and alluvial mining is being carried on. Messrs. Larkin and party installed hydraulic elevators at Enchanted Creek, and attempted to bottom some alluvial wash in the bed of the Wairau River, but without success. The average number of men employed at this place was four. The yield of gold was 5 oz., valued at £19 7s. 6d.; and the expenditure £1,315. The Wairau Valley Gold-mining Company, at Top Valley, employed two men driving a prospecting-tunnel at the old Jubilee Mine in search of the reef at a lower level. A total distance of about 900 ft. was driven, but without success.

Messrs. Dowman and party, Morayshire Claim, at Top Valley, with the aid of two men, sank a winze on an outcrop of a scheelite-bearing quartz lode about 3 ft. wide, and produced 2 tons of hand-picked scheelite. This claim appears to be worthy of a little development-work to prove the extent of the lode.

At Cullensville, Mahakipawa, £300 has been spent in bringing up a race. It is anticipated that £700 would need to be expended to enable Mr. Morton to drain the selection and get down on the gold.

COAL.

In the neighbourhood of Picton some prospecting for coal has been proceeding, but no returns have come in yet. William Lucena and party held a prospecting license granted on the 2nd November, 1911, in respect of 17 acres in this district.

At Endeavour Inlet, Queen Charlotte Sound, where some twenty years ago a considerable thickness of antimonite was known to exist, no recent operations have been carried on for the purpose of reviving this industry, and the land had been thrown open for selection under section 190 of the Land Act, 1908.

Generally, no serious accidents have been reported.

I have, &c.,

R. STONE FLORENCE, Warden.

Mr. Warden RAWSON, Westport, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Warden's Office, Westport, 25th March, 1912.

I have the honour to report as follows upon the gold-mining industry in the Karamea Mining District for the twelve months ended the 31st December, 1911.

WESTPORT SUBDISTRICT.

Ten prospecting licenses, ten alluvial claims, one quartz claim, and one dredging claim were granted during the year.

The Britannia Gold-mining Syndicate employed two men during the greater part of the year, and four men for the remainder, prospecting, with indifferent success.

The Long Tunnel Sluicing Company has ceased operations.

Millikin and party extended their operations, and continue to earn about £4 per man per week.

The Westland Gold-mining Syndicate has nearly completed the long tunnel (nearly two miles in length) which is being constructed to carry away the tailings when work is commenced at the old Shamrock Claim. Some trouble was experienced in constructing the necessary ventilating-shafts, owing to the wet nature of the ground. A novel method—a kind of combination of elevator and suction-pipe—was employed in this work.

McNeight and party were not so successful as they anticipated, but are apparently now in good ground.

The Carthage Gold-mining Company has commenced operations, and the initial "wash-up" justifies the belief that the company has secured a valuable property. Further developments are being awaited with much interest. If the results are such as are anticipated, I have no doubt a number of claims will be taken up in the neighbourhood. Mr. Powell, who has adopted a similar principle in connection with his own sluicing claim near Charleston, is now engaged in installing the combined elevator and suction plant I have referred to above, modified to suit the different conditions existing on the company's claim.

MURCHISON SUBDISTRICT.

Owen.—A marked improvement in reefing matters was noticeable during the past year. Early in 1911 a Nelson mining company, the Mount Owen Rising Sun Mineral Company, took up a prospecting license on the eastern slopes of Mount Owen, at an elevation of 4,700 ft. above the sea. Samples taken from the outcrop, when subjected to analysis at the Dominion Laboratory, Wellington, gave excellent results. Subsequently the syndicate sent 2 tons of ore to Sydney for treatment. The concentrates from this parcel gave a return of £12 12s. 5d. per ton. A Sydney firm of mining speculators, it is stated, at once offered the holders of the property £15,000 in cash and 26,000 paid-up shares for an out-and-out sale. The directors are considering the offer, but the majority are unwilling to sell at the price. Several other mining privileges have been applied for during the past few months, and it is the general opinion here that mining developments on a large scale will take place in the Owen district in the near future.

Upper Matakītiki.—The Matakītiki Hydraulic Sluicing Company went to a big expense last year in repairing and extending the old Mammoth Water-race, but the results of its mining operations were so discouraging that the directors deemed it advisable to shut down pending the decision of the Mines Department on an application for a loan of £5,000 to the company for the purpose of assisting it to extend its water-race to some likely-looking gravels below O'Rourke's Hotel.

Rappahannock.—This time last year the Rappahannock region gave very fair promise of becoming an important mining centre, and a large number of mining privileges were taken up by persons interested in the mining industry. The results, however, have been very disappointing, and it seems that, although gold of an excellent quality exists in that part of the district, it is very unevenly distributed; on the whole, the opinion of local miners is that the cost of obtaining the metal will far exceed the value of the gold won.

Taylor's Creek.—This part of the district carried quite a number of miners in the early days, but has been abandoned for many years. Last year Messrs. Warneford, Fairhall, and Rogers took up a 75-acre prospecting license in the locality, and, besides doing a good deal of surface-prospecting, drove a 60 ft. tunnel into the western side of the ridge between Taylor's Creek and the Matakītiki River. The results were very encouraging, a good deal of the wash carrying 1 dwt. to the yard; and the hill-side to a height of 200 ft. was also proved to be payable. The holders are now making arrangements for the construction of a pipe-line from the Eight-mile Lake for the purpose of working the ground by hydraulic sluicing.

Pea Soup Creek.—A reef carrying, it is stated, about 4 dwt. to the ton was discovered in this part of the district last year by Mr. T. O'Brien, and he intends driving upon it, in order to satisfy himself that the reef lives down.

Warwick.—A discovery which may lead to important developments was recently made by Mr. G. A. Swanson in this quarter. Besides containing, it is stated, between 3 dwt. and 4 dwt. of gold to the ton, with small quantities of silver, some of the samples sent by Mr. Swanson to Invercargill yielded 69 per cent. of copper. The discoverer is now driving on a lode 21 ft. in thickness, and is very hopeful of success.

Warwick Junction.—A race about ten miles in length is now in course of being constructed by the Thomson Maruia Hydraulic Sluicing Company, for the purpose of commanding the auriferous terraces on the east side of the Maruia River opposite the ground held by the Walker Maruia Mining Company. About a mile and a half of the race has been completed, and it is anticipated that sluicing operations will be in full swing well before Christmas.

Seddonville.—Very little mining is being carried on in this district, but there are indications of increasing activity.

The proprietors of the Red Queen property have temporarily suspended operations until they have proved the property owned by the Carthage Gold-mining Company, in which they are largely interested, when they propose to vigorously prospect the first-named.

A company has been formed with a view to prospecting the Lady Agnes reef. Work is to be commenced shortly.

Karamea.—Mining is practically at a standstill in this district. A prospecting party is at work up Fenian Creek.

Charleston.—The beachcombers on the Rahui Beach have been working fairly steadily, but they complain that the beach is getting poorer every year.

Norris and Butterworth are reported to be doing well.

A claim at Brighton was taken up by J. Watson, but the results are not yet to hand.

Four prospecting licenses to prospect for mica were taken out. A Christchurch company holds two of the areas, which are being prospected by Mr. Dennehy, who has discovered some very rich seams. Two tons of the mica has been sent to England, with a view of testing the market.

Lyell.—A slight improvement in the number of mining applications was noticeable. The New Alpine Syndicate, at Lyell Creek, with eight men, has been prospecting the various levels during the past year, and has lately struck a payable reef between levels Nos. 6 and 7. A few crushings have been taken out and put through, with good results.

The Victory Gold-mining and Development Company (Limited), a Christchurch company, is still prospecting the old Victory Mine and the adjoining country thereabouts, but, so far, has met with little success.

The Crown, an old abandoned mine situated about a mile from the Lyell Township, has been taken up by Wellington investors, who paid £50 for the old battery. Two men have been employed during the past six months driving on the lower level, but have nothing yet to report.

A few parties have been out prospecting, but also have nothing to report. Two dredges (Old Diggings Dredge and the Buller Junction), belonging to Hansen and Smeaton's dredging syndicate respectively, have been working steadily during the past year, with fairly good results.

I have, &c.,

E. RAWSON, Warden.

Mr. Warden HEWITT, Hokitika, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Warden's Office, Hokitika, 30th March, 1912.

I have the honour to present my report on the mining industry in the Westland District for the year ended the 31st December, 1911.

HOKITIKA SUBDISTRICT.

Alluvial Mining.

Operations have been carried on steadily throughout the year in the Back Creek Terrace, Seddon's Terrace, Governor's Terrace, and Arch Creek districts, the miners engaged, in most cases, making good wages. At Commissioner's and Tucker Flats a fair quantity of gold has been won. Some difficulty has, however, been experienced in getting to the bottom of the wash in one of the claims. Steps have been taken to overcome this difficulty, and I anticipate a steady return from these localities for years to come.

In the Mahinapua district a considerable area has been worked by means of a "blow-up." This method is adopted at Mahinapua only at the present time, but as time goes on I expect to see it introduced to work the sea-beach in several parts of the district, and it should prove the means of getting the fine gold which is known to exist in our beaches in fair quantities.

The general outlook in connection with alluvial mining is perhaps more full of promise now than it has been for a number of years past. The result of prospecting operations in the Kanieri district during the closing months of the year by means of a Government Keystone drill prove very encouraging. The locality is commanded by a water-supply sufficient to enable the working of the ground on a considerable scale, and, as it is possible to bring the water into the field without the expenditure of a large amount of capital, active mining operations should be proceeding there at no distant date. Much has been said from time to time with reference to the extensive rimu flats and Hau Hau; but nothing has been done on the ground since my last annual report beyond further prospecting in several places, the result of which is such as to lead me to hope that capital will be forthcoming with which to bring in a water-supply commanding the country.

Dredging.

Dredging operations are now confined entirely to the Success Gold-dredging Company (Limited) at Hau Hau, from which fair returns have been obtained.

Quartz-mining.

A considerable amount of development-work has been done at the quartz-mines at Wilberforce, in which district further prospecting is being carried on.

ROSS SUBDISTRICT.

There is little to report from this subdistrict. The quartz-mine at Donnelly's Creek closed down during the year.

Prospecting operations were carried on in Jones's Creek, but met with little success.

Driving operations for a reef in Redman's Gully were commenced.

A considerable amount of work was done on a drainage-tunnel by Luckie and party, which had to be abandoned owing to lack of sufficient capital to complete it.

A dredging claim held by Robertson and party was prospected by means of a Government Keystone drill, but apparently proved too poor to warrant providing a dredger to work the ground.

A number of small claims have been taken up at Squatter's Creek, but little work has been done there except perhaps by Denia and Richards, who are reported to have been handling good wash.

Trent and Eves have worked steadily at the development of their claim at Donnelly's Creek, but have experienced considerable difficulty in driving a drainage-tunnel, which they have been compelled to abandon on account of the nature of the country met with in their driving operations. Other means of draining this claim are to be adopted, and the success of any scheme brought forward is hoped for, as there is a considerable area of ground in the vicinity of the claim which will doubtless be worked if the drainage difficulty is overcome.

The Ross Goldfields (Limited) completed the unwatering of their mine in the opening months of the year, and carried on mining operations for a short period. These were, however, brought to a close by a mishap to the company's power-line, which culminated in the flooding of the mine. The company subsequently went into liquidation, but has since been reconstructed. Additional plant is to be obtained, and mining operations recommenced as soon as this is erected.

OKARITO SUBDISTRICT.

Mining operation in this district are practically at a standstill. There are several individual miners working at different places along the beach, who appear to be making little more than a bare living.

At Omeroa some work has been done, but whether profitable or otherwise I have no knowledge.

Prospecting operations have been carried on at the Haast, but the result of these is not known.

STAFFORD AND GOLDSBOROUGH SUBDISTRICT.

Mining has proceeded steadily in this district, the value of the gold won being at least equal to the return for the year 1910.

A new claim at Goldsbrough was opened by Messrs. Carmine and party upon the completion of the construction of a costly tunnel tail-race early in the year, the actual mining operations having produced satisfactory results.

Two claims have been successfully worked at Middle Branch Flat. The deviation of the main Hokitika-Kumara Road, which passes through the middle of this flat, was commenced during the year, the deviation being taken over worked ground. This will render the ground occupied by the original road available for mining; and as the claims lying along each side of the road formerly provided good returns, the miners who secure the ground thrown open in consequence of the deviation are assured of profitable employment in mining it.

Mining has proceeded steadily at all claims at Callaghan's with the exception of that of Manzoni, where the construction of an extensive tunnel has rendered the suspension of mining operations necessary.

Mining has proceeded at Tunnel Terrace and German Gully so far as the limited water-supply available would permit.

The claims in this field draw their water-supply from the Government water-race; but the quantity of water available is not sufficient to enable all the claims to be vigorously and continuously worked.

The Wheel of Fortune Company has proceeded with the mining of its claim at Kelly's Terrace. Operations in this locality by Sullivan and party have been suspended for the present.

The Stafford dredger has been working throughout the year, but I have no knowledge as to the results.

KUMARA SUBDISTRICT.

Alluvial Mining.

The Kumara Long Tunnel Company carried on sluicing operations during the first nine months of the year, when, as a result of a break in the No. 3 channel, mining operations were suspended, and the men were engaged in effecting the repairs to that channel.

McGrath and party sluiced for the first six months of the year, when attention had to be given to the timbering of No. 4 channel, through which the company will proceed to sluice, in consequence of their having run out of fall with their original tail-race. The party has also completed the tunnel tail-race at the head of Larrikin's, and will be actively mining again by the end of March, 1912. The party has a large claim, and provides work for a number of miners.

The result of Garner and party's operations during the year is not known. Mining has been carried on since May.

At Westbrook and Quinn's Terrace eight new claims have been taken up, and some of the existing claims in the locality are being worked, others being held pending the completion of the extension of the Government water-race across the Taramakau River.

Some twenty-six miners have been profitably employed at Cape Terrace and Westbrook, where mining is still proceeding.

Dredging.

Dredging operations have been confined to Greenstone Creek, where little work has been done, owing to the extensive repairs to the one remaining dredger.

The Keystone drill has been used for prospecting both in Greenstone Creek and Taramakau River with the object of employing some new dredgers.

Prospecting.

A considerable amount of prospecting has been done during the year in the beds of the Taramakau River and Greenstone Creek, and also in the vicinity of Griffin's Range and the Rough Wainihinihi. At the latter places two mineral prospecting warrants over areas containing in the aggregate 4,000 acres have been granted for the term of five years. These areas are to be prospected for greenstone and other nephritic rocks.

I have, &c.,

J. GEORGE L. HEWITT, Warden.

Mr. Warden BARTHOLOMEW, Dunedin, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Warden's Office, Dunedin, 30th March, 1912.

I have the honour to present my report for the year ended the 31st December, 1911, on the mining district under my charge.

LAWRENCE, WAIPORI, AND WAITAHUNA.

In the Warden's Court at Lawrence the following business was transacted: Miners' rights issued, 260; applications received, 84; registrations, 61.

Twelve new claims were granted, nearly all to existing holders, who surrendered their old titles to take up unworked and adjoining ground.

At Waipori there was some friction between the local miners and the Dunedin City Corporation over the latter's applications for additional storage-dams for their electrical-power works at Waipori Falls. The Corporation withdrew two of the applications objected to, and obtained rights to three additional dams in positions where the mining industry would not be interfered with.

Nothing of note has occurred in the development of mining during the year. The increased supply of water during the latter half of the year, consequent on the wet season, has enabled sluicing operations to be carried on more advantageously and profitably than for several years past.

ROXBURGH.

No new discoveries have been made in this portion of my district during the past year. The hydraulic-sluicing companies have taken advantage of the increased water-supply, and may be said to have had a prosperous year.

There are about twelve dredges carrying on operations in the river between Shingle Creek and the Island Block, and while no phenomenal returns have been reported, the favourable condition of the river has enabled them to put in more than the average working-time, with consequent payable results.

During the past year a considerable number of small areas have been taken up under the occupation-lease system for fruitgrowing purposes, and probably the attention of the rising generation and others having been attracted to this important and profitable industry has prevented the outlying portion of this district obtaining the amount of prospecting its auriferous nature warrants. Hence the absence of new discoveries.

The following details represent the business transacted in the Warden's Court: Rents and royalities, £503 1s. 3d.; fees and fines, £25 9s.; ordinary applications, 90; general registrations, 95; water-race licenses, 14; and miners' rights, 142.

I have, &c.,

J. R. BARTHOLOMEW, Warden.

Mr. Warden HASELDEN, Naseby, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Warden's Office, Naseby, 22nd January, 1912.

I have the honour to present my annual report on the mining district under my charge for the year ended the 31st December, 1911.

During 1911 there has been little advance made in the gold-mining industry, but the standard of recent years has, on the whole, been maintained. At Macrae's Flat there has been fresh enterprise, especially in scheelite or tungsten mining, and if the hopes entertained at present are realized satisfactory results will be obtained.

The property formerly owned by Messrs. Donaldson Bros. has been acquired by a registered company, and both gold-bearing quartz and scheelite are being obtained.

Gold-mining in quartz, alluvial, and dredging has kept up fairly well throughout the districts, the demand for water being a gauge of activity. During the early part of the year water was very scarce, but has been more plentiful of late.

A change is gradually taking place throughout the districts, and agriculture, sheep-farming, and fruitgrowing are making progress, but are retarded by want of water, and by a plethora of rabbits. Notwithstanding the efforts of Inspectors, the rabbit nuisance is a very formidable enemy to the settlers.

The question of granting irrigation rights is a very serious one, and requires attention. It is plain that if the water available over a large area is granted to the occupier of a small holding, the larger area will remain a desert.

The area in my districts is so large that it is impossible for me to personally obtain any thorough knowledge of the different localities, and I have to depend somewhat on information acquired from the Mining Registrars and the police officers attached to the Courts; when reporting on applications to purchase land, where practicable I have inspected the area myself, but this has not always been possible.

I have, &c.,

W. R. HASELDEN, Warden.

Mr. Warden YOUNG, Queenstown, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

The Warden's Office, Queenstown, 30th March, 1912.

I have the honour to present my report for the year ended the 31st December, 1911, on that portion of the Otago Mining District under my charge.

DREDGING.

The number of dredges continues year by year to decrease. Twenty-six were at work, being five less than in the previous year. Three in the Waikaia Valley and the remaining two in the Waimumu ceased operations. Good returns were obtained from the fourteen at work in the Waikaka Valley: the deep-level dredging having been very successful, future prospects of this field are assured.

ALLUVIAL MINING.

Alluvial mining remains in much the same condition as last year. Scarcity of water during the greater part of the year hampered operations, and retarded new ventures. Development-work was actively carried on in and about the Waikaia Valley, the Shotover and Arrow Rivers. Copious rains during the last quarter enabled most of the claims to be worked to the full capacity, causing increased interest to be taken in these fields.

QUARTZ-MINING.

Prospecting operations were carried on in connection with the reefs at Macetown and Skippers, but nothing worthy of note was disclosed.

SCHEELITE.

A good deal of attention continues to be directed to the scheelite-bearing lodes on the ranges at the head of Lake Wakatipu, and several prospecting parties were at work. Nine licenses were granted over new ground. The Glenorchy Scheelite Syndicate continues to be the principal producer, and paid royalty on 643 tons of ore from the lode.

I have, &c.,

H. A. YOUNG, Warden.

Mr. Warden CRUICKSHANK, Riverton, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Warden's Office, Riverton, 18th April, 1912.

I have the honour to present my report on the subdistricts under my charge for year ended the 31st December, 1911.

ROUND HILL.

The only miners' claims being worked here are those of the Round Hill Company and the Ourawera Company. The latter company has had a disappointing year. Instead of being a dividend-payer as of yore, the company made a loss of £160 on the actual working. This is attributed to poor wash, want of water, and rough ground.

The Round Hill Company have their No. 1 elevators working in ground which it is stated will take five years to work out. No. 2 elevator will shortly be shifted to a new position, which, it is stated, will permit five years' sluicing without its removal. The total amount of gold won during the year was about 1,800 oz., the value being £7,170 12s. 8d. The working-expenditure during the year was almost as much, being £6,913 10s. 9d., so there was no dividend. The company are employing thirty-eight men. Both companies suffer from the irregular nature of the water-supply.

PAHIA.

Messrs. Hucklebridge and party have just shifted their plant, and are now commencing work in ground that promises to be payable.

WYNDHAM.

In this district there is usually nothing to report, but this year there are signs of increasing activity. A syndicate has taken up two claims at Long Beach beyond Waikawa, and has brought in water at considerable expense. Sluicing operations are just beginning, seven men being employed.

Between Fortrose and Waikawa the only mining is the work carried on in the claims of Messrs. Brunton and Bennett.

PRESERVATION.

During the past year there has been more activity in mining than for some years past. The Tarawera Company, at great cost, erected a large smelting plant, but the initial trial was not a success, and the company has had to go into liquidation. The shareholders, however, are pluckily arranging to give the venture another trial. The Morning Star has been working steadily all through the year. Several other small private parties are working with varying success. From what I hear from the various miners interested the district is one worthy of thorough prospecting, being rich in minerals of all kinds. The Sound is twenty-eight miles long, the country is precipitous and heavily wooded, and the climate is very wet and severe.

I have, &c.,

G. CRUICKSHANK, Warden.

ANNEXURE C.

REPORTS OF DIRECTORS OF SCHOOLS OF MINES.

Professor JAMES PARK M.Inst.M.M., M.A.I.M.E., F.G.S., Director of the Otago University School of Mines, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Otago University, 17th April, 1912.

I have the honour to present my report on the work done at the Otago School of Mines during the year ended the 31st December, 1911.

The mining school for the session of 1911 showed an attendance of twenty-nine students, of whom twelve were entered for the full associate courses, and four for the surveying course, the remaining twelve attending the classes in geology. At the annual examinations one failed in mathematics, one in senior surveying, and three in computations.

As a result of the New Zealand University Examinations, James Allen Thomson, B.Sc., Oxford, A.O.S.M., obtained the D.Sc. degree; and William Andrew Alexander first-class honours in physics and the Senior Scholarship in geology.

Dr. A. Moncrief Finlayson, A.O.S.M., was awarded the forty-guinea premium of the Institution of Mining and Metallurgy, London, for his thesis on "The Secondary Enrichment of the Copper-ore of Rio Tinto, Spain." In 1910 this prize was awarded to Alexander McLeod, A.O.S.M., for a paper on "The Efficiency of Steam-condensation."

Mr. E. Fletcher Roberts and E. Gordon Wilson passed the examinations of the New Zealand Surveyors Board of Examiners, and obtained their diplomas as licensed surveyors, the former standing at the top of the list for the Dominion.

The number of important appointments secured by old graduates exceeds that of any former year, and in 1911, as in 1910, the demand for men who have just graduated is greater than the supply, which is mainly due to the small number of students annually entering the Mining School. At the present time thirty-seven old students are profitably employed in mining and engineering in New Zealand; of these, no less than fourteen hold official appointments in connection with the Mines and Geological Departments of the State.

Among the more important appointments obtained by old graduates during 1911 are the following:—(1) G. W. Thomson, A.O.S.M., mill-superintendent, the Temis Keming Mining Company, Cobalt, Ontario; (2) R. A. Farquharson, A.O.S.M., petrologist to Geological Survey of Western Australia; (3) Robert Lee, A.O.S.M., general manager, Kaitangata Collieries; (4) Percy G. Morgan, M.A., A.O.S.M., Director of the Geological Survey of New Zealand; (5) J. Allan Thomson, D.Sc., A.O.S.M., Palaeontologist, New Zealand Geological Survey; (6) John Henderson, D.Sc., A.O.S.M., Mining Geologist, New Zealand Geological Survey; (7) John A. Bartrum, Assistant Geologist, New Zealand Geological Survey; (8) T. O. Bishop, A.O.S.M., Inspector of Mines, West Coast Inspection District, New Zealand; (9) William Gibson, B.E., A.O.S.M., Director, Karangahake School of Mines; (10) H. Lovell, Director, Coromandel School of Mines; (11) John F. McPadden, Director, Reefton School of Mines; (12) Otto Friedlander, A.O.S.M., sampler, Messrs. Bewick, Moreing, and Company, Kalgoorlie; (13) A. Gordon Macdonald, B.E., A.O.S.M., Government Inspector of Mines, Malay Settlement; (14) F. W. Thomas, A.O.S.M., mine-surveyor, Abbontiahoon Mines, Gold Coast Colony; (15) E. D. E. Isaacson, A.O.S.M., assistant manager, Congo Mines, Upper Congo; (16) O. Gore Adams, A.O.S.M., mining engineer to Compania Istanifeira El Acre, Bolivia; (17) A. Walker, A.O.S.M., assistant manager, Grand Junction Mines, Waihi; (18) Harold Hamilton, A.O.S.M., assistant geologist to Mawson Antarctic Expedition; (19) Philip McDouall, B.E., A.O.S.M., mine-surveyor, Wealth of Nations Mine, Reefton.

LABORATORY.

During 1911 the number of samples forwarded by the public for examination and valuation by assay or analysis showed an increase over that of 1910, being as follows: Number of lots, 133; total number of samples, 273.

The samples included quartz and quartz ores for the determination of gold and silver, scheelite for tungstic acid, coals, oils, shales, rock-phosphate, limestones, fireclays, bullion, and various ores of iron, copper, &c.

The new machines for testing cement, iron, and wood in tension and compression were erected during the early part of 1911, and have already proved of immense value to the classes in mining, engineering, and applied mechanics.

I have, &c.,

JAMES PARK, Director.

Mr. A. H. V. MORGAN, M.A., Director of the Waihi School of Mines, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Waihi, 21st May, 1912.

I have the honour to present my annual report upon the work done at the Waihi School of Mines during 1911.

The average attendance of students during the year was seventy, with an average class attendance of 135. These numbers, while still satisfactory, and far in excess of those of any other school of mines in the Dominion, show a slight falling-off from the record attendances of the previous year. This is no doubt due, to some extent at least, to the less prosperous state of the mining industry, and the unsettled feeling prevalent in the district.

At the annual examinations conducted by the Mines Department last December thirty-nine students presented themselves for the written papers, and eight for the practical tests, with the satisfactory result that sixteen first-class, fifteen second-class, and nineteen third-class certificates were obtained, and eight passes were recorded in the practical examinations. In addition, two students (S. Darby and N. Carless) qualified for the bullion-assayers' certificates issued by the Department of Trade and Customs. The gold medal presented by the president (Mr. T. Gilmour) for the highest aggregate in any four subjects was this year won by E. Johnson. Mr. J. Livesey's medal for mining subjects was won by J. R. Thomson. The gold medal presented by Mr. M. F. Haszard for surveying was won by H. Langdon.

At the last examination for Government certificates, held in March, 1911, four students of this school (H. Langdon, W. L. Dutton, L. Moore, and H. A. De Lautour) gained certificates in the first-class metal-mine managers' examination, and one (J. R. Thomson) obtained a partial pass, but has since completed the examination and obtained the certificate. In the examination for battery-superintendents one student (T. T. Andrews) was successful, and two (J. G. Goosman and C. Kingsford) obtained partial passes. The latter has since completed his examination. At the 1912 examinations W. E. Brown passed the examination for battery-superintendents. Altogether thirty-three students of this school have obtained certificates as first-class metal-mine managers, two as first-class coal-mine managers, forty-three as battery-superintendents, and twenty-one as assayers of bullion under the Customs Department.

Electrical Engineering Classes.—This department continues to be well patronized on account of its increasing importance in mining and metallurgical practice, and the consequent necessity of all

engaging therein becoming more or less acquainted with the subject. Under Mr. Ellis's continued able supervision this department continues its good work. The further additions to the machinery anticipated last year were duly received and installed during the year, with the result that this branch of the school is well equipped with apparatus for practical demonstration and use.

During the year, as the result of suggestions made at the annual meeting on the matter of arranging a system of examinations which would be more suitable to schools of mines, the Council considered the matter carefully, and agreed to certain recommendations, which were duly forwarded to the Minister of Mines. The chief recommendations were that the annual examinations in December might be made to serve for the mine-managers' and battery-superintendents' certificates also, thus avoiding two sets of examinations, and that students might be allowed to take their examinations for the certificates in stages. The matter is in abeyance in the hands of the Mines Department, pending an intended conference of the latter with the Directors of the schools of mines.

I have to acknowledge with thanks receipt of a number of specimens for the museum from various gentlemen, including a valuable piece of pitch-blende from Mr. R. E. Williams, and a beautiful specimen of Coromandel gold donated by Mr. Frank Shepherd. Thanks are also due to Messrs. Thomas Gilmour, Haszard, and Livesey for their gifts of handsome gold medals, and to the proprietor of the *Australian Mining Standard* for donating prizes for mining and metallurgy. I desire also to take this opportunity of recording my appreciation of the ability and enthusiasm displayed by the members of the staff, and the co-operation and assistance of the Council and secretary.

I have, &c.,

A. H. V. MORGAN, Director.

Mr. W. H. BAKER, B.Sc., Director of the Thames School of Mines, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Thames, 19th March, 1912.

I have the honour to present my report on the work done at the Thames School of Mines during the year 1911.

Attendance.—As mining prospects did not materially improve during the year, so the school attendance remained practically the same as during the previous year. The average number of individual students was 89, of whom 38 were registered students, 38 elementary science students, and 12 members of the teachers' science class.

Examinations.—Sixteen registered students presented themselves for examination, and obtained six first-class, ten second-class, and six third-class certificates. Twelve students in the elementary science class were also examined, and obtained one second- and two third-class certificates. The practical examinations in assaying were this year very disappointing, as only two students succeeded in obtaining passes. The President's medal, awarded by the Hon. James McGowan, was won by W. H. J. Cropp, who sat for examination in nine subjects, with the average result of 62.5 marks. Mr. E. F. Adams's prize for metallurgy was won by L. Stevenson, who obtained the highest number of marks in this subject throughout the Dominion. In the elementary science class, J. Lyes was awarded the Council's prize, and five others obtained prizes for attendance.

Battery and Experimental Plant.—Various improvements, including the renewal of an elevator and the addition of a slimes-ump, were made to the plant, and everything now works satisfactorily. Five parcels of ore were treated, and satisfactory tests carried out. In one parcel from Te Aroha silver telluride was proved to exist abundantly, and the plant gave very valuable data for the future treatment of so refractory an ore. Assay plant: During the year 228 assays were made for the public from all parts of the Dominion.

Museum.—Many valuable additions have been made to the mineral collection during the year, including typical samples of the Bonanza ore-shoot of the Talisman, nodular quartz from the Watchman, and Westralian specimens from Mr. McLean. The thanks of the school are tendered to the donors of these and other specimens to the museum.

Library.—The library has been further extended by books supplied by the Mines Department. The lending library instituted by the Department is very much appreciated by the students and staff.

In conclusion, I wish to express my appreciation of the work done by the staff, and my thanks for the interest and support of the Council in furthering the interests of the school.

I have, &c.,

W. H. BAKER, B.Sc., Director.

Mr. H. LOVELL, Director of the Coromandel School of Mines, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Coromandel, 23rd April, 1912.

I have the honour to report as follows on the work of the Coromandel School of Mines for the year 1911.

The average number of individual students in attendance for the year was eleven, with a class-attendance of thirty-five.

Instruction was given in the following subjects: Mathematics, chemistry, assaying, geology, mining subjects, surveying, mechanical drawing, and electricity.

During the year 100 assays, consisting mostly of ores for their gold and silver contents, were made for the public.

Four students presented themselves at the annual school of mines examination, and obtained the satisfactory average of 48.5 per cent. of marks in the eleven subjects in which they sat.

I have, &c.,

H. LOVELL, Director.

Mr. W. GIBSON, B.E., Director of the Karangahake School of Mines, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Karangahake, 5th March, 1912.

I have the honour to present my report upon the work of the Karangahake School of Mines for the year ended the 31st December, 1911.

The attendance at the main school showed the number of students to be as follows: First term, 31; second term, 29; third term, 26. The class-attendance was 53 for eight classes, 59 for nine classes, and 51 for nine classes in the successive terms. This shows an average of nearly two classes per student. The attendance of students, with one or two exceptions, was very regular. The regular students showed up most prominently in the annual examinations.

Annual Examinations.—The students of this school did very satisfactory work, as is shown by the certificates gained, which are sixteen first-class, six second-class, and four third-class. The school topped the list in senior practical chemistry, junior dry assaying, senior wet assaying, junior wet assaying, surveying, junior mathematics, and drawing. In the practical examinations the results obtained were: three passed in bullion assaying, one in senior dry assaying, one in junior dry assaying, one in senior wet assaying. Two students, Messrs. G. Hyde and F. Small, are entitled to receive H.M. Customs certificates for bullion assaying. The President's (Mr. K. M. Barrance) prize was won by Mr. G. Hyde, with the highest aggregate in three classes, and the Council's two prizes for the highest aggregate in two classes were won by Messrs. John Shore and A. McLean.

The total number of gold and silver assays put through during the year was 127, of which four were done free of charge for prospectors.

In conclusion, I have to thank the members of the Council for their unremitting interest in the school's welfare, and their efforts to make it attractive to students. I have also to thank Messrs. E. C. Hurdfield, A.M.B., Assistant Director, and H. C. Tempest, electrical instructor, for the zeal and ability they have displayed in their work.

I have, &c.,

W. GIBSON, Director.

Mr. W. F. WORLEY, Director of the Nelson School of Mines, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Nelson, 15th March, 1912.

I have the honour to present my report on the Nelson School of Mines for the year ended the 31st December, 1911.

Blowpipe Analysis Class.—Fourteen boys joined this class in the beginning of the year. The class met thirty-six times, and the average attendance was 11.5. Most of the boys were quite new to the work, but made good progress, as a result of good attendance and a keen interest in the work. An examination for proficiency in elementary blowpipe analysis was held in December. No boy is allowed to sit for this examination unless he has had a two years' course of training. Edward Blechynden was able to satisfy this condition, and passed the examination with credit.

Assaying.—During the year fifteen assays were made for prospectors and the public. This number, though small, is considerably higher than for the previous year, and is indicative of more interest in prospecting.

Popular Lectures.—Seven of these were given during the winter months—three in Nelson City, one at Spring Grove, one at Wakefield, one at Wai-iti, and one at Lower Moutere. The subjects were earthquakes, volcanoes, and the mining industry of New Zealand. The latter was repeated five times, and was well received on each occasion. As in previous years, bare travelling-expenses was the only charge made for these lectures.

Geology.—A paper on the Flax Moor, Kaka Ridge, dealing with the igneous rocks of Brook Street, was published in the May issue of the "Nelsonian." A copy of this paper is enclosed with this report.

I have, &c.,

W. F. WORLEY, Director.

Mr. J. F. MCPADDEN, Director of the Reefton School of Mines, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Reefton, 29th April, 1912.

I have the honour to present my report on the work of the Reefton School of Mines for the year ended the 31st December, 1911.

Attendance.—The average number of students during 1911 was 33, with a class attendance of 61.

Examinations.—Ten students sat for the annual Government examinations held in December, and obtained five first-class, six second-class, and four third-class passes. At the examination for Government certificates held in March last, five students sat—four for battery-superintendents' certificates, and one for first-class mine-manager's certificate.

Waiuta School.—In August last classes were commenced at Waiuta, instruction being given every Friday afternoon and evening. The attendance at this school averaged fourteen during 1912.

Assays.—During the year 260 assays were made, forty-five of which were made free of charge to prospectors.

Library.—Books to the value of £10 were added during the year.

General.—Thanks to the efforts of an energetic Council and Secretary, the sum of £51 was raised locally. This amount is being spent in purchase of books and general repairs to the school. I have to acknowledge, with thanks, the receipt of various minerals from Messrs. F. Shepard (Coromandel), T. O. Bishop, A. Sutherland, P. Callan, and G. Gofton.

I have, &c.,

J. F. MCPADDEN, Director.

ANNEXURE D.

REPORTS OF WATER-RACE MANAGERS.

Mr. JAMES ROCHFORD, Manager of the Waimea-Kumara Water-races, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Kumara, 14th May, 1912.

I have the honour to present my report on the Waimea-Kumara Water-races for the financial year ended the 31st March, 1912.

WAIMEA RACE.

The cash received for sales of water from this race for the year ended the 31st March, 1912, was £837 15s. 6d., and the expenditure for the same same period on gauging, maintenance, and repairs amounted to £599 0s. 8d., showing a credit balance of £238 14s. 10d. on the year's transactions.

The average number of miners supplied with water from the race during the year was 32.16, an increase of 0.83 on the previous year; and the approximate quantity of gold obtained by them was 1,702 oz., having a value of £6,637 16s.

The sales of water for the year amounted to £829 2s. 11d., or £25 5s. 9d. less than the previous year.

The cash received for sales of water was £9 11s. 9d. less, and the expenditure on gauging, maintenance, and repairs was £10 12s. 7d. greater than during the previous year.

A serious break occurred in one of the tunnels between Goldsbrough and Stafford during the month of February, which materially reduced the revenue from the Stafford section of the race; but there is no indication of a falling-off in the demand for water in this locality.

The Waimea Hydraulic Sluicing Company worked steadily during the year in their claim on Scandinavian Hill, and I am pleased to say that the returns showed a decided improvement on the two previous years. This party deserve the highest praise for the strenuous efforts they have made in the face of adverse circumstances to thoroughly test and develop their property, and it is to be hoped that the satisfactory conditions now obtaining will continue for many years to come.

Linklater and party worked their two claims during the year with highly satisfactory results, and purchased water to the value of £235 17s. 11d., making the total value of water purchased by them since the siphon was constructed to Lower German Gully (about three years and a half ago) £770 2s. 10d.

At Tunnel Terrace six parties have been supplied with water from the race throughout the year, with satisfactory results, and I am satisfied that there will be no falling-off in the sales of water in this locality for some years to come. There was a good supply of water during the year, the Waimea siphon being practically full all the time; but, notwithstanding this fact, the demand for water was considerably in excess of the supply.

The water was off for five days during the year through breaks in the race.

Authorized free water to the amount of £18 13s. 9d. was supplied from this race during the year.

The following is a summary of the revenue and expenditure of the Waimea Water-race for the year ended the 31st March, 1912: Sales of water, £829 2s. 11d.; cash received, £837 15s. 6d.; expenditure, £599 0s. 8d.; approximate value of gold obtained, £6,637 16s.; average number of miners employed, 32.16.

BRANCH RACE TO CALLAGHAN'S AND MIDDLE BRANCH.

The cash received from this race during the year ended the 31st March, 1912, was £443 9s. 10d., and the expenditure on gauging, maintenance, and repairs for the same period amounted to £485 11s. 2d., showing a debit balance of £42 1s. 4d. on the year's transactions.

The average number of miners supplied with water was 15.66, a decrease of one as compared with the previous year; and the approximate quantity of gold obtained was 1,191 oz., having a total value of £4,644 18s.

The sales of water amounted to £434 1s. 8d., an increase of £81 12s. 1d. on the previous year; and the cash received showed an increase of £84 0s. 3d.

The approximate quantity of gold obtained by the miners was 167 oz. greater than during the previous year, representing an increase in value of £651 6s.

The expenditure on gauging, maintenance, and repairs was £15 6s. 2d. greater than the proceeding year, and the races have been well maintained, and are now in good order.

Carmine and party sluiced steadily throughout the year in their new claim above Goldsbrough, with highly satisfactory results, and purchased water to the value of £129.

There was only one party sluicing into the Waimea main tail-race during the year, but the deviation of the Hokitika-Kumara Road on to the old workings at Middle Branch Flat, which is now about completed, will give an impetus to mining in this locality, by throwing open a fairly large area of highly payable ground; and the demand for water from the Middle Branch race for the next two or three years will be considerably in excess of the available supply.

At Callaghan's Flat, Havill and party worked their claim all the year, and, although the quantity of water purchased was small, I am given to understand that the returns for the year were fairly satisfactory. The sluicing operations of this party are greatly retarded by the small quantity of water available from their high-level dams to break down the auriferous wash, which is so hard that the limited pressure from the Callaghan's Water-race has little or no effect upon it. Cook and Honey did a large amount of work in their claim during the year, and purchased water to the value of £151 3s. 9d.

Although the returns for the year were satisfactory, they did not altogether come up to the high expectations of the party; but this can be accounted for by the many difficulties met with, which are always contingent upon opening out deep ground with limited pressure. However, the claim is

now in excellent working-order, and, judging by present indications, this party should in the next year or two be highly recompensed for the large amount of capital expended in developing their property.

Owing to the want of fall in his original tail-race, Mr. Manzoni did not purchase water during the year ; but contractors have been at work during the last fifteen months in driving a tunnel tail-race at a lower level from Manukau Creek, to open up and thoroughly develop this valuable property. The tail-race is about 1,000 ft. in length, and for the first 500 ft. or 600 ft. passes through a conglomerate rock of marine formation, which is extremely hard and difficult to work. This greatly increased the cost of construction, and Mr. Manzoni is to be congratulated on carrying out to a successful issue such a big undertaking ; and it is to be hoped that he will be richly rewarded in the near future. The tail-race is now nearing completion, and Mr. Manzoni will soon be ready to open out his claim, and the sales of water from the Callaghan's race should show a still greater increase during the ensuing year.

The following is a summary of the revenue and expenditure of the Callaghan's Water-race for the year ended the 31st March, 1912 : Sales of water, £434 ls. 8d. ; cash received, £443 9s. 10d. ; expenditure, £485 11s. 2d. ; approximate value of gold obtained, £4,644 18s. ; average number of men employed, 15-66.

KUMARA RACE.

The cash received for sales of water from this race for the year ended the 31st March, 1912, was £93 5s. 5d. ; and the expenditure on gauging, maintenance, and repairs was £433 18s., showing a debit balance of £340 12s. 7d. on the year's transactions.

The average number of miners supplied with water was 8-16, an increase of 0-16 on the previous year ; and the approximate quantity of gold obtained by them was 339 oz., of the value of £1,322 2s.

The sales of water for the year amounted to £153 17s. 3d., a decrease of £176 5s. 7d. on the previous year ; and the cash received shows a decrease of £258 2s. 6d.

The approximate quantity of gold obtained was 302 oz. less than the previous year, representing a decrease in value of £1,177 16s.

The expenditure on gauging, maintenance, and repairs was £70 14s. 6d. greater than during the previous year. This increased expenditure was caused by a break in the Kapitea Hill Race, and the No. 1 Kapitea Dam, and the construction of a new by-wash at the head of the Dillmanstown-Kumara siphon. The break in the No. 1 Kapitea Dam was a very serious one, a large quantity of water broke through the top of the embankment, and came out in the creek under the timber foundation. The dam was running over at the time, and, although the gauge-box was opened up to its full carrying-capacity, it took several hours before the water was reduced below the cavity in the embankment ; and for some time it appeared impossible to save the structure. As soon as the water was sufficiently reduced, horses and drays were procured, and a large number of men were put on, and the repairs were carried out day and night. The embankment was dug out for over 60 ft. in length, and from 18 ft. to 20 ft. deep ; refilled with good material, puddled, and faced with stone paving. Had a flood occurred during the progress of the work the probability is that the whole structure would have carried away, and a new distributing-dam would have to be constructed to supply the miners on the north bank of the Taramakau River.

The sales of water for the year from this race were the lowest ever recorded, or likely to be recorded for many years to come, and showed a falling-off of £176 5s. 7d. as compared with the previous year. This falling-off was entirely due to a break that took place in the No. 3 channel on the 28th October, 1911, which prevented the Long Tunnel Company from sluicing during the last five months of the year, and the value of water purchased by this party was £191 0s. 4d. less than during the year ended the 31st March, 1911.

Although the cash received was £60 11s. 10d. less than the sales of water for the year, the whole of this outstanding amount is recoverable.

A large amount of work was done in the Head-race Tunnel during the year, 180 sets of timber, and over 19,000 ft. of lining and lathing being placed in position. The work was difficult and expensive in places, owing to the bad nature of the ground, but repairs had to be effected before the parties on the north bank of the Taramakau River could be supplied, and the tunnel is now capable of carrying 140 heads of water.

Garner's and Murchie's were the only two private races supplied with water during the year.

McGrath and Co. completed their tunnel tail-race to their Upper Larrikins claim in February. This tunnel was started about seven years ago ; it is 2,970 ft. in length, and cost about £3,000, and is the biggest work of its kind ever carried out in this district by one party. They are now ready to start sluicing, and have made an application for thirty heads of water for five hours daily. This will materially increase the sales of water from the Kumara Race, and it is to be hoped the venture will prove an unqualified success, and that McGrath and Co. will be well rewarded for their energy and enterprise.

The most encouraging outlook, however, for the continued life of the Kumara field is afforded by the completion during the year of the 30 in. inverted siphon crossing the Taramakau Valley, and the construction of a storage dam and 130 chains of ditching on the north bank of the Taramakau River. This important scheme is capable of supplying the miners with at least fifty heads of water for twelve hours daily, and commands an extensive area, which has given most satisfactory prospects for profitable working for many years to come. Authorized free water to the amount of £49 10s. was supplied for opening up new claims.

The usual quantity of flushing water authorized by the Department was supplied when the No. 3 channel was working, and to the Kumara Borough for fire-brigade and other purposes, free of charge.

The following is a summary showing the revenue and expenditure of the Kumara Race for the financial year ended the 31st March, 1912 : Sales of water, £153 17s. 3d. ; cash received, £93 5s. 5d. ; expenditure, £433 18s. ; approximate value of gold obtained, £1,322 2s. ; average number of men employed, 8-16.

WAIMEA-KUMARA WATER-RACES.

The following is a summary of the revenue and expenditure of these races for the financial year ended the 31st March, 1912: Sales of water, £1,417 1s. 10d.; cash received, £1,374 10s. 9d.; expenditure, £1,518 9s. 10d.; approximate value of gold obtained, £12,604 16s.; average number of men employed, 56. It will be seen by the above summary that the value of the sales of water from the combined races for the year was £1,417 1s. 10d., as against £1,537 1s. 1d. for the previous year, thus showing a decrease in the value of sales of water of £119 19s. 3d.

The total expenditure on gauging, maintenance, and repairs was £1,518 9s. 10d., as against £1,421 16s. 7d. for the preceding year, an increase in the cost of maintenance and repairs of £96 13s. 3d.; but it must be remembered that the expenditure for the year ended the 31st March, 1911, was the lowest on record, and showed a decrease of £400 5s. 8d. as compared with the year ended the 31st March, 1910.

The cash received during the year was £1,374 10s. 9d., as against £1,558 4s. 9d. for the previous year, thus showing a decrease in revenue of £183 14s.

Comparing the sales of water with the expenditure on management, maintenance, and repairs the combined races show a loss of £101 8s. for the year; but now that the Taramakau Valley Extension is completed, and McGrath and Co. have started sluicing operations, the revenue from the Kumara Water-race should steadily increase, and the combined races should show a substantial profit over working-expenses for a considerable number of years.

WAINIHIHI WATER-RACE.

There was a good supply of water from this race, and, together with the Kawhaka supply, the Waimea siphon was kept practically full all the year. No breaks occurred, and the race is now in excellent repair.

I have, &c.,

JAMES ROCHFORD, Manager of Water-races.

Mr. ROBERT MURRAY, Manager of the Central Otago Water-races, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Naseby, 22nd April, 1912.

I have the honour to present my report on the Mount Ida and Alexandra Races for the year ended the 31st March, 1912.

MOUNT IDA WATER-RACE.

The total sales of water from this race during the year amounted to £1,206 3s. 6d., an increase over those of last year of £387 8s. The expenditure on maintenance and repairs for the same period was £1,211 15s. 6d., a decrease on the previous year's expenditure of £134 10s. 6d. The total cash received was £1,206 3s. 6d.

On account of payment in advance, free water to the value of £5 11s. 1d. was supplied, and free water for washing up was also supplied, to the value of £100 4s. 3d. The total value of water supplied from this race during the year amounted to £1,311 18s. 10d., an increase on that of the previous year of £421 4s. 11d.

The average number of miners supplied with water was thirty-four, a decrease of two on that of last year.

The approximate quantity of gold obtained by the parties using water from this race was 1,584 oz., valued at £6,098 8s., an increase as compared with last year of £409.

With the exception of the months of April, July, and August, the year has been a good one for water, severe cold weather with falls of snow having been experienced, giving a full supply for nine months of the year. On account of hard frost, the water had to be turned out of the race during the first week in July. On the 10th August a slight thaw set in, when two heads were turned into the race to cut out the snow and ice, and on the 14th I was able to make a start with the cleaning. After reaching the 40th mile, I turned the water on to the whole of the miners on the 26th; from thence to the 31st March there was a full supply. A small slip occurred in Butcher Gully on the 7th September; obtaining plenty of assistance I had it repaired, and the water on again on the 9th. On the evening of the 6th March heavy rain set in, continuing for twenty-seven hours. This caused the heaviest flood over the whole length of the race during the last twenty years, filling up the whole of the race, creek, and crossings from the 40-mile with heavy boulders and rough rock and mountain shingle, and a considerable length of race was destroyed. The damage was very heavy. From the 40-mile inward towards Naseby very little damage was done, as the race is situated a considerable distance from the foot of the range. During the year several gauge-boxes were renewed, and small repairs were effected to the distributing races.

ALEXANDRA WATER-RACE.

The total sales of water from this race during 1911 amounted to £204 18s. 4d., the total cash received being £193 6s. 2d. The total expenditure upon this race during the same period was £446 0s. 6d.

To enable the Wallis dredge at the Poolburn end of Ida Valley to the south to keep afloat and work, water was bought from the Alexandra Race in January to the end of the year. Messrs. R. Campbell and Sons, owners of the Galloway Station, in February purchased water for irrigation, both these customers being allowed a month's free water to start with, of a total value of £24 13s. 4d.

The total value of water supplied from this race during the year was £229 11s. 8d., a decrease on that of last year of £150 17s. 4d.

Owing to the wet and cold season the farmers, the principal consumers of water from this race, used but little compared with the quantity they in ordinary seasons would require.

The permanent men on the race maintained the race in good order during the year.

There were no sales of water from the Blackstone Hill Race.

I have, &c.,

R. MURRAY, manager.

ANNEXURE E.

MINING STATISTICS.

Table 1.

STATEMENT SHOWING THE REVENUE OF THE GOLDFIELDS COLLECTED IN THE SEVERAL DISTRICTS OF THE DOMINION OF NEW ZEALAND FOR THE PERIOD FROM 1ST JANUARY TO 31ST DECEMBER, 1911.

District.	Miners' Rights.	Business Licenses, Machine and Residence Sites.	Water-races, Sluices, &c.	Gold-mining Leases, Rents, and Royalties.	Registration.	Fees and Fines, Wardens' Courts.	Miscellaneous.	Totals.
AUCKLAND.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Coromandel ..	50 5 0	66 5 0	..	370 18 11	5 5 0	3 19 0	8 15 6	505 8 5
Te Aroha ..	25 5 0	661 17 4	23 10 0	334 14 6	19 15 0	7 0 0	5 1 0	1,077 2 10
Paeroa ..	192 15 0	138 1 10	..	1,222 16 2	..	60 9 0	148 11 3	1,672 13 3
Thames ..	127 5 0	..	0 15 0	976 12 1	21 9 0	44 14 0	130 1 0	1,800 16 1
Puhipuhi ..	7 5 0	..	..	54 0 0	..	10 3 0	..	71 8 0
Tauranga ..	1 5 0	..	..	..	..	..	1 6 0	2 11 0
Waihi ..	101 5 0	672 7 2	..	1,467 16 6	27 12 0	40 10 0	265 2 11	2,574 13 7
Totals ..	415 5 0	1,538 11 4	24 5 0	4,426 18 2	74 1 0	166 15 0	558 17 8	7,204 13 2
NELSON.								
Wangapeka ..	8 10 0	..	..	..	..	..	..	8 10 0
Motueka ..	2 5 0	..	..	87 0 0	0 15 0	2 8 0	0 5 0	92 13 0
Collingwood and Takaka ..	12 10 0	2 5 0	1 5 0	257 5 11	2 10 0	50 14 0	4 13 0	331 2 11
Westport, Seddonville, and Granity ..	106 0 0	36 12 6	..	554 8 0	19 16 0	61 1 0	157 3 4	935 0 10
Charleston ..	22 0 0	..	0 10 0	20 5 6	..	4 9 0	0 7 0	47 11 6
Ahaura ..	48 0 0	15 10 0	1 15 0	272 6 4	2 15 0	27 18 0	712 17 0	1,081 1 4
Reefton ..	110 10 0	24 1 6	..	919 8 0	9 14 0	54 15 0	306 19 0	1,425 7 6
Lyell and Murchison ..	14 0 0	..	..	70 4 6	0 1 0	1 4 0	32 11 0	118 0 6
Totals ..	323 15 0	73 9 0	3 10 0	2,180 18 3	35 11 0	202 9 0	1,214 15 4	4,039 7 7
MARLBOROUGH.								
Havelock ..	1 15 0	0 1 0	..	23 7 6	..	1 2 0	6 15 0	33 0 6
Blenheim ..	12 0 0	..	..	121 10 9	..	1 8 0	8 13 0	143 11 9
Totals ..	13 15 0	0 1 0	..	144 18 3	..	2 10 0	15 8 0	176 12 3
WESTLAND.								
Hokitika ..	37 0 0	..	0 15 0	432 10 0	15 18 0	28 1 0	17 2 0	531 6 0
Greymouth ..	90 5 0	..	0 5 0	8,065 13 4	4 1 0	24 13 0	51 10 2	8,236 7 6
Ross ..	24 15 0	..	..	363 11 3	6 19 0	13 14 0	33 18 0	442 17 3
Stafford and Goldsbrough ..	22 5 0	1 0 0	..	412 2 9	..	18 9 0	..	453 16 9
Okarito ..	6 0 0	1 11 0	2 0 0	225 5 9	1 4 0	3 9 0	1 0 0	240 9 9
Kumara ..	79 10 0	6 10 0	6 5 0	864 0 10	11 4 0	21 1 0	36 4 11	1,024 15 9
Totals ..	259 15 0	9 1 0	9 5 0	10,363 3 11	39 6 0	109 7 0	139 15 1	10,929 13 0
CANTERBURY.								
Ashburton ..	0 15 0	..	..	..	..	..	..	0 15 0
OTAGO AND SOUTHLAND.								
Middlemarch ..	2 15 0	0 15 0	..	28 3 0	0 8 0	..	..	32 1 0
Hindon ..	17 10 0	..	0 5 0	54 9 6	0 7 0	0 4 0	0 18 0	73 13 6
Naseby ..	35 10 0	0 6 0	..	505 13 10	..	..	43 1 0	584 15 10
Tapanui ..	1 0 0	..	..	..	..	..	..	1 0 0
Black's ..	..	..	..	..	..	..	..	..
Alexandra ..	99 15 0	21 4 1	12 5 0	1,614 18 6	17 11 0	57 12 0	0 11 0	1,823 16 7
Clyde ..	..	..	..	..	..	..	..	..
Roxburgh ..	..	..	..	..	..	..	..	..
Arrowtown ..	10 15 0	3 8 0	..	231 16 6	4 0 0	5 0 0	..	254 19 6
Cromwell ..	54 15 0	1 0 0	0 10 0	598 8 6	..	56 15 0	26 2 0	737 10 6
Queenstown ..	46 0 0	1 13 0	..	312 7 1	6 0 0	9 9 0	1 1 0	376 10 1
Lawrence ..	60 15 0	8 2 6	2 5 0	436 6 10	4 4 0	16 10 0	28 16 1	556 19 5
Orepuki ..	18 0 0	..	..	34 13 11	0 16 0	..	2 14 0	56 3 11
Riverton ..	21 0 0	..	..	171 17 9	2 7 0	..	34 7 3	229 12 0
Pembroke ..	3 5 0	..	..	..	0 9 0	1 12 0	..	5 6 0
Waikaia ..	4 5 0	3 5 0	2 5 0	296 16 3	2 16 0	12 10 0	2 17 0	324 14 3
Wyndham ..	3 0 0	..	1 0 0	11 2 0	0 8 0	1 6 0	..	16 16 0
Gore ..	9 0 0	..	..	116 0 1	0 7 0	1 2 0	1 1 0	127 10 1
Totals ..	387 5 0	39 13 7	18 10 0	4,412 18 9	39 13 0	162 0 0	141 8 4	5,201 8 8
Grand totals ..	1,400 10 0	1,665 15 11	55 10 0	21,528 17 4	188 11 0	643 1 0	2,070 4 5	27,552 9 8

Table 2.

STATEMENT SHOWING THE REVENUE OF THE GOLDFIELDS COLLECTED IN THE SEVERAL DISTRICTS OF THE DOMINION OF NEW ZEALAND FOR THE PERIOD FROM 1ST JANUARY TO 31ST MARCH, 1912.

District.	Miners' Rights.	Business Licenses, Machine and Residence Sites.	Water-races, Sluices, &c.	Gold-mining Leases, Rents, and Royalties.	Registration.	Fees and Fines, Wardens' Courts.	Miscellaneous.	Totals.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
AUCKLAND.								
Coromandel ..	5 15 0	17 4 8	..	178 1 11	1 17 0	4 5 0	4 5 0	211 8 7
Thames ..	18 5 0	..	..	268 17 3	4 6 0	4 15 0	13 13 6	309 16 9
Te Aroha ..	5 10 0	105 19 0	..	8 1 3	2 1 0	4 15 0	..	126 6 3
Paeroa ..	13 0 0	62 7 0	..	436 6 11	..	..	161 12 8	673 6 7
Puhipuhi ..	0 10 0	..	..	44 17 0	..	1 10 0	..	46 17 0
Tauranga ..	0 10 0	..	..	..	..	..	..	0 10 0
Waihi ..	20 10 0	129 19 6	..	537 17 9	5 2 0	4 0 0	80 11 0	778 0 3
Totals ..	64 0 0	315 10 2	..	1,474 2 1	13 6 0	19 5 0	260 2 2	2,146 5 5
NELSON.								
Wangapeka ..	2 15 0	..	..	..	..	..	..	2 15 0
Collingwood and Takaka ..	1 10 0	0 10 0	0 5 0	121 1 1	0 10 0	0 18 0	3 17 0	128 11 1
Westport, Seddonville, and Granity ..	26 0 0	42 4 4	..	265 1 3	5 6 0	15 13 0	33 3 0	387 7 7
Charleston ..	5 15 0	..	..	2 13 9	..	1 15 0	..	10 3 9
Ahaura ..	13 15 0	9 12 6	1 0 0	211 6 11	1 9 0	20 9 0	209 16 6	467 8 11
Reefton ..	15 15 0	8 0 0	..	388 0 5	2 6 0	10 0 0	42 7 11	466 9 4
Lyell and Murchison ..	0 5 0	..	..	2 10 11	..	..	10 2 0	12 17 11
Motueka ..	0 5 0	..	..	5 0 0	0 2 0	1 0 0	..	6 7 0
Totals ..	66 0 0	60 6 10	1 5 0	995 14 4	9 13 0	49 15 0	299 6 5	1,482 0 7
MARLBOROUGH.								
Havelock ..	..	..	..	14 1 9	..	2 7 0	4 5 0	20 13 9
Blenheim ..	3 10 0	..	..	41 16 0	..	0 4 0	2 5 0	47 15 0
Totals ..	3 10 0	..	..	55 17 9	..	2 11 0	6 10 0	68 8 9
WESTLAND.								
Hokitika ..	12 10 0	..	0 10 0	102 8 11	3 5 0	11 1 0	46 4 0	175 18 11
Greymouth ..	19 15 0	..	..	2,408 6 4	0 15 0	5 17 0	6 1 0	2,440 14 4
Ross ..	3 0 0	..	..	157 16 0	1 9 0	6 9 0	5 2 0	173 16 0
Stafford and Goldsbrough ..	5 10 0	0 5 0	..	306 12 3	..	11 19 0	..	324 6 3
Kumara ..	10 0 0	6 0 0	..	65 3 3	1 6 0	3 2 0	2 6 0	87 17 3
Okarito ..	2 10 0	..	0 5 0	16 16 5	0 3 0	1 2 0	..	20 16 5
Totals ..	53 5 0	6 5 0	0 15 0	3,057 3 2	6 18 0	39 10 0	59 13 0	3,223 9 2
CANTERBURY.								
Ashburton ..	..	..	..	..	..	..	..	..
OTAGO AND SOUTHLAND.								
Hindon ..	6 0 0	..	..	11 5 0	..	0 2 0	..	17 7 0
Naseby ..	7 15 0	0 2 0	..	169 18 2	..	..	5 12 0	183 7 2
Roxburgh ..	..	..	..	..	..	..	..	..
Alexandra ..	..	..	..	..	..	..	..	..
Clyde ..	10 15 0	7 2 0	3 15 0	516 6 1	4 15 0	4 10 0	..	547 3 1
Black's ..	..	..	..	..	..	..	..	..
Arrowtown ..	2 5 0	0 1 0	..	61 0 6	0 14 0	1 12 0	..	65 12 6
Pembroke ..	1 0 0	..	..	..	0 1 0	0 6 0	..	1 7 0
Cromwell ..	11 10 0	..	..	253 14 11	..	10 18 6	..	276 3 5
Queenstown ..	8 10 0	1 8 0	..	124 15 11	2 19 0	2 9 0	1 2 0	141 3 11
Lawrence ..	7 15 0	0 5 0	0 15 0	152 2 4	0 15 0	3 3 0	23 2 6	187 17 10
Waikaia ..	1 5 0	..	0 5 0	52 17 5	1 16 0	3 4 0	..	59 7 5
Orepuki ..	3 5 0	..	..	8 19 11	0 1 0	..	0 5 0	12 10 11
Riverton ..	5 15 0	..	..	50 10 0	9 11 0	..	47 0 0	112 16 0
Wyndham ..	0 15 0	..	..	1 18 9	0 2 0	0 2 0	..	2 17 9
Middlemarch ..	0 15 0	..	..	..	..	..	..	0 15 0
Gore ..	1 10 0	..	..	46 3 2	0 6 0	0 14 0	1 6 0	49 19 2
Totals ..	68 15 0	8 18 0	4 15 0	1,449 12 2	21 0 0	27 0 6	78 7 6	1,658 8 2
Grand totals ..	255 10 0	391 0 0	6 15 0	7,032 9 6	50 17 0	138 1 6	703 19 1	8,578 12 1

Table 3.

STATEMENT SHOWING THE QUANTITY OF QUARTZ CRUSHED AND GOLD OBTAINED IN THE HAURAKI MINING DISTRICT FOR THE YEAR ENDED 31ST DECEMBER, 1911.

Locality and Name of Mine.	Average Number of Men employed.	Quartz crushed.	Gold obtained.		Estimated Value.
			Amalgamation.	Cyanide.	
WAIHI BOROUGH.					
Waihi—		Tons cwt. gr. lb.	Oz. dwt.	Oz. dwt.	£ s. d.
Waihi	1,030	*316,349 0 0 0	129,086 0	938,346 0	670,179 11 3
Grand Junction	528	*94,603 0 0 0	..	146,529 0	150,729 10 0
Sundries from various sources	..	cleaning up	115 14	..	107 17 0
	1,558	410,952 0 0 0	129,201 14	1,084,875 0	821,016 18 3
OHINEMURI COUNTY.					
Waitekauri—					
New Waitekauri	2	42 10 0 0	..	119 9	127 2 4
Maoriland	15	1,272 0 0 0	484 4	532 4	2,834 1 5
Golden Cross	18	421 10 0 0	525 12	475 0	1,457 17 11
	35	1,736 0 0 0	1,009 16	1,126 13	4,419 1 8
Karangahake—					
Talisman	360	47,550 0 0 0	36,562 18	185,316 19	222,059 1 3
New Zealand Crown	184	20,835 0 0 0	..	19,015 2	45,030 10 6
	544	68,385 0 0 0	36,562 18	204,332 1	267,088 11 9
Komata—					
Komata Reefs	68	7,580 0 0 0	3,702 4	14,243 18	17,112 13 2
Maratoto—					
Silver Stream	10	7 4 2 6	Sold in	Australia.	209 3 8
Totals	657	77,708 4 2 6	41,274 18	219,702 12	288,829 10 3
PIAKO COUNTY.					
Waiorongomai—					
Bendigo	10	750 0 0 0	104 13	..	221 19 0
Hardy's Mines	6	0 9 2 22	..	3 14	12 16 0
	16	750 9 2 22	104 13	3 14	234 15 0
COROMANDEL COUNTY.					
Waikopomiko—					
Four-in-Hand	6	0 0 2 14	68 6	..	200 4 0
Tokatea—					
Royal Oak	6	1 1 2 2	49 0	..	127 10 0
Pride of Tokatea	3	5 2 1 8	158 8	..	429 19 3
Exalt	2	0 1 0 0	1 8	..	4 2 6
Mount Welcome	6	18 0 0 0	281 9	..	815 0 0
Monte Christo	2	1 0 0 6	6 14	..	18 0 0
	19	25 4 3 16	496 19	..	1,394 11 9
Kapanga—					
Kapanga	20	48 0 0 0	84 10	..	246 11 4
Venture	2	0 10 0 0	7 8	..	21 3 5
Success	2	2 15 0 0	5 15	..	16 7 3
Scotty's	2	2 10 0 0	9 1	..	30 1 0
	26	53 15 0 0	106 14	..	314 3 0
Hauraki Block—					
Old Hauraki	37	569 9 1 3	1,353 19	..	4,019 12 9
Hauraki Reefs	14	118 0 3 19	248 12	..	706 15 1
	51	682 10 0 22	1,602 11	..	4,726 7 10
Bremner's Freehold—					
Prospectors	2	Dish washings, &c.	17 1	..	45 18 0
Bremner's Freehold	6	14 1 3 4	95 11	..	263 11 3
Lucky Hit	2	2 0 0 0	3 17	..	14 0 0
	10	16 1 3 4	116 9	..	323 9 3
Kuaotunu—					
Mountain King	20	607 0 0 0	260 14	391 1	1,849 8 1
Handsworth	8	100 0 0 0	553 0	..	1,338 13 9
New Waitaia	12	76 0 0 0	210 19	..	618 5 0
	40	783 0 0 0	1,024 13	391 1	3,806 6 10
Totals	152	1,560 12 2 0	3,415 12	391 1	10,765 2 8

* Quartz crushed at these mines was shown in previous reports as short tons of 2,000 lb. dry weight.

Table 3—continued.

STATEMENT SHOWING THE QUANTITY OF QUARTZ CRUSHED AND GOLD OBTAINED IN THE HAURAKI MINING DISTRICT FOR THE YEAR ENDED 31ST DECEMBER, 1911—continued.

Locality and Name of Mine.	Average Number of Men employed.	Quartz crushed.	Gold obtained.		Estimated Value.
			Amalgamation.	Cyanide.	
THAMES COUNTY AND BOROUGH.					
Gumtown—		Tons cwt. qr. lb.	Oz. dwt.	Oz. dwt.	£ s. d.
Kapowai	3	24 0 0 0	25 6	..	62 5 8
Mata Creek	1	0 0 0 20	26 5	..	67 17 9
Tapu—					
Portia	2	50 0 0 0	151 9	..	459 17 8
Puru—					
Crown and Golden Crown	9	270 0 0 0	19 2	..	50 0 0
Waionio—					
Monowai	25	2,000 0 0 0	..	2,339 0	1 226 16 6
Tararu—					
Day Dawn and Norfolk Mines	12	390 0 0 0	65 12	85 7	308 14 9
Sylvia	36	4,395 0 0 0	..	18,900 0	7,946 15 10
Watchman	17	180 0 0 0	33 2	36 0	203 14 1
Dixon's	4	0 0 0 30	1 3	..	3 15 7
	69	4,915 0 1 2	99 17	19,021 7	8,463 0 8
Moanatairi—					
Kuranui-Caledonian	4	29 0 2 27	108 5	..	266 16 3
Thames Foreshore	10	6,504 0 0 0	..	605 3	881 14 1
Point Russell	1	40 10 0 0	2 9	..	6 1 0
Thames	1	5 10 0 24	29 2	..	78 14 10
	16	6,579 0 3 23	139 16	605 3	1,233 6 2
Kuranui—					
Kuranui	6	4 0 0 0	13 3	..	31 13 0
Wai tahi—					
Waiotahi	11	204 0 0 0	278 19	..	640 14 2
Ballarat	2	3 1 0 8	117 5	..	310 19 0
Noupariel	4	20 0 0 0	315 14	..	833 10 2
Punga Flat	1	0 0 0 26	3 2	..	8 11 8
Cambrian	3	69 0 1 23	101 8	..	270 10 6
Golden Drop	1	1 1 0 0	1 16	..	4 3 6
	22	297 2 3 1	818 4	..	2,068 9 0
Grahamstown—					
Victoria	6	13 0 0 0	5 16	..	16 2 7
Waiokaraka—					
May Queen	25	456 1 0 23	718 3	..	1,971 11 8
Karaka—					
Claremont	3	3 2 1 4	550 10	..	96 12 6
Halcyon	2	51 0 0 0	28 12	..	77 17 9
Good Hope	6	68 0 0 0	78 2	..	222 11 8
Occidental	8	34 0 0 0	160 11	..	413 4 6
Neck or Nothing	1	3 0 0 0	1 14	..	3 15 0
Una Hill	2	13 10 0 0	3 17	..	10 0 6
	22	169 12 1 4	823 6	..	824 1 11
Hape Creek—					
Lord Nelson	2	3 4 0 25	473 14	..	1,144 6 8
Summer Hill	1	3 0 0 14	23 3	..	56 11 4
Adventure	1	1 0 0 0	1 3	..	2 18 6
Dart	5	18 2 3 14	260 16	..	750 10 6
Comstock	4	30 0 0 0	35 0	..	105 0 1
Daisy	1	0 0 0 30	7 9	..	16 18 11
	14	45 7 1 27	801 5	..	2,076 6 0
Kirikiri—					
Kirikiri	6	20 0 0 0	3 9	..	7 2 3
Neavesville—					
Golden Belt	12	316 0 0 0	274 16	82 10	807 5 10
Tairua—					
Tairua Mines	25	750 0 0 0	306 10	56 9	718 15 6
Tairua Monarch	4	400 0 0 0	111 8	27 17	304 11 0
	29	1,150 0 0 0	417 18	84 6	1,023 6 6
SUMMARY.					
Waihi Borough	1,558	410,952 0 0 0	129,201 14	1,084,875 0	821,016 18 8
Ohinemuri County	657	77,708 4 2 6	41,274 18	219,702 12	288,829 10 8
Piako County	16	750 9 2 22	104 13	3 14	234 15 0
Coromandel County	152	1,560 12 2 0	3,415 12	391 1	10,765 2 8
Thames County and Borough	267	16,309 5 0 16	4,337 15	22,132 6	20,389 1 11
Totals, 1911	2,650	507,280 11 3 16	178,334 12	1,327,104 13	1,141,235 8 1
Totals, 1910	2,881	*556,169 4 2 12	155,749 6	1,798,947 12	1,324,456 1 5
Increase	..	..	22,585 6	..	..
Decrease	231	48,888 12 2 25	..	471,842 19	183,220 13 4

* Last year these figures were given as 612,553 tons 4 cwt. 2 qr. 134 lb.; then (and previously) the quartz crushed by the Waihi and Grand Junction Companies was reckoned in short tons of 2,000 lb. dry weight. (The figures are now shown calculated on the long-ton basis of 2,240 lb.)

Table 3—continued.

STATEMENT SHOWING QUANTITY OF QUARTZ CRUSHED AND GOLD OBTAINED IN THE MARLBOROUGH, NELSON, AND WESTLAND MINING DISTRICTS FOR THE YEAR ENDED 31ST DECEMBER, 1911.

Locality and Name of Mine.	Average Number of Men employed.	Quartz crushed.	Gold obtained.		Estimated Value.
			Amalgamation.	Cyanide.	
MARLBOROUGH.					
Wakamarina— Dominion Consolidated ..	20	Tons. 1,659	Oz. dwt. gr. 327 9 0	Oz. dwt. gr. ..	£ s. d. 1,133 7 8
COLLINGWOOD COUNTY.					
Taitapu— Golden Blocks ..	17	448	1,133 16 0	..	4,388 3 2
BULLER COUNTY.					
Lyell— New Alpine ..	6	70	40 0 0	..	151 0 0
INANGAHUA COUNTY.					
Boatman's— Golden Arch.. ..	2	30	19 0 0	14 0 0	129 0 0
Reefton— Keep-it-Dark ..	56	7,212	1,332 9 0	813 6 0	7,943 19 11
Wealth of Nations ..	150	24,968	9,164 15 0	3,321 1 0	49,635 8 4
Golden Fleece ..	30	329	294 14 0	85 12 0	1,306 4 4
Progress ..	320	41,596	8,435 15 0	2,689 2 0	42,832 7 4
Lankey's Creek ..	4	981	215 14 0	..	868 16 2
	560	75,086	19,443 7 0	6,909 1 0	102,586 16 1
Big River— New Big River ..	54	6,913	6,637 7 0	680 0 0	28,062 0 5
Waiuta— Blackwater ..	281	44,038	20,205 2 0	3,351 15 0	92,062 0 7
Totals ..	897	126,067	46,304 16 0	10,954 16 0	222,839 17 1
SUMMARY.					
Marlborough ..	20	1,659	327 9 0	..	1,133 7 8
Collingwood County ..	17	448	1,133 16 0	..	4,388 3 2
Buller County ..	6	70	40 0 0	..	151 0 0
Inangahua County ..	897	126,067	46,304 16 0	10,954 16 0	222,839 17 1
Totals ..	940	128,244	47,806 1 0	10,954 16 0	228,512 7 11
Totals, 1910 ..	930	121,832	49,171 17 0	11,037 9 0	230,806 14 2
Increase ..	10	6,412	..	..	..
Decrease ..	..	..	1,365 16 0	82 13 0	2,294 6 3

Table 3—continued.

STATEMENT SHOWING THE QUANTITY OF QUARTZ CRUSHED AND GOLD OBTAINED IN THE SOUTHERN MINING DISTRICT FOR THE YEAR ENDED 31st DECEMBER, 1911.

Locality and Name of Mine.					Average Number of Men employed.	Quartz crushed.	Gold obtained.	Estimated Value.	
FIORD COUNTY.									
Preservation Inlet—						Tons.	Oz. dwt.	£ s. d.	
Morning Star					6	55	5 0	17 10 0	
Alpha					4	..	..	..	
					10	55	5 0	17 10 0	
LAKE COUNTY.									
Macetown—									
United Goldfields of New Zealand					12	250	98 10	388 11 1	
Hamilton and Reid					4	14	22 13	67 19 0	
					16	264	121 3	451 10 1	
VINCENT COUNTY.									
Carriok—									
Carriok					30	200	38 2	123 0 7	
Good Chance					4	45	33 17	130 6 5	
Totals					34	245	71 19	253 7 0	
Bendigo—									
Cromwell					12	..	..	..	
Bald Hill Flat—									
Advance					2	115	139 0	535 8 0	
					48	360	210 19	788 10 0	
MANIOTOTO COUNTY.									
Hyde—									
Mount Highlay					19	361	71 2	257 13 4	
N.Z. Gold and Tungsten					14	3,536	177 0	667 2 9	
					33	3,897	248 2	924 16 1	
WAIHEMO COUNTY.									
Macrae's—									
Golden Point					30	4,798	603 9	2,340 18 11	
Maritana					5	..	..	..	
Golden Bar					5	..	..	..	
Goldfinch					6	300	79 11	310 0 0	
					46	5,098	683 0	2,650 18 11	
TAIERI COUNTY.									
Barewood—									
Barewood					15	695	46 0	171 10 1	
Canton Reef					4	98	135 15	501 18 5	
					19	793	181 15	673 8 6	
SUMMARY.									
Fiord County					10	55	5 0	17 10 0	
Lake County					16	264	121 3	451 10 1	
Vincent County					48	360	210 19	788 10 0	
Maniototo County					33	3,897	248 2	924 16 1	
Waihemo County					46	5,098	683 0	2,650 18 11	
Taieri County					19	793	181 15	673 8 6	
Totals					172	10,467	1,449 19	5,506 13 7	
Totals, 1910					118	10,658	2,284 4	8,926 8 11	
Increase					54	..	..	..	
Decrease					..	191	834 5	3,419 15 4	

Table 3—continued.

STATEMENT OF VALUE OF BULLION WON FROM QUARTZ CRUSHED FOR ALL DISTRICTS FOR THE YEARS ENDED 31ST DECEMBER, 1910 AND 1911.

Mining District.	Year ended 31st December, 1910.	Year ended 31st December, 1911.
	£	£
Hauraki	1,324,456	1,141,235
Marlborough, Nelson, and West Coast	230,807	228,512
Otago and Southland...	8,926	5,506
Totals	1,564,189	1,375,253

Table 4.

GROSS TOTALS AND VALUE OF BULLION PURCHASED BY BANKS FOR THE YEAR ENDED 31ST DECEMBER, 1911.

Bank.	Bullion purchased.	Value.
<i>Hauraki Mining District (Northern Inspection District).</i>		
	Oz. dwt. gr.	£ s. d.
Bank of New Zealand	220,157 19 0	237,121 17 0
Bank of New South Wales	3,489 4 20	7,587 14 5
National Bank of New Zealand	1,108 11 0	2,906 2 1
	224,755 14 20	247,615 13 6
<i>Marlborough, Nelson, and Westland Mining Districts (West Coast Inspection District).</i>		
Bank of New Zealand	25,777 0 7	101,533 12 3
National Bank of New Zealand	10,469 10 13	40,541 13 4
Bank of New South Wales	6,621 10 9	26,418 11 6
Union Bank of Australia	2,274 19 2	8,789 7 11
	45,143 0 7	177,283 5 0
<i>Otago and Southland Districts (Southern Inspection District).</i>		
Bank of New Zealand	50,754 15 7	196,516 12 2
Bank of New South Wales	5,867 17 8	22,862 14 7
National Bank of New Zealand	27,560 13 9	106,739 2 3
Bank of Australasia	5,526 17 0	21,465 6 6
Union Bank of Australia	957 6 17	3,685 4 10
Private buyers	222 7 19	853 12 3
	90,889 17 12	352,122 12 7
Totals	360,788 12 15	777,021 11 1
Totals, 1910	335,587 0 0	775,111 0 0

Table 5.

RETURN OF GOLD DUTY CREDITED TO LOCAL BODIES FOR THE YEAR ENDED 31ST DECEMBER, 1911, AND THE QUARTER ENDED 31ST MARCH, 1912.

Local Body.	For the Year ended 31st December, 1911.	For the Quarter ended 31st March, 1912.
	£ s. d.	£ s. d.
COUNTIES—		
Coromandel	631 0 2	
Ohinemuri	7,561 10 8	1,223 17 3
Piako	2 17 10	
Thames	320 15 4	216 14 2
BOROUGHS—		
Thames	284 2 11	15 13 8
Waihi	17,396 18 0	3,662 2 7
Totals	26,197 4 11	5,118 7 8

Table 6.

RETURN OF THE QUANTITY AND VALUE OF GOLD ENTERED FOR DUTY* FOR EXPORTATION FROM NEW ZEALAND FROM 1ST APRIL, 1857, TO 31ST DECEMBER, 1911.

PRODUCE OF THE GOLDFIELDS IN		DURING THE QUARTER ENDED 31ST DECEMBER, 1911.		ENTERED FOR EXPORTATION TO THE 30TH SEPTEMBER, 1911.		TOTAL ENTERED FOR EXPORTATION FROM NEW ZEALAND TO THE 31ST DECEMBER, 1911.	
County or Borough.	District.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		Oz.	£	Oz.	£	Oz.	£
County of Thames ..	Auckland	2,167	7,963				
" Ohinemuri ..		24,599	94,194				
" Coromandel ..		1,217	5,101				
" Piako ..		29	123				
Borough of Thames ..		157	659				
" Waihi ..		41,737	168,282				
Great Barrier Island ..		..	..				
		69,906	276,322	5,356,435	20,399,340	5,426,341	20,675,662
	Wellington ..	..	..	188	706	188	706
County of Marlborough	Marlborough ..	122	439	90,390	352,163	90,512	352,602
" Collingwood	Nelson ..	207	829	1,726,299	6,844,033	1,726,506	6,844,862
County of Buller ..	West Coast	107	420				
" Inangahua ..		12,514	49,665				
" Grey ..		940	3,789				
" Westland ..		784	3,203				
Borough of Kumara ..		..	..				
" Hokitika ..		..	..				
" Ross ..		..	..				
		14,345	57,077	5,675,901	22,564,736	5,690,246	22,621,813
	Canterbury ..	..	..	99	387	99	387
County of Taieri ..	Otago	119	463				
" Tuapeka ..		2,799	11,282				
" Vincent ..		6,959	27,903				
" Maniototo ..		872	3,548				
" Waihemo ..		343	1,298				
" Waitaki ..		550	2,226				
" Lake ..		964	3,857				
" Wallace ..		1,083	4,331				
" Waikouaiti ..		..	..				
" Bruce ..		307	1,231				
" Clutha ..		222	916				
" Fiord ..		2	8				
" Southland ..		8,155	32,927				
		22,375	90,006	7,207,968	28,664,942	7,230,343	28,754,942
Unknown ..	..	93	370	660	2,569	753	2,939
Totals ..	..	107,048	425,037	20,057,940	78,828,876	20,164,988	79,253,913

*Duty payable on gold exported. the produce of the North Island, 2s. 3d. per oz.; duty payable on gold exported. the produce of the South Island, 3d. per oz. Vide sections 1 and 2 of the Gold Duty Act, 1906, and section 16 of the Mining Act Amendment Act, 1910.

Table 7.

COMPARATIVE RETURN FOR THE YEARS ENDED 31ST DECEMBER, 1911 AND 1910.

PRODUCE OF THE GOLDFIELDS IN THE DISTRICT OF	DURING THE QUARTER ENDED				TOTALS FOR YEAR 1911.		TOTALS FOR YEAR 1910.	
	31st March, 1911.	30th June, 1911.	30th September, 1911.	31st December, 1911.	Quantity.	Value.	Quantity.	Value.
	Oz.	Oz.	Oz.	Oz.	Oz.	£	Oz.	£
Auckland ..	57,465	70,175	66,245	69,906	263,791	1,049,204	286,526	1,136,057
Marlborough ..	30	46	31	122	229	867	53	212
Nelson ..	1,511	205	226	207	2,149	8,586	117	466
West Coast ..	27,437	20,763	29,858	14,345	92,403	368,545	92,036	358,099
Otago ..	31,148	13,589	29,036	22,375	96,148	387,614	99,527	401,391
Unknown ..	7	271	135	93	506	1,966	29	103
Totals for 1911	117,598	105,049	125,531	107,048	455,226	1,816,782	..	..
Totals for 1910	113,975	110,604	148,290	105,419	..	..	478,288	1,896,326

Table 8.

RETURN OF THE QUANTITY AND VALUE OF GOLD ENTERED FOR DUTY* FOR EXPORTATION FROM NEW ZEALAND FROM 1ST APRIL, 1857, TO 31ST MARCH, 1912.

PRODUCE OF THE GOLDFIELDS IN		DURING THE QUARTER ENDED 31ST MARCH, 1912.		ENTERED FOR EXPORTATION TO THE 31ST DECEMBER, 1911.		TOTAL ENTERED FOR EXPORTATION FROM NEW ZEALAND TO THE 31ST MARCH, 1912.	
County or Borough.	District.	Qu'ntity	Value.	Quantity.	Value.	Quantity.	Value.
		Oz.	£	Oz.	£	Oz.	£
County of Thames ..	Auckland	1,965	7,302				
Ohinemuri ..		12,238	45,440				
Coromandel ..		..	..				
Pako ..		..	..				
Borough of Thames ..		..	..				
Waihi ..		36,621	147,567				
Great Barrier Island ..		..	..				
		50,824	200,309	5,426,341	20,675,662	5,477,165	20,875,971
	Wellington ..	..	..	188	706	188	706
County of Marlborough	Marlborough ..	79	316	90,512	352,602	90,591	352,918
County of Collingwood ..	Nelson	677	2,695				
Murchison ..		22	88				
		699	2,783	1,726,506	6,844,862	1,727,205	6,847,645
County of Buller ..	West Coast	1,114	4,100				
Inangahua ..		12,660	49,926				
Grey ..		4,850	19,285				
Westland ..		8,144	12,633				
Borough of Kumara ..		..	..				
Hokitiki ..		..	..				
Ross ..		303	1,212				
		22,071	87,156	5,690,246	22,621,813	5,712,317	22,708,969
	Canterbury ..	..	..	99	387	99	387
County of Taieri ..	Otago	142	565				
Tuapeka ..		6,125	24,598				
Vincent ..		6,827	27,476				
Maniototo ..		2,967	11,673				
Waihemo ..		454	1,778				
Waitaki ..		751	2,945				
Lake ..		1,240	4,997				
Wallace ..		519	2,075				
Waikouaiti ..		..	..				
Bruce ..		383	1,536				
Cutha ..		324	1,327				
Fiord ..		..	..				
Southland ..		7,835	31,899				
		27,567	110,869	7,230,343	28,754,942	7,257,910	28,865,811
Unknown ..	..	135	447	753	2,939	888	3,386
Totals ..	..	101,375	401,880	20,164,988	79,253,913	20,266,363	79,655,793

* Duty payable on gold exported, the produce of the North Island, 2s. 3d. per oz.; duty payable on gold exported, the produce of the South Island, 3d. per oz. *Vide* sections 1 and 2 of the Gold Duty Act, 1908, and section 18 of the Mining Act Amendment Act, 1910.

Table 9.

COMPARATIVE RETURN FOR THE QUARTERS ENDED 31ST MARCH, 1912, AND 31ST MARCH, 1911.

District of	Quarter ended 31st March, 1912.		Quarter ended 31st March, 1911.	
	Quantity.	Value.	Quantity.	Value.
	Oz.	£	Oz.	£
Auckland ..	50,824	200,309	57,465	229,571
Wellington ..	..	..	..	..
Marlborough ..	79	316	30	120
Nelson ..	699	2,783	1,511	6,041
West Coast ..	22,071	87,156	27,437	109,315
Canterbury ..	..	..	..	..
Otago ..	27,567	110,869	31,148	125,564
Unknown ..	135	447	7	30
Totals ..	101,375	401,880	117,598	470,641

Table 10.

RETURN SHOWING THE AVERAGE PRICES OF PROVISIONS ON THE GOLDFIELDS FOR THE YEAR ENDED 31ST DECEMBER, 1911.

District.	Bread— Wheaten.	Butter— Freeb.	Butter— Salt.	Cheese.	Coffee.	Flour.	Grain— Wheat.	MEAT.			Milk.	Rice.	Salt.	Sugar.	Tea.
	Per lb.	Per lb.	Per lb.	Per lb.	Per lb.	Per 100 lb.	Per Im. bushel.	Per lb.	Per lb.	Per lb.	Per qt.	Per lb.	Per lb.	Per lb.	Per lb.
AUCKLAND—	d.			d.				d.	d.	d.	d.	d.	d.	d.	
Thames	2	1/2	/7	7	1/10	11/6	4/6	5	4	6	4	2½	½	3	1/6
Paero	2	1/1	/10	7	1/6	15/	4/9	6-8	6	6½	3	2½	1	2	1/8
Coromandel	2	1/2	/10	8	1/6	13/6	4/6	5-10	4-7	7	4	2½	1	2½	1/-3/6
Tauranga	2	1/3	/11	7-9	2/	10/6	5/3	6	5-6	6	4	3	1	3	1/6-2/6
Te Aroha	2	1/1	/10	7	1/6	15/	4/9	6-8	6	6½	3	2½	1	2	1/8
Waikato	1½	1/2	/11	9	1/11	11/	4/6	7	6	6	4	3	1	3	2/
Pukipuhi	2	1/2	1/	8½	1/8	10/6	5/	5	5	6	3	2½	1	2½	1/6
NELSON—															
Wangapeka	2	1/3	1/	9	2/	17/	7/	6	5	6	4	4	2	4	2/
Collingwood	2	9-1/1	/8	8	1/10	11/6	5/3	5	4½	5	4	3	1	2½	1/2-2/6
Motueka	3½	1/2	1/	9	2/	12/6	5/	7	4	6	4	2½	1	2½	1/2-2/
Karamea	2½	1/2	/11	9	1/6	13/	4/6	6	6	6	3	3½	1	3	2/
Lyell	2½	1/3	1/	10	2/	13/	6/6	6	6	6	5	3	1½	3½	1/6-2/6
Murchison	2½	1/4	..	9	1/6	16/	..	4½-6½	5	5	4	3	2	4	2/
Westport	1½	1/2	1/	8	1/9	11/	5/	6½	7	10	4	3	1	2½	1/9
Charleston	2	1/3	1/	8	2/	12/	6/	6	6	6	5	3	1	3	2/
Alhaura	2	1/2	1/	8	2/	15/	6/	6	6	8	4	3	2	3½	2/
WESTLAND—															
Stafford and Goldsborough	1½	1/3	1/	8	1/9	14/	6/	6	6	8	6	2	2	3	2/
Hokitika	1½	1/2	1/	8	1/6	13/6	6/	6	6	8	5	2	1	2½	1/6-3/
Ross	2	1/1	..	8	1/6	11/	5/	6	6	6	4	2½	1	2½	2/
Okarito	3	1/3	..	9	1/9	17/6	7/	5½	5½	6	..	4	1	3½	2/1
Greymouth	2	1/2	1/1	8	1/9	11/6	6/	6	5	7	4	2½	1½	3	2/
Kumara	2	1/2	1/	8	1/6	13/6	6/6	6	6	6	6	3	1	2½	1/6-2/
Reefton	2	1/1	/10	9	1/9	13/	5/6	7	7	7	4	3	1	2½	2/
OTAGO—															
Hindon	2	1/	/10	8	1/9	14/	4/	6	5-6½	5½	4	3	1½	3	1/3-2/
Cromwell	2	1/1	1/4	8	1/6	12/9	5/	6	3	6	4	3	1	2½	1/-2/
Clyde															
Alexandra	1½	1/3	1/3	8	1/9	10/	4/6	5	4	6	5	2	1	2	1/9-2/
Roxburgh															
Black's															
Lawrence	1½	1/	/11	8	1/10	10/	4/0	6	5½	5	3	2½	1	3	1/9
Naseby															
Macrae's	2	1/1	/11	8	1/8	13/	5/	6	5	8	4	3	1	3	1/6
St. Bathan's															
Queenstown	1½	1/	/10	8	1/9	10/	3/	4-6	4-6	6	3	3	1	3	1/10
Arrow (Wakatipu Goldfield)	2	1/	/10	8	1/6	11/	3/	6	5½	6	2	2½	2	3	1/10
P. mbr. ke	2	1/	1/4	8	2/	10/6	3/	6	5	6	4	3	2	3	2/
Waikna	2	1/5	1/2	10	2/	16/	..	7	6	6	5	4	2	3	1/10-2/10
Riverton and Orepuki	1½	1/2	1/2	8	1/7	12/9	6/	6-8	5	5-11	5	2½	1	2½	1/10
Gore	1½	1/	/10	8	1/8	12/6	4/	5	4	6½	3½	2½	1	2½	1/6
Wyndham	1½	1/3	1/2	8	1/9	10/9	4/6	6	6	6½	4	3	1	3	1/8

Table 12.

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.			
AUCKLAND DISTRICT.														
Alburnia Gold-mining Company (Limited)	2/9/10	7,800	£ 1,615	£	155,994	£ s. d. 2d. & 2½d.	10	150	4	Oz.	£	£ 1,645	£	£
Bendigo Gold-mining Company (Limited)	26/3/08	14,396	8,173	1,424	143,958	0 1 4	66	156	14	164	240	5,507	..	1,134
Bonanza Gold-mining Company (No Liability)	22/10/06	10,000	3,250	..	100,000	0 0 9	..	105	..	..	..	3,314	..	20
Brenner's Freehold Gold-mining Company (Ltd.)	5/8/10	10,000	534	..	100,000	0 0 2	299	92	4	440	1,220	1,647	..	42
Dixon's Consolidated Gold-mining Company (Ltd.)	22/6/08	4,500	4,022	500	100,000	1/., 11d., & 9d.	31	100	..	1	4	3,969	..	3
Dominion Gold-mining Company (No Liability)	8/9/11	18,760	782	..	187,000	0 0 1	..	145	6	..	..	247	..	26
Four-in-Hand Gold-mining Company (Limited)	4/6/09	17,971	5,029	3,500	89,857	2/., 1/10., & 1/7	34	63	2	158	461	4,905	..	150
Golden Cross Gold-mining Company (Limited)	12/11/06	10,175	9,750	325	101,750	11d., 1/., 2/.	100	125	20	1,422	2,874	11,209	..	1,292
Good Hope Gold-mining Company (No Liability)	10/11/10	12,975	1,235	1,622	129,746	0 0 5	353	92	6	79	221	1,447	..	7
Handsworth United Gold-mining Company (Ltd.)	27/7/09	14,000	3,083	1,000	140,000	0 0 7	..	123	9	1,571	3,829	5,926	..	570
Hare-Ratjen Copper Company (Limited)	5/4/07	7,600	1,000	6,600	7,600	1 0 0	..	20	..	..	..	1,318	..	156
Hauraki Reefs (Limited)	28/4/10	20,000	4,604	5,083	175,000	9d., 4d., & 2/.	..	486	15	540	1,552	5,753	..	..
Imperial Gold-mining Company (Limited)	20/10/09	4,840	906	375	96,800	3½d., 1d., & ½d.	131	40	..	..	..	776	..	30
Kaipara Copper-developing Company (Limited)	25/6/08	1,470	1,010	460	1,470	1 0 0	..	98	1	..	..	1,244	..	1
Karangahake Gold-mining Company (Limited)	6/9/07	10,525	6,220	750	105,250	0 1 4	14	70	1	..	43	6,053	..	..
Kirikiri Consolidated Mines (Limited)	2/9/09	15,000	4,022	7,500	150,000	0 1 7	30	26	6	..	..	3,920	..	60
Kurauui Gold-mining Company (Limited)	12/9/95	22,394	16,073	3,450	89,575	0 4 4	204	88	6	..	1,888	17,269	..	169
Langhan's Antimony and Minerals (Limited)	20/8/07	5,725	3,172	..	114,505	0 1 0	..	66	..	..	142	4,006	..	43
Lord Plunket Gold-mining Company (Limited)	20/6/05	3,100	433	1,000	30,900	9½d. & 1/.	..	40	..	..	..	474	..	50
Luck-at-Last Gold-mining Company (Limited)	25/8/09	2,255	2,228	..	83,260	0 0 6½	27	24	4	..	..	2,192	..	831
Maoriland Gold-mining Company (Limited)	15/6/06	10,600	6,400	..	106,000	2/ & 6d.	..	200	15	..	4,607	22,965	..	268
May Queen Gold-mining Company (Limited)	15/5/07	64,000	20,867	26,767	256,000	0 3 10	1,433	527	23	4,954	13,916	44,259	..	932
Missouri Mines (Limited)	7/10/08	12,650	1,925	1,125	126,500	0 0 6	59	60	1	..	..	1,916	..	10
Moanatairi Gold-mining Company (Limited)	7/12/09	22,449	8,323	..	179,596	0 0 11½	282	223	1	..	..	7,984	..	8,085
Monowai Gold-mining Company (Limited)	21/9/09	25,000	10,417	2,000	120,000	0 2 1	..	65	25	2,861	1,646	15,898	..	2,500
Mountain King Gold-mining Company (Limited)	12/2/08	12,000	7,000	..	100,000	0 1 6	..	160	21	2,283	6,330	13,385	..	164
Mountain Queen Gold-mining Company (Limited)	18/8/09	6,850	741	750	68,500	0 0 6	222	51	..	..	..	701	..	30
Mount Welcome Gold-mining Company (Limited)	1/7/09	5,000	1,262	458	100,000	4d., 4½d., & 1d.	..	120	5	457	1,318	2,570	..	25
New Champion Gold-mining Company (Limited)	21/9/11	2,500	1,700	100	50	37 10 0	100	24	12	..	..	1,493	..	..
New Champion Gold-mining Company (Limited)	23/11/09	28,750	1,084	3,746	113,860	3/., 2/5, 2/6	..	79	..	..	..	1,291	..	50
New Magnet Gold-mining Company (Limited)	14/7/10	5,000	919	..	100,000	1½d., 2d., & 2½d.	122	75	4	35	105	1,045	..	..
New Success Gold-mining Company (Limited)	29/10/09	5,227	1,977	375	60,200	5d., 4½d., 4d.	92	32	2	25	71	1,777	..	120
New Sylvia Gold-mining Company (Limited)	2/10/05	30,000	25,000	1,208	300,000	0 1 8	..	330	44	18,751	9,769	33,746	..	435
New Waitata Gold-mining Company (Limited)	25/2/09	15,000	6,875	2,500	150,000	0 1 3	..	133	15	674	1,810	8,002	..	..
New Waitetauri Gold-mining Company (Limited)	12/9/06	12,500	7,203	1,500	100,000	1/3½ & 1/9½	..	103	..	1,105	1,305	10,181	..	28
New Zealand Cinnabar Company (Limited)	2/6/10	5,000	1,500	3,500	200	25 0 0	..	29	1	..	120	2,492	..	705

Occidental Consolidated Gold-mining Company (No Liability)	3/8/09	5,397	3,583	107,938	5d. & 10d.	197	97	12	..	416	4,140	..	39
Old Hauraki Gold-mines (Limited) ..	3/8/07	21,000	11,375	210,000	0 1 1	..	320	33	6,467	19,251	24,948	2,625	140
Pride of Tokatea Gold-mining Company (Limited) ..	12/7/09	6,000	2,022	90,000	0 0 5½	..	113	2	..	428	3,325	..	15
Pride of Waihi Gold-mining Company (Limited) ..	15/1/01	50,000	2,917	100,000	0 0 10	..	221	..	..	..	3,248	..	42
Reliance Gold-mining Company (Limited) ..	20/12/06	5,500	4,366	110,000	11d., 9d., 8d.	675	50	..	..	..	4,345	..	..
Rising Sun Gold-mining Company (Limited) ..	11/12/08	16,500	4,423	110,000	0 0 9	223	138	8	..	..	4,392	..	100
Royal Oak Gold-mining Company (Limited) ..	22/3/04	12,500	2,062	100,000	0 1 8½	..	165	1	4,081	11,154	15,960	..	75
Saxon Gold-mining Company (Limited) ..	2/12/07	35,000	5,420	200,000	9d. & 10d.	740	350	6	381	109	8,964	..	325
Scotia Gold-mining Company (Limited) ..	11/9/09	1,036	1,257	102,150	0 0 4	..	74	..	301	393	1,432	..	23
Seddon Gold-mining Company (Limited) ..	13/8/09	10,000	1,257	100,000	0 0 4	34	44	3	..	..	1,237	..	10
Silver Stream Mines (Limited) ..	7/7/09	43,950	5,220	43,950	Various	403	83	10	1,500	209	4,996	..	325
Tairua Gem Gold-mining Company (Limited) ..	11/9/09	11,300	1,659	113,000	0 0 5½	119	40	..	..	..	1,561	..	40
Tairua Golden Hills (Limited) ..	6/12/11	26,881	8	159,249	..	..	86	29	..	..	166	..	1,733
Tairua Mines (Limited) ..	9/3/11	17,295	3,603	172,950	0 0 5	..	280	25	363	719	3,581	..	..
Tairua Monarch Consolidated (Limited) ..	27/4/08	23,750	16,439	190,000	0 0 7	186	145	..	..	305	6,311	..	50
Tauri Tomtit (Limited) ..	14/12/10	3,750	2,172	25,000	0 3 0	845	40	4	..	..	1,754	..	..
Tellurides Proprietary (Limited) ..	2/11/09	26,200	7,632	262,005	0 1 0	193	298	17	..	..	8,855	..	241
Te Puke Gold Reefs (Limited) ..	4/5/98	12,865	12,865	101,478	0 2 6	..	103	..	..	..	12,996	4,945	4
Thames Foreshore Dredging Company (Limited) ..	16/5/08	5,000	5,000	10,000	0 10 0	..	10	10	3,412	3,435	12,451	..	8,563
Thames Gold-mining Company (Limited) ..	16/12/05	15,000	12,812	150,000	0 1 8½	..	151	..	60	177	12,979	..	109
Union Hauraki Gold-mines (Limited) ..	9/10/09	9,794	4,813	78,350	0 1 1	212	54	11	..	..	4,767	..	..
Victoria Gold-mining Company (No Liability) ..	8/12/06	29,523	8,267	147,615	0 1 1	344	269	1	1,025	2,869	11,137	..	17
Waihi Extended Gold-mining Company (Limited) ..	12/8/95	149,967	47,927	149,967	0 7 1½	..	423	13	..	..	48,824	..	264
Waihi-Paeroa Gold-extraction Company (Limited) ..	4/3/10	125,000	39,947	125,000	Various	2,578	101	60	..	..	63,163	..	2,278
Waihi Reefs Consolidated (Limited) ..	26/10/09	172,250	7,500	172,250	1 0 0	..	242	1	..	..	12,801	..	6,042
Waihi Standard Gold-mining Company (No Liability) ..	20/11/11	20,000	708	200,000	0 0 1	126	11	15	116	108	360	..	442
Waitangi Consolidated Gold-mining Company (No Liability) ..	23/10/08	146,833	7,217	169,800	1/1 & 8d.	213	227	20	..	1,369	14,610	..	..
Waitawheta Gold-prospecting Company (No Liability) ..	21/12/07	7,250	3,200	145,000	5½d.	352	151	6	..	38	3,280	..	402
Waitotahi Gold-mining Company (Limited) ..	28/7/71	18,000	15,000	240,000	0 1 3	..	620	7	..	673,735	268,876	400,800	23
Watchman Gold-mining Company (Limited) ..	4/12/11	2	..	150,000	2/ & 5d.	45	7	..	..	..	..	..	13
Zeehan Consolidated (Limited) ..	23/8/10	11,300	2,354	150,000	..	..	70	2	..	..	2,931	..	20
Totals ..	..	1,514,855	423,124	8,019,873	..	11,074	9,303	563	53,226	768,186	819,916	407,970	39,271

NELSON DISTRICT (INCLUDING WEST COAST).

		£	£	£ s. d.	£	Oz.	£	£	£
Big River South Gold-mines (Limited) ..	22/7/09	15,000	3,000	0 2 6	..	..	66	..	3,588
Blackwater River Gold-dredging Company (Ltd.) ..	27/4/00	9,475	5,892	0 18 0	..	..	90	..	42,019
Blue Creek Gold, Silver, and Lead Development Company (Limited) ..	14/11/10	25,000	1,913	0 4 0	87	..	220	..	1,792
Dominion Consolidated Developing Company (Limited) ..	18/1/11	15,000	2,538	10/ & 6/1	337	327	32	1,133	3,518
Just-in-Time Gold-mining Company (Limited) ..	6/8/10	6,425	2,828	10/ & 4/6	156	..	66	..	2,921
Keep-it-Dark Mines (Limited) ..	8/2/11	10,000	2,429	0 2 5	321	1,775	43	6,593	11,016
Maunapua Gold-mining Company (Limited) ..	11/12/09	5,385	4,354	20/ & 5/	..	174	79	666	9,292
Matakitaki Hydraulic Sluicing Company (Limited) ..	16/4/10	5,000	4,344	17/6, 18/9, & 2/6	37	45	103	178	4,715
Totals ..	..	151,485	42,312	..	..	..	9,303	563	819,916

Table 12—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.			
NELSON DISTRICT (INCLUDING WEST COAST)—continued.														
Mont d'Or Gold-mining and Water-race Company (Limited)	25/7/82	£ 12,000	£ 10,800	£ ..	12,000	£ s. d. 0 18 0	£ ..	42	12	Oz. 35,793	£ 137,547	£ 99,726	£ 51,600	£ ..
Mount Owen Rising Sun Mineral Company (Ltd.)	21/9/11	10,210	1,592	16,000	26,210	Various	..	199	4	..	..	1,492	..	29
Murray Creek Gold-mining Company (Limited) ..	30/5/11	10,000	2,462	2,000	12,000	0 4 11	37	60	2	..	..	2,209	..	809
New Big River Gold-mining Company (Limited)	19/8/07	6,000	600	..	24,000	0 0 6	..	66	54	27,069	107,672	55,257	51,600	482
New Traifalgar Dredging Company (Limited) ..	13/4/04	6,500	2,500	2,000	6,500	1 0 0	..	100	9	6,873	27,065	28,868	4,550	..
New Ulster Quartz-mining Company (Limited) ..	11/3/08	5,260	3,808	1,250	10,730	0 7 7	28	26	2	241	882	4,739	..	..
No Town Creek Gold-dredging Company (Limited)	9/3/00	8,500	8,500	3,500	12,000	1 0 0	..	118	10	19,648	76,223	48,000	34,200	445
Pactolus Gold-dredging Company (Limited) ..	30/8/99	8,125	8,125	1,250	12,500	0 15 0	..	131	10	33,118	131,043	75,020	62,500	180
Parapara Hydraulic Sluicing and Mining Company (Limited)	18/6/92	50,600	26,210	20,000	40,600	£1. 5s. 12d.	150	60	10	12,446	47,872	69,551	..	..
Poerua Gold-mining Company (Limited)	20/10/10	19,787	5,660	28,000	19,787	0 7 6	2,416	172	31	..	..	5,753	..	116
Ross Goldfields Reconstructed (Limited)	7/2/11	70,000	7,905	43,750	70,000	2/6 & 2/	845	253	2	..	..	1,299	..	167
Stafford Gold-dredging Company (Limited)	17/5/05	289	289	1,734	2,023	1 0 0	..	7	7	6,090	23,725	19,501	3,287	277
St. George Gold-mining Company (Limited)	9/10/09	12,150	4,992	3,000	24,300	10s/ & 5/6	41	81	8	..	..	4,972	..	6
Worksoop Gold-dredging Company (Limited)	20/3/07	4,500	4,500	1,500	6,000	1 0 0	..	85	11	9,354	35,904	23,130	15,900	115
Totals	..	315,206	115,241	157,634	406,360	..	4,455	2,099	280	165,432	645,725	518,378	235,131	6,857
OTAGO DISTRICT (INCLUDING SOUTHLAND).														
Arthur's Point Gold-mining Company (Limited)	22/10/09	6,480	2,840	..	6,480	Various	..	73	7	94	361	3,422	..	520
Bakery Flat Sluicing Company (Limited)	10/9/96	2,500	2,012	..	2,500	0 18 6	..	28	..	4,330	16,416	17,148	1,062	159
Carrick Gold-mining Company (Limited)	22/2/10	18,385	8,285	10,000	18,385	1 0 0	..	132	22	61	197	10,732	2,286	..
Chicago Gold-dredging Company (Limited)	1/11/99	5,000	6,750	2,500	5,000	1 0 0	..	57	7	10,394	40,346	34,114	8,964	161
Crewe Gold-dredging Company (Limited)	7/9/02	2,000	2,000	3,000	5,000	1 0 0	..	19	14	9,184	35,380	30,391	6,375	318
Deep Stream Gold-mining Company (Limited)	19/11/06	2,500	500	2,000	2,500	1 0 0	..	7	4	1,205	4,644	4,913	1,125	144
Earnsclough Gold-dredging Company (Limited)	15/7/01	8	8	10,992	11,000	1 0 0	..	14	35	39,250	150,447	127,615	24,750	1,132
Electric Gold-dredging Company (Limited)	2/9/99	26,000	..	26,000	26,000	1 0 0	..	293	21	53,930	208,467	86,813	126,092	1,286
Gabriel's Gully Sluicing Company (Limited)	2/5/07	600	180	..	600	0 6 0	..	6	4	1,443	5,544	4,281	1,335	130
Golden Bed Dredging Company (Limited)	5/5/99	11,000	10,694	2,000	12,794	1 0 0	..	143	10	15,689	60,652	47,829	15,269	250
Golden Crescent Sluicing Company (Limited)	26/11/98	3,500	3,500	..	3,500	1 0 0	..	23	7	6,365	24,749	19,245	8,137	20
Golden Sun Dredging Company (Limited)	1/12/10	2,000	1,987	..	2,000	1 0 0	12	35	1	400	1,555	3,563	405	..
Golden Treasure Dredging Company (Limited)	11/7/93	1,500	1,384	1,500	3,000	1 0 0	..	42	9	19,334	74,504	53,404	23,871	768
Good Chance Dredging Company (Limited)	24/3/09	1,250	779	..	1,250	1 0 0	..	61	8	1,748	6,845	7,321	625	196
Hamilton's Sluicing Company (Limited)	8/6/10	6,000	4,000	2,000	6,000	1 0 0	..	34	5	440	1,658	5,384	..	107
Hartley and Riley Beach Dredging Company (Ltd.)	14/7/97	6,500	6,300	200	6,500	1 0 0	..	314	8	32,203	124,627	44,917	83,687	40
Havelock Sluicing Company (Limited)	3/3/08	4,000	3,400	600	4,000	1 0 0	..	11	6	2,486	9,550	11,981	1,400	75
Hit-or-Miss Water-race Company (Registered), Mount Ida	19/6/87	..	..	..	301	20 0 0	..	3	..	*	*	*	*	..

Inland Block Gold-dredging and Sluicing Company (Limited)	26/2/00	24,030	12,030	12,000	25,000	1 0 0	112	8	7,806	30,423	37,133	2,403	1,371
Jutland Hydraulic Dredging Company (No Liability)	28/6/01	5,000	4,100	900	5,000	1 0 0	9	7	5,420	20,846	21,830	3,250	341
Karaunui Dredging Company (Limited)	12/10/09	5,115	2,765	2,350	5,115	1 0 0	97	10	1,869	6,057	12,434	..	2,031
Kia Ora Victoria Gold-dredging Company (Ltd.)	10/8/01	9,100	5,915	..	9,100	0 13 0	35	16	23,424	94,940	66,288	34,352	158
Koputai Gold-dredging Company (Limited)	9/1/06	3,200	3,200	300	3,500	1 0 0	44	7	8,108	31,838	22,318	12,537	..
Lady Roxburgh Gold-dredging Company (Limited)	3/3/00	9,000	5,166	2,000	11,000	0 15 0	98	8	6,593	25,327	28,747	3,593	600
Ladysmith Gold-dredging Company (Limited)	19/4/00	12,000	3,964	3,000	14,500	0 10 0	78	9	7,960	30,692	26,559	8,436	184
Lammernoor Mining Company (Limited)	6/7/08	4,950	1,000	1,000	5,950	0 10 0	25	5	182	704	5,529	..	458
Little Valley Sluicing Company (Limited)	26/5/11	2,775	1,320	1,100	2,775	0 16 0	20	29	..	..	1,813	..	491
Lowburn Dredging Company (Limited)	26/1/09	2,000	2,000	1,350	2,000	1 0 0	8	10	1,681	6,457	9,575	..	980
Lower Nevis Dredging Company (Limited)	29/9/06	600	600	600	1,200	1 0 0	7	7	2,749	10,579	10,547	960	256
Magnum Bonum Gold-dredging Company (Limited)	1/3/06	2,500	2,500	..	2,500	1 0 0	9	8	6,280	24,995	17,424	8,875	..
Manuhierika Gold-dredging Company (Limited)	1/8/99	12,000	6,000	6,000	12,000	1 0 0	166	9	17,830	68,367	38,467	33,445	190
Manuka Mining Company (Limited)	26/5/04	200	200	..	200	1 0 0	7	1	434	1,683	1,950	..	175
Maori Gully Sluicing Company (Limited)	8/4/09	6,400	..	6,400	3,200	..	14	5	935	3,780	3,541	320	103
Masterton Gold-dredging Company (Limited)	6/1/04	5,000	3,500	1,500	5,000	1 0 0	76	8	14,178	55,909	27,400	31,500	..
Molynaux Hydraulic Dredging Company (Limited)	25/5/00	5,896	5,896	..	5,896	1 0 0	85	8	12,723	48,968	55,114	7,076	59
Mount Morgan Sluicing Company (Limited)	2/7/02	800	800	2,000	2,800	1 0 0	11	3	1,516	5,838	5,672	210	..
Muddy Terrace Sluicing Company (Limited)	4/10/06	14,400	14,400	5,550	19,950	1 0 0	136	25	4,017	15,841	42,805	..	12,564
Mystery Flat Gold-dredging Company (Limited)	16/7/00	5,512	4,512	1,000	5,512	1 0 0	91	8	14,520	57,357	35,445	26,595	184
Naseby Dredging and Hydraulic Sluicing Company (Limited)	16/10/97	2,000	2,287	2,000	5,000	0 15 3	24	4	4,100	15,791	16,192	3,500	43
Nevis High Lead Sluicing and Elevating Company (Limited)	1/7/08	1,470	1,470	..	2,100	0 14 0	7	7	221	740	1,580	..	25
New Lagrange Hydraulic Sluicing Company (Ltd.)	5/12/08	2,000	500	1,300	2,000	1 0 0	24	..	901	3,534	4,640	..	370
Ngapara Gold-dredging Company (Limited)	9/9/11	2,400	..	2,400	3,000	0 16 0	10	7	208	800	832	..	320
Nokonai Hydraulic Sluicing Company (Limited)	6/10/09	3,000	3,000	..	3,000	1 0 0	9	10	3,119	12,199	9,669	3,750	475
Obrig Dredging Company (Limited)	26/3/98	24,000	7,000	17,000	24,000	1 0 0	63	43	28,699	107,913	82,984	28,884	464
1911 Gold-dredging Company (Limited)	13/3/99	9,955	8,955	1,000	9,955	1 0 0	70	8	8,013	30,592	32,595	4,173	45
Otago Gold-dredging Company (Limited)	13/5/11	2,500	2,375	125	2,500	1 0 0	14	9	322	1,237	3,029	..	..
Ourawera Gold-dredging Company (Limited)	20/5/95	5,000	2,000	3,000	5,000	1 0 0	52	8	23,245	89,965	80,441	17,375	300
Paracale Gold-dredging Company (Limited)	23/5/95	3,000	3,000	..	3,000	1 0 0	16	9	11,243	44,808	35,148	13,615	..
Patterson's Freehold Gold-mining Company (Ltd.)	7/12/06	6,233	6,233	1,200	6,233	1 0 0	42	54	10,507	36,469	42,702	15,000	3,891
Phoenix Water-race Company (Limited) (Regd.)	15/7/99	12,000	8,000	4,000	12,000	1 0 0	32	17	16,908	67,631	59,695	..	..
Rise-and-Shine Gold-dredging Company (Limited)	12/10/67	1,500	1,500	..	1,000	1 10 0	18	1	..	..	1,207	8,442	12
Rising Sun Gold-dredging Company (Limited)	24/2/01	10,000	9,746	2,000	12,000	1 0 0	156	10	30,743	119,552	90,900	35,100	584
Round Hill Mining Company (Limited)	16/2/01	8,000	5,500	2,500	8,000	1 0 0	81	10	14,871	57,501	41,616	16,000	88
Roxburgh Amalgamated Mining and Sluicing Company (Limited)	30/7/02	28,245	6,753	21,492	5,649	5 0 0	180	38	35,849	143,296	142,535	7,626	275
Sailor's Bend Dredging Company (Limited)	2/3/89	29,152	13,121	15,000	29,152	0 18 6	171	14	28,185	105,579	86,779	32,430	189
Sailor's Gully (Waitahuna) Gold-mining Company (Limited)	1/9/99	8,000	6,500	1,500	8,000	1 0 0	165	8	5,050	19,486	22,749	3,587	73
Sandy Point Gold-dredging Company (Limited)	3/6/96	2,000	200	1,800	2,000	1 0 0	10	4	3,462	13,111	9,891	3,600	58
Scandinavian Water-race Company (Limited)	20/2/03	8,000	8,000	..	8,000	1 0 0	44	11	11,217	43,714	45,957	7,200	1,428
Shetland Consolidated Sluicing Company (Ltd.)	10/12/07	2,400	2,317	9,750	9,757	1 0 0	22	14	3,959	15,096	15,863	..	5,089
Skipper's Sluicing Company (Limited)	16/8/07	3,600	2,317	1,200	3,600	1 0 0	9	..	53	209	2,264	..	80
Success Gold-dredging Company (Limited)	20/11/11	3,450	214	3,105	3,450	0 10 0	30	6	..	..	195	..	60
	25/5/10	10,000	8,000	2,000	10,000	1 0 0	121	11	1,020	4,039	13,292	..	1,505

* No record.

Table 12—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.														
Tallaburn Hydraulic Sluicing Company (Limited)	3/12/04	£ 1,200	£ 1,200	£ ..	12	100 0 0	£ ..	7	4	Oz. 956	£ 3,682	£ 4,744	£ 1,380	£ ..
Teviot-Molyneux Gold-mining Company (Limited)	24/12/09	10,000	10,000	..	10,000	..	..	6	3	..	2,334	5,555	..	5,970
Tinker's Gold-mining Company (Limited)	29/10/10	11,500	11,500	..	11,500	1 0 0	..	21	9	590	42,844	27,300	13,875	108
Undaunted Gold-mining Company (Limited)	1/3/98	15,000	15,000	..	1,500	10 0 0	..	36	8	10,931	60,249	66,716	3,078	908
United M. and E. Water-race Company (Regd.)	23/4/72	7,600	7,600	..	152	50 0 0	..	7	6	15,632	11,264	10,734	1,050	668
United M. and E. Water-race Company (Regd.)	23/9/00	6,000	6,000	..	6,000	1 0 0	..	13	5	..	37,830	27,919	13,475	286
Vinegar Hill Hydraulic Sluicing Company (Ltd.)	20/10/03	3,500	1,750	1,750	3,500	1 0 0	..	45	9	9,570	65,616	45,625	22,750	..
Waikaka Gold-dredging Company (Limited)	20/12/01	7,000	3,000	4,000	7,000	1 0 0	..	21	8	16,406	102,799	69,723	39,760	2,513
Waikaka Syndicate (Limited)	11/2/99	4,700	4,700	6,500	11,200	1 0 0	..	34	24	26,025	19,306	19,045	2,813	27
Waikaka United Gold-dredging Company (Ltd.)	22/3/99	2,500	2,275	225	2,500	1 0 0	..	7	..	4,989	2,330	4,251	2,104	20
Waipori Consolidated Gold-dredges (No Liability)	22/2/02	1,380	1,380	..	1,380	1 0 0	..	22	..	605	13,599	11,245	3,850	240
Waitahuna Dredging Company (Limited)	10/11/04	2,000	1,400	..	2,000	0 14 0	..	8	5	3,489	2,602,258	2,121,317	780,661	54,359
Waitahuna Hydraulic Sluicing Company (Limited)	..	486,993	300,920	222,689	493,148	..	335	4,017	743	667,869	4,016,169	3,459,611	1,423,762	100,487
Totals	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Grand totals	..	2,317,054	839,285	737,363	8,919,381	..	15,864	15,419	1,586	886,527	4,016,169	3,459,611	1,423,762	100,487

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

Foreign Companies.

Name of Company.	Date of Registration of Office in Dominion.	Subscribed Capital.	Amount of Capital actually paid up in Dominion.	Value of Scrip given to Shareholders on which no Cash paid.	Number of Shares on Dominion Register.	Amount paid per Share, Dominion Register.	Arrears of Calls, Dominion Register.	Number of Shareholders on Dominion Register.	Number of Men employed in Dominion.	Quantity and Value of Gold and Silver produced since Registration.		Total Expenditure since Registration.	Total Amount of Dividends paid in Dominion.	Amount of Liabilities of Company in New Zealand.
										Quantity.	Value.			
Blue Spur and Gabriel's Gully Consolidated Gold Company (Limited)	1/2/88	£ 91,266	£ ..	£ 48,268	..	£ ..	£ ..	..	22	Oz. 51,415	£ 196,314	£ 135,771	£ ..	£ 2,359
New Zealand Crown Mines Company (Limited) ..	5/7/10	60,000	10,023	40,000	161,166	0 4 0	..	376	160	..	32,320	34,031	..	915
Totals	..	151,266	10,023	88,268	161,166	..	..	376	182	51,415	228,634	169,802	..	3,274

ANNEXURE F.

EXAMINATIONS UNDER THE MINING ACT, 1908.

QUESTIONS ASKED AT THE 1911 EXAMINATION FOR FIRST-CLASS CERTIFICATES OF COMPETENCY AS MINE-MANAGERS.

SUBJECT A.—*The Laying-out and Construction of Shafts, Chambers, Main Drives or Levels, Uprises, and Stopes.*

1. (a.) A vertical shaft to be sunk 1,000 ft. situated 50 ft. to the north-west of outcrop of a lode striking north-east and south-west and underlaying to south-east 12° from the perpendicular; the shaft to be 14 ft. by 6 ft. in clear of timber; to be timbered with framed sets and struddles, and divided into three compartments, one for pumping and two for hauling ore, &c.

(b.) Give the size you would make each compartment in the clear, also the size of timber you would use (the country being of medium hardness) for sets, struddles, and dividing-pieces.

(c.) Make a sketch-plan showing how you would fit the timbers, hang the sets, and the distance apart you would place them from centre to centre.

(d.) How far would you have to crosscut from bottom of shaft to reach the lode? (a.) Give the height of backs on course of reef from floor of level to surface.

(e.) On opening up the lode for stoping (provided it is 10 ft. wide) give the most suitable distances you would adopt between the levels. (b.) Give the height of chambers you would open and size of timbers you would use.

(f.) Having driven the levels, state how far apart you would sink winzes or put uprisers to facilitate filling up worked-out stopes and ventilation.

SUBJECT B.—*The Timbering of Shafts, Adits, Main Drives or Levels, Passes, Stopes, and generally the Systems of timbering Mines and filling up Old Workings.*

1. In stoping or beating out a lode (say, 10 ft. wide), state how far apart you would fix the ore-passes; describe how you would timber them; also the size in clear to avoid broken ore hanging up.

2. State where you would place ladder-roads, how far you would have them apart in the level, how you would timber them, and what size is the most convenient for travelling in.

3. Show by a sketch how you would timber stopes where the lode is friable and 20 ft. wide. To what height would you stope before filling in?

4. Where the output of ore is 200 tons per eight-hours shift, how many lines of rails would you have in crosscut, from chamber to level on lode, where timber is required? State size in clear sets would require to be to admit double line of rails, 2 ft. gauge.

5. Give the different systems of stoping in mines. Describe the shrinkage method fully.

6. State how you would timber a level where the walls are soft. Give a sketch showing how you would fit the sets, and the size and description of timber. Would you use sills?

7. What is the breaking-strain in tons of a rimu cap-piece uniformly loaded 18 in. diameter and 6 ft. span? Give the size of legs of same material 7 ft. to equal cap-piece.

SUBJECT C.—*The Ventilation of Mines and Composition of Gases.*

1. Prepare a chart or table for fire-damp, white-damp, and black-damp, under the following headings: Proper name; Chemical formula; Specific gravity; Character; Effect upon man; Explosive-proportions; Caused by; Test for; Where found.

2. How and where would you test the quantity and quality of air circulating in a mine which was reported to be inadequately ventilated? State the minimum velocity which an anemometer will correctly register.

3. Describe and sketch a "Sirocco" fan; state the special advantages claimed for this fan, and how the ventilation may be reversed when using one.

4. A current of 25,000 cubic feet of air is split into three airways, A, B, and C, having the following dimensions: A, area 6 ft. by 9 ft., length 700 yards; B, area 6 ft. by 10 ft., length 800 yards; C, area 4 ft. by 10 ft., length 300 yards: how will the quantity divide itself among these splits if no regulators are used and all splits are subject to a common pressure?

SUBJECT D.—*Tapping Water in Mines, and the Mode of constructing Dams in Underground Workings to keep the Water back.*

1. In approaching old and extensive lode-workings containing 300 ft. of water, for safety (independent of statutory provisions) what should be (a) the maximum width of the drive, (b) the minimum length and greatest diameter of the boreholes, (c) the angle of and distance apart of flank-holes, (d) the position of the flank-holes, (e) the discharge of water in gallons per minute when tapped by the borehole?

2. Describe and illustrate by sketches how you would prepare the site and construct an underground dam to resist a pressure of water due to a static head of 1,000 ft. Calculate the thickness of such a dam if constructed of hardwood having an ultimate crushing-strength of 10,000 lb. per square inch.

3. Calculate the capacity in gallons of an excavated tank which is 100 ft. square at the bottom; three sides have a batter of 2 to 1, and the fourth side has a batter of 5 to 1; the depth of water is 10 ft. when the tank is full.

SUBJECT E.—Blasting and the Use of Explosives.

1. (a.) Do explosives exert an equal force in every direction?
(b.) In what direction do they take effect?
(c.) At what point of the charge does that direction begin?
(d.) How does the necessary quantity of explosive vary?
2. Describe and illustrate by sketch a dynamo or magneto-electric firing-machine. State (a) what precautions are essential when using it, and (b), if electrical misfires or hangfires are possible.
3. What are the chief differences between the three classes of explosives used in mining? Give examples of one of each, with their respective compositions; and describe the special precautions which should be taken with each class.
4. After blasting in a place where rock-drills are used, how may the dust and smoke caused by such blasting be immediately allayed without the aid of ventilation, and before any person returns to the place?

SUBJECT F.—A Knowledge of Arithmetic and the Method of keeping Mining Accounts.

1. If 30 gallons of water run in and $22\frac{1}{2}$ gallons per hour run out of a cistern capable of holding 200 gallons, in what time will the cistern be filled?
2. Divide an income of £1,350 into two parts so that the income-tax on one part at 9d. in the pound may be three times the income-tax on the other part at 1s. in the pound.
3. The cost of keeping 25 horses being at the rate of £11 6s. 0½d. per week, what will be the cost of keeping 13 horses during September and October?
4. Draw out a form for a monthly sheet in connection with a gold-quartz mine which, when filled up, will give at a glance such quantities and costs as a board of directors is likely to require.

SUBJECT G.—Practical Elementary Electricity.

1. Define concisely the meaning of "direct current"; "alternating current"; "series, shunt, and compound dynamos."
2. What is "pressure drop"? Calculate what would be the P.D. for each 100 yards of a cable one mile in length wherein a current of 80 amperes is flowing and the resistance is 0.5 ohm per mile.
3. Give a brief description of the principle of transformers; and, as an example, the transforming of a voltage of 3,000 and a current of 80 amperes to meet the requirements of twenty motors of 14 horse-power at 500 volts.
4. Give the relative advantages and disadvantages of steam, compressed air, and electricity for driving ventilating-fans at the surface, and for operating pumps in deep mines.

SUBJECT I.—Pumping Appliances and the Drainage of Mines.

1. Describe the action and illustrate by sketch a three-throw plunger pump. State (a) the usual piston-speed, (b) revolutions of crank-shaft per minute. Compare pumps of this type with Cornish and turbine pumps for the drainage of metal-mines.
2. Describe and illustrate by sketches, beginning at the collar of the shaft, a single-acting Cornish pumping system suitable for a vertical shaft 1,000 ft. deep, and adequate for dealing with 2,000,000 gallons in twenty-four hours. State (a) the diameter of the pump, (b) the type and B.H.P. of the engine, (c) the number and type of the valves, (d) the over-all efficiency of the engine and pumps.
3. Describe the action and illustrate by sketch Davy differential valve gear. For what purpose is it employed with both the single and double system of rods?

SUBJECT J.—The Haulage in Shafts and on Underground Planes, also the Strength of Haulage Ropes and Chains.

1. What size and type of winding-engine would you employ for raising 125 tons of mineral per hour from a depth of 1,800 ft., with a boiler-pressure of 100 lb. per square inch?
2. What is the truck drawbar pull, at the moment of starting, when the load to be hauled is 15 loaded trucks of 3,000 lb. each, on (a) a level track, (b) an incline of 10 per cent.? (c.) What is the horse-power required to haul this load up the incline, 3,000 ft. long, at a speed of 10 miles an hour, the haulage-rope weighing 1.5 lb. per foot, and taking rolling friction at one-fortieth of the load. (Allow 13 per cent. of the weight of the load for the resistance of rope and pulley, and 50 per cent. of efficiency for hauling-engine.)
3. What size of plough-steel winding-rope would you put in a shaft 1,950 ft. deep to wind 150 tons of mineral per hour? Describe and sketch the form of capping you would use, and say how often you would recap.

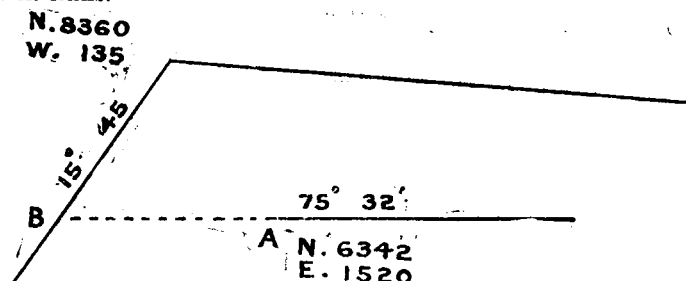
SUBJECT K.—The Effect that Faults, Slides, and Mullock-bars have on Lodes, and how to ascertain the Direction of Slides and Heavals.

1. Explain the meaning (that is, give definitions) of the following terms: Normal fault; reversed fault; throw; heave. Give diagrams to illustrate your definitions.
2. Quote two or three examples of faults occurring in New Zealand mining-fields, and briefly state what you know about each.

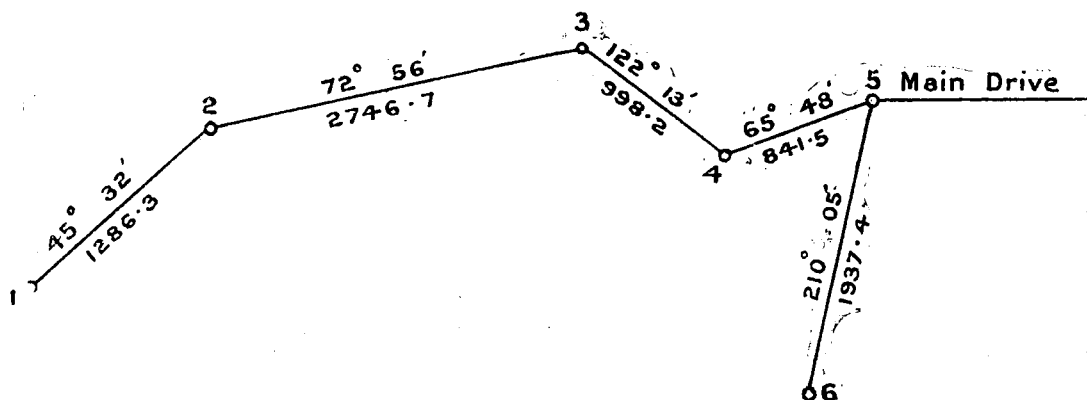
3. A lode apparently terminates against a fault. After an attempt to pick up the lode beyond the fault has failed, the theory is advanced that the fault is older than the lode, and therefore that the lode probably does not continue beyond the fault. State how you would ascertain whether this theory is correct or not, and in particular detail the class of evidence you would look for in order to help you in coming to a decision. Quote any cases of apparently faulted lodes known to you that seem to bear on the point.

SUBJECT L.—*A Knowledge of Underground Surveying, and of making Plans of the Underground Workings, showing the Dip or Inclination and Strike of the Reefs or Lodes.*

1. A drive terminates at A: how far must it be continued to reach the boundary at B? The distances are given in links.



2. Reduce the following traverse of the underground workings of a mine, and give the distances on the meridian and perpendicular from Station 1.



3. Compute the area in acres, &c., enclosed when Stations 1 and 6 are joined.

4. Required the solid content, in feet, inches, and parts, of a round mining prop 20 ft. long, its mean girth (after allowing for bark) being 2 ft. 11 in.

5. Name the different instruments used for angular work in underground surveying.

SUBJECT M.—*A Knowledge of the Different Rocks where Gold, Silver, Tin, Copper, Zinc, Lead, and Antimony are found, and the Formation of Lodes and Leads.*

[Candidates need not answer more than three questions.]

1. State clearly the chief points of difference between a mineral-bearing lode and a bedded deposit, such as coal.

2. Give an outline of some theory accounting for the formation of mineral lodes, and state how far it accounts for the known facts, or, in other words, to what extent you consider it to be proved.

3. State what you know regarding the occurrence of "shoots" or large patches of ore richer than the average in gold-quartz veins. In your answer give references to mines and mining districts with which you are familiar.

4. Gold-miners find by experience that in a given district certain characters of enclosing rock ("country") and of vein-stone indicate the probable presence of profitable ore. Discuss the matter with reference to some mining district of which you have knowledge, and state how far you consider experience gained in one district of value in another district.

QUESTIONS ASKED AT THE 1911 EXAMINATION FOR BATTERY-SUPERINTENDENTS' CERTIFICATES.

SUBJECT A.—*The Different Modes of reducing and pulverizing Ores.*

1. Show by neat sketch general plan and cross-section of a modern quartz-crushing mill, with 30 heads of stamps of 1,100 lb. each, stone-breakers, Challenge ore-feeders, quicksilver-tables, tube mills, &c. Give dimensions in figures on both plan and section; also describe fully all details in regard to foundations and dimensions of timber required in the erection of stamps.

2. As a battery superintendent, give an estimate of the cost of a crushing-battery as described in the foregoing question, and show in detail how you arrive at the amount.

3. Describe fully the dimensions of what is known as Brown's Towers for treating crushed ore with cyanide-of-potassium solutions, the method of keeping the solution and pulp in circulation, and also the method of charging and emptying the towers.

4. If the stamps in a crushing-battery had a drop of 8 in., show arithmetically the maximum number of drops that a stamp could make per minute without the tappet striking the cam.

SUBJECT B.—*Amalgamation Machines.*

1. What is meant by the amalgamation of ores containing gold and silver? How is amalgamation produced, and how are the metallic contents collected and made into a marketable condition?

2. Describe the mechanical appliances that are used for amalgamation: (a) The quantity of ore that each pan can treat in twenty-four hours; (b) the speed that each has to be driven at, and the quantity of quicksilver charged in each.

3. In using a pan for amalgamating purposes, what effect, if any, is produced by the use of salt and sulphate of copper in amalgamation of gold?

4. How is amalgam removed from pans that are used for amalgamating purposes, and how are the metallic contents made into a marketable condition? Describe fully.

SUBJECT C.—*The Use of Quicksilver, and Methods of using it in connection with the Extraction of Gold and Silver from Ores.*

1. How is it ascertained when quicksilver is not in a fit state for the amalgamation of gold or silver? What means should be taken to effect a remedy?

2. What effect has the treatment of concentrates containing gold, silver, lead, antimony, and copper on quicksilver used for amalgamation, and how are the different metals separated? Explain fully.

3. Describe how copper plates are coated with quicksilver, also how they are kept in good condition and the amalgam removed.

4. In using copper plates to cover amalgamating-tables, give the minimum thickness of plates you would use, and give reasons for same.

5. If crushed auriferous ore containing antimony were treated by amalgamation on amalgamating-tables, what effect would be produced by a current of electricity in contact with the quicksilver in the ripples?

SUBJECT D.—*Cyanide, Chlorination, and other Chemical Processes of recovering Gold and Silver from Ores.*

1. What is meant by the recovery of gold from ore by using cyanide solutions? How is this effected? (a.) How is the ore prepared to be in a fit state to be treated with KCN solutions? (b.) How are KCN solutions made? (c.) How do you ascertain the best strength of KCN solutions to use, and the length of time the ore requires to be treated with such solutions?

2. In using 216 lb. of crude cyanide containing 75 per cent. of KCN in a sump solution containing 0.012 per cent. KCN, required the quantity of solution it would need to make up a solution of 0.2 per cent. KCN.

3. If 40 tons of sump solution contained 0.08 per cent. of KCN, required the quantity of stock solution containing 11 per cent. KCN to make up the sump solution to 0.15 per cent. KCN.

4. How is bullion extracted from KCN solutions, and how are the solutions separated from the gangue; also, how is the bullion made into a marketable condition? Describe fully.

5. If a circular vat had to be constructed to hold 200 tons of pulverized ore to a depth of 6 ft., required the diameter of the vat, taking the weight of the ore at 112 lb. per cubic foot.

6. If any of the workmen were suffering from hydro-cyanide poisoning, what steps would you take to alleviate the sufferer, and what antidote would you use? Describe fully.

7. What is meant by the chlorination of ore containing gold? How is it affected (a) by the Plattner process, (b) by the Newbury-Vautin process; (c) how is the gold recovered and made into a marketable condition?

8. What effect, if any, has the treatment of raw concentrates on KCN solutions? What do you consider the most effective and economical method of extracting the gold from pulverized iron and arsenical pyrites?

SUBJECT E.—*Sampling and Testing of Ores.*

1. Describe the better-known methods of sampling, for assay, the quartz as it comes from the mine.

2. Describe the fire assay of a sample of quartz, and explain the chemistry of the various processes involved. How would you modify the assay if the sample consisted mainly of galena?

3. How would you estimate tin in a sample of low-grade ore?

4. What tests would you make in order to detect the following elements when occurring singly in rocks: Silver, lead, antimony, tin, chromium, zinc?

5. How would you prove the presence of the following elements in a sulphide ore: Arsenic, iron, mercury, bismuth?

SUBJECT F.—*A Knowledge of Arithmetic and the Method of keeping Battery Accounts.*

1. The weekly wages in a crushing-mill, where 30 men and 11 boys are employed, amount to £150 7s. 6d.; each boy gets $\frac{1}{4}$ of the wages of each man: how much did each man and boy receive?

2. A Lancashire steam boiler is 30 ft. long and 7 ft. in diameter, having two furnace-tubes through it 2 ft. 6 in. in diameter: when lying horizontally how many imperial gallons of water would it take to fill the boiler to within 21 in. of the crown?

3. A Pelton water-wheel 6 ft. in diameter under a head of 150 ft. is required to develop 40 horse-power: allowing the wheel to give 80 per cent. of the theoretical power of the water, how many cubic feet of water is required to give the horse-power, and what diameter of nozzle will it take to deliver this quantity on the wheel?

4. The value of bullion is £13,450 16s. 7d.; it contained gold 0.3437 fine, the balance being silver: taking gold at £4 3s. 6d. per ounce and silver at 2s. 1d. per ounce, how many ounces of gold and silver did the bullion contain?

5. Show arithmetically the cube root of 0.00413 squared.

LIST OF MINE - MANAGERS. BATTERY - SUPERINTENDENTS, AND DREDGE-MASTERS WHO HAVE OBTAINED 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.	*Greenish, J., Reefton.	*Nasmyth, T., Reefton.
*Anderson, P., Thames.	*Greenville, W., Olinemuri.	Newman, W., Naseby.
*Andrews, R., Coromandel.	*Hall, J. P.	*Northey, J., Thames.
Andrews, T., Thames.	*Hansen, P. C., Thames.	*O'Sullivan, D. E., Thames.
Barclay, T. H., Thames.	*Harris, J., Owen's Reefs.	Polton, A., Karangahake.
Bennett, J., Alexandra.	Harrison, R. H., Coromandel.	Porter, J., Waipori.
*Benney, J., Coromandel.	*Hicks, T. B., Thames.	*Purvis, G., Ross.
Black, T., Waiomio.	*Hilton, G. P., Bendigo.	Quinn, E., Te Aroha.
*Bollersley, N., Boatman's.	*Hodge, F., Coromandel.	*Radford, T., Thames.
*Bradbury, M., Reefton.	Hollis, W., Thames.	Ralph, J. G., Thames.
Bray, John, Lyell.	Hunter, R., Thames.	*Ranger, J., Reefton.
Burch, W. H., Thames.	James, F., Thames.	Rasmussen, C. L., Mokihinui.
Byrne, J. F., Stafford.	Jamieson, A., Coromandel.	Rasmussen, C. P., Mokihinui.
Cameron, A., Macetown.	Jenkins, M., Wakatipu.	Reid, P., Coromandel.
*Cameron, E., Te Aroha.	Johnstone, H., Bluespur.	Resta, L., Macetown.
Chapman, J. A., Dunedin.	*Julian, J., Boatman's.	*Roberts, E., Ross.
*Clarke, G. S., Thames.	Kelly, J., Lyell.	Rooney, F., Reefton.
*Comer, R., Thames.	Kerr, J., Thames.	Scott, T., Waiorongomai.
Conradson, M., Lyell.	*Lawn, E., Black's Point.	*Searight, A., Reefton.
*Corin, W., Thames.	*Lawn, H., Boatman's.	*Senior, J., Thames.
*Cornes, C. A., Karangahake.	*Lawn, J., Reefton.	Smith, J. E., Thames.
*Coutts, J., Thames.	*Littlejohn, W., Karangahake.	Stone, F., Karangahake.
Crawford, T. H., Thames.	*Lowe, E. W., Thames.	*Steedman, J. B., Thames.
*Crowley, C., Reefton.	*Malfroy, J. M. C., Ross.	Sturm, A., Waipori.
*Cummings, W., Reefton.	*Martin, W. G., Thames.	Taylor N., Thames.
Davis, J. E., Queenstown.	*McCallum, J., Reefton.	Todd, C., Heriot.
*Davey, C., Ross.	McCullough, R., Thames.	Treloer, J. S., Reefton.
*Donald, J., Cromwell.	McGruer, G. N., Karangahake.	Tripp, R. S., Arrowtown.
*Dryden, S., Thames.	*McIlhane, J., Thames.	Vivian, J. G., Thames.
*Dunlop, T. A., Thames.	McIntosh, D., Bluespur.	*Vivian, S., Reefton.
Edwards, J., Skipper's.	McKay, J., Ross.	*Waite, C. D., Thames.
Elliott, J., Macetown.	*McKenney, J., Reefton.	*Waite, E., Thames.
*Evans, F., Skipper's.	*McKenzie, W., Thames.	Walker, J. W., Thames.
Evans, J. H., Skipper's.	*McLeod, G., Coromandel.	Watson, T., Reefton.
*Fitzmaurice, R., Reefton.	*McLiver, F., Thames.	*Wearne, J. E., Endeavour Inlet.
Frewen, J. B., Queenstown.	*McLiver, H., Thames.	Wearne, T., Endeavour Inlet.
Gavin, T., Te Aroha.	McMaster, J., Reefton.	*Wilcox, J., Thames.
*Gilbert, J., Reefton.	Moore, H. W., Thames.	Williams, J., Skipper's.
Gilmour, T., Thames.	*Moore, J. H., Thames.	Wright, G., Boatman's.
*Giles, G. F., West Wanganui.	*Morgan, R., Otago.	Wylie, W., Ross.
Glass, W. M., Naseby.	Morrisby, A. A., Glenorchy.	Young, G., Skipper's.
*Goldsworthy, J., Waiorongomai.		

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

Adams, B., Thames.	Crawford, J. J., Thames.	Hosking, G. F., Auckland.
Baker, W., Thames.	*Cummings, W., Reefton.	Kruizenza, W., Reefton.
Black, G., Reefton.	Donaldson, W., Otago.	*Lawn, T., Reefton.
*Caples, P. Q., Reefton.	Fleming, M., Thames.	Logan, H. F., Wellington.
*Carter, J., Thames.	Gardner, W. P., Reefton.	Mangan, T., Thames.
*Casley, G., Reefton.	Harris, W., Thames.	Mouat, W. G., Dunedin.
Cochrane, D. L., Reefton.	Horn, G. W., Thames.	*Truscott, G., Thames.
Colebrook, J. D., Coromandel.	Horne, W., Coromandel.	Watkins, W. E., Reefton.
Coombe, J., Reefton.	Hornick, M., Thames.	*Wilkie, J., Reefton.

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

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

Issued after Examination under the Mining Act, 1891.

Agnew, J. A., Thames.	*Hughes, D., Thames.	*Prince, F. H., Reefton.
Annear, William, Reefton.	*James, T., Thames.	Robertson, D. B., Stafford.
Arcott, R., Waibi.	Keam, P. E., Thames.	Ross, Richard, Thames.
Bennett, E. P., Thames.	Lane, J., Reefton.	Russell, Murray, Dunedin.
Boydell, H. C., Coromandel.	Lawn, C. H., Capleston.	Shepherd, H. F., Thames.
Bradley, R. J. H., Te Puke.	Linck, F. W., Thames.	Stanford, W. J., Macetown.
Bray, E., Reefton.	*Marshall, F., Reefton.	*Steedman, J. G., Thames.
*Bruce, Malcolm, Thames.	Morrison, R., Thames.	Sutherland, Benjamin, Reefton.
Carroll, J., Lyell.	McDermott, J., Thames.	Tierney, R., Thames.
Cartwright, E., Thames.	McDermott, G., Thames.	Vialoux, F., Coromandel.
Crabb, J., Reefton.	McDermott, W., Thames.	Warne, George, Thames.
*Dobson, J. A., Auckland.	McGregor, W. T., Thames.	Waters, D. B., Skipper's.
Evans, H. A., Wellington.	McKenzie, H. J., Coromandel.	Watt, J., Thames.
*Fahey, P., Reefton.	McPeake, J., Thames.	White, G. H., Thames.
*Flannigan, Francis, Reefton.	O'Keeffe, M. D., Thames.	Whitley, A., Thames.
Gilmour, J. L., Thames.	Paul, Matthew, Thames.	Williams, C., Capleston.
Hodge, J. H., Thames.	Paltridge, Henry, Thames.	

* Deceased since issue of certificate.

FIRST-CLASS MINE-MANAGERS' CERTIFICATES—*continued.**Issued after Examination under the Mining Acts, 1898, 1905, and 1909.*

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

Issued under Section 313 of the Mining Act, 1891.

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

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

Alexander, Thomas, Deep Creek.	Harvey, A. G., Coromandel.	Moorecraft, Walter, Coromandel.
Argall, A. E., Coromandel.	*Howard, Samuel, Karangahake.	Morgan, William, Owaharoa.
Battens, H., Coromandel.	James, Robert, Thames.	Moyle, Thomas, Thames.
*Begley, Thomas, Reefton.	Jamieson, John, Reefton.	Patton, William, Macetown.
Bennett, Charles Henry, Kuaotunu.	Johns, Thomas, Waihi.	Pearce, Francis, Reefton.
Bunney, Joseph, Waihi.	Kennerley, W. H., Thames.	Potter, William H., Thames.
Campbell, Alexander, Cullensville.	*Langford, James, Coromandel.	*Rabe, Henry, Karaka.
Carlyon, Samuel, Coromandel.	McCombie, John, Karangahake.	Rillstone, Charles, Waipori.
Cornes, C. A., jun., Karangahake.	MacDonald, H., Coromandel.	Somervell, John, Thames.
Daldy, Edward Arthur, Coromandel.	McEnteer, James, Tararu.	*Stackpole, Robert, jun., Karangahake.
Draffin, Samuel, Waitekauri.	McFarlane, Charles M., Tokatea.	Thomas, Archelaus, Tapu, Thames.
Farmer, C. S., Waitekauri.	McLean, Benjamin J., Waitekauri.	Turnbull, Thomas A., Whangamata.
*Goldsworthy, Thomas, Tokatea.	McLean, Charles, Thames.	*Willets, Henry, Thames.
*Goldsworthy, William, Karangahake.	*McLean, James, Tararu, Thames.	*Wilson, James R. S., Kuaotunu.
Govan, Joseph, Thames.	Meehan, James, Westport.	

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

Binns, G. J., Dunedin.	*Gow, J., Dunedin.	McLaren, J. M., Thames.
Cochrane, N. D., Westport.	Green, E. R., Dunedin.	Tennent, R., Westport.
Gordon, H. A., Wellington.	Hayes, J., Dunedin.	*Wilson, G., Thames.

SECOND-CLASS MINE-MANAGERS' CERTIFICATES.

Certificates of Service issued under the Mining Act, 1891.

Adams, W. J., Thames.	Corbett, T., Paeroa.	Harvey, William, Reefton.
Agnew, J. A., Coromandel.	*Cowan, Hugh, Kuaotunu.	Hetherington, William, Thames.
*Allen, Richard, Reefton.	Crabb, Thomas, Reefton.	*Hicks, W., Thames.
Argall, A. E., Coromandel.	Daniel, P. F., Greymouth.	Hill, Alexander Grey, Waikakaho.
*Beard, W. T., Reefton.	Dobson, John Allen, Kuaotunu.	Hollis, Frederick J., Waihi.
*Begley, Thomas, Reefton.	Edwards, George, Westport.	Hore, John, Wellington.
Bennett, C. H., Coromandel.	Ellery, John, Reefton.	Hornibrooke, H. P., Kuaotunu.
Blair, Thomas, Kuaotunu.	*Flannigan, Francis, Reefton.	Jamieson, John, Reefton.
Bolitho, James, Reefton.	Foster, Thomas, Wellington.	Jobe, James, Thames.
Bone, William, Reefton.	*Gale, C. W., Coromandel.	Johns, Thomas, Thames.
*Borlase, J. H., Capleston.	Gemmings, Charles, Thames.	Johnstone, William, Collingwood.
*Bowler, John, Thames.	Gill, George, Thames.	Kendall, Henry, Thames.
Bray, Edwin, Reefton.	Glasgow, T. M., Thames.	Kerr, George, Kamo.
Bremner, John, Coromandel.	Goldsworthy, Henry, Thames.	Kirker, Thomas, Thames.
Brokenshire, James, Thames.	Goldsworthy, William, Mauku, Auckland.	Laughlin, David, Thames.
Brown, John, Macrae's.	Govan, Joseph, Thames.	Law, John, Thames.
Brownlee, Thomas James, Thames.	Gribble, James, Norsewood.	*Lough, H., Thames.
Bunny, Joseph, Thames.	*Griffin, Patrick, Thames.	Loughlin, S., Thames.
Byrne, John, Karangahake.	Grimmond, Joseph, Ross.	Mackay, William, Nenthorn.
*Caird, Alexander McNeil, Reefton.	Guthrie, John, Wellington.	Martin, David, Black's Point.
*Campbell, J., Kuaotunu.	*Guy, Robert, Kuaotunu.	Martin, James, Reefton.
*Climo, Noah, Coromandel.	Hardman, James Edward, Thames.	Mayn, John, Coromandel.
Comer, W. W., Thames.	*Harris, R., Thames.	McCombie, John, Karangahake.
Comer, George, Thames.		*McCormick, Charles, Coromandel.

* Deceased since issue of certificate.

SECOND-CLASS MINE-MANAGERS' CERTIFICATES—continued.

Certificates of Service issued under the Mining Act, 1891—continued.

*McEwen, James, Reefton.	Page, John, Lyell.	Shaw, James, Karangahake.
*McLean, James, Thames.	*Parkiss, Joseph W., Reefton.	Sligo, Alexander, Nenthorn.
McLean, Alexander, Coromandel.	Peebles, Alexander, Kuaotunu.	Thomas, James, Thames.
McLean, Charles, Thames.	Pettigrew, Robert, Sydney.	Thomas, A., Thames.
*McNeill, Daniel, Thames.	*Phillips, W. H., Thames.	Thomson, John, Dunedin.
McNeill, George, Upper Kuaotunu.	*Pollock, John, Thames.	*Tregellas, James, Reefton.
McLoughry, Archibald, Karangahake.	Potts, W. H., Thames.	*Tregoweth, William, Thames.
*McQuillan, John, Reefton.	Primrose, J., Kuaotunu.	*Wells, Charles Lewis, Thames.
Meagher, John, Karangahake.	*Rabe, Henry, Thames.	*Willets, Henry, Thames.
*Mills, George, Thames.	*Radford, Thomas, Thames.	Williams, James, Thames.
*Milne, John, Thames.	Reid, Thomas Groat, Thames.	Williams, John, Thames.
Morgan, William, Upper Thames.	Rickard, John, Thames.	*Wilson, James R. S., Kuaotunu.
*Moorecroft, Thomas, Thames.	Richards, A. H., Kuaotunu.	Wilson, J. G., Thames.
Moyle, Thomas, Thames.	*Rogers, Charles Henry, Reefton.	Whisker, Charles, Thames.
*Naysmith, James, Reefton.	Rogers, William Henry, Kumara.	White, John S., Karangahake.
Newdick, Alfred, Thames.	*Ross, J., Thames.	Woodcock, James, Thames.
*Notman, Alexander, Reefton.	*Rowe, James, Thames.	Worth, Robert, Waihi.
O'Keefe, M. W. D., Thames.		

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

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

Issued under Section 313 of the Mining Act, 1891.

Connon, William, Thames.	Edwards, E., Coromandel.	McCormick, W. J., Waitekauri.
*Coran, Henry, Thames.	*Kelso, Archibald, Coromandel.	

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

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

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

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

BATTERY-SUPERINTENDENTS' CERTIFICATES.

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

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

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

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

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

Adams, J. H., Coromandel.	Banks, E. J., Thames.	Brown, F. M., Karangahake.
Adams, Richard W., Tararu, Thames.	Barrance, K. McK., Karangahake.	Brown, J. E., Komata.
Adams, J. H., Thames.	Barrett, J. J., Karangahake.	Brown, W. E., Reefton.
Airey, Hubert, Karangahake.	Barron, William E., Waikino.	Burns, William, Waioio.
Aitken, Alexander Hugh, Waihi.	Baskett, E. G., Karangahake.	Bush, E. F., Parawai.
Allen, D. V., Thames.	Bell, L. M., Waihi.	Bush, George Arthur, Karangahake.
Allen, H. E., Wellington.	Bidlake, A. E., Waioio.	Bush, H. R., Thames.
Anderson, David, Waihi.	Bird, A. W., Thames.	Campbell, Colin, Thames.
Andrews, T. T., Waihi.	Bishop, T. O., Reefton.	Carpenter, W. E., Karangahake.
Auld, J. B., Crushington.	Blackadder, William, Crushington.	Curless, Noel, Waihi.
Baker, W. H., Thames.	Bradley, R. J. H., Karangahake.	Carter, S., Waihi.
Banks, C. A., Waihi.	Browne, E., Waitekauri.	Carroll, John, Kuaotunu.

*Deceased since issue of certificate.

BATTERY SUPERINTENDENTS' CERTIFICATES—continued.

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

Chappell, G. A., Karangahake.	Hay, Adam, Karangahake.	Orbell, G. S., Waikouaiti.
Clark, John L., Waihi.	Harsant, C., Puketui.	Paltridge, F., Thames.
Clarke, Thomas, Waihi.	Hazard, T. R. C., Waitekauri.	Pond, H. C., Auckland.
Ooote, J. M., Thames.	Hindmarsh, R., Reefton.	Porteous, J., Crushington.
Corbett, G. L., Waitekauri.	Hitchcock, W. E., Barewood.	Quick, J. N., Thames.
Couper, J., Thames.	Hogg, E., Karangahake.	Reid, J. E., Great Barrier.
Cowles, R. K., Crushington.	Hogg, T. R., Karangahake.	Reynolds, E. A., Auckland.
Crompton, H., Maratoto.	Horn, G. W., Kuaotunu.	Roberts, H. C., Waihi.
Croucher, Herbert, Waihi.	Gillooly, T., Roxburgh.	Rodden, William, Lyell.
Dawson, B., Ellerslie.	Gillstrom, Carl A., Berlin's.	Rosewarne, R. H., Thames.
Donnelly, Thomas, Waihi.	Hutchison, R. M., Karangahake.	Royse, W. G., Reefton.
Donovan, Willie, Waikino.	Johnson, Edward, Waihi.	Sanford, A. G., Waihi.
Draffin, Eugene, Kuaotunu.	Jones, R. D., Karangahake.	Shaw, D. S., Waikino.
Eaton-Turner, Geoffrey William, Waihi.	Kidd, R. B., Waitekauri.	Snaw, L. J., Waikino.
Ellis, L. L., Waitekauri.	Kingsford, A., Karangahake.	Stephens, H., Dunedin.
Empson, J. B., Karangahake.	Kingsford, C., Waihi.	Sutherland, J. A., Reefton.
Evans, G. C., Waihi.	Langford, G. S., Waikino.	Thomson, G. W., Bendigo.
Evans, J., Waihi.	Launder, G. H., Waitekauri.	Thurlow, J. R., Coromandel.
Evans, W. B., Reefton.	Lawless, L. J., Paeroa.	Tomlinson, A., Karangahake.
Ewen, H. F., Auckland.	Littlejohn, W. D., Karangahake.	Tomlinson, David Mitchell, Barewood.
Fletcher, H. T., Katikati.	Lovelock, J. E., Crushington.	Tomlinson, W. F., Dunedin.
*Fraser, J. M., Reefton.	Mackay, John, Crushington.	Turnbull, E. V., Waihi.
Fry, Sidney, Westport.	Maltman, A., Reefton.	Ulrich, G. A. C., Komata.
Fuller, John P., Kuaotunu.	Mann, C., Westport.	Ulrich, Herstall, Wnaneapoua.
Fyfe, A., Dunedin.	Matheson, A. M., Barewood.	Walker, Alfred James Dickson, Waihi.
Gardner, E. A., Reefton.	Maxwell, W. L., Waihi.	Waters, D. B., Waihi.
Gibson, William, Waihi.	McDonall, P. H., Waihi.	Watson, A. B., Waitekauri.
Gilpin, J., Waihi.	McEwin, J. A., Reefton.	Watson, A. P., Crushington.
Gow, E. A., Crushington.	McKinlay, John, Waihi.	Watson, J. R., Reefton.
Grayden, J., Waitekauri.	McNeil, A. R., Karangahake.	Watson, J. P., Reefton.
Grayden, Peter, Thames.	McPadden, J., Coromandel.	Watson, W. A., Crushington.
Grumitt, P. H., Thames.	Melrose, P., Waihi.	White, A. S. H., Karangahake.
Gwilliam, Benjamin, Karangahake.	Montgomery, A. E., Opitouni.	Williams, A. C., Waihi.
Halliwell, L. V., Karangahake.	Morgan, Robert James, Waihi.	Williams, James, Reefton.
Hargraves, E. P., Waihi.	Motherwell, William, Waihi.	Williams, William Eustace, Waihi.
	Moyle, W. T., Upper Tairua.	Wilson, A. P., Crushington.

DREDGEMASTERS' CERTIFICATES.

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

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

DREDGEMASTERS' CERTIFICATES—continued.

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

Anderson, Andrew, Alexandra South.	Holden, Charles, jun., Cromwell.	Nicholson, Charles S. G., Mataura.
Anderson, Bertram, Maori Point.	Holden, John, Cromwell.	Noble, William, Alexandra.
Anderson, G. B., Roxburgh.	Hepburn, D. O., Alexandra.	Olsen, Hans, Alexandra.
Archer, D. J., Ngakawau.	Hughes, John L., Miller's Flat.	Omond, Thomas, Nevis.
Baird, William G., Clyde.	Johnston, John, Maori Gully.	Orkney, H. E., Cromwell.
Bardsley, John James, Cromwell.	Johnston, Louis, Beaumont.	Orr, H. T., Cromwell.
Bishop, Hugh Arthur, Collingwood.	Jones, David Rowland, Island Block.	Orr, William W., Cromwell.
Blair, G., Abbotsford.	Jones, T. R., Miller's Flat.	Parker, P. R., Roxburgh.
Borthwick, Robert, Alexandra.	Junker, Frank J., Berlin's.	Patterson, J. B., Miller's Flat.
Bourke, John, Clyde.	Kane, William, Clyde.	Patterson, J., Clyde.
Brent, C. D., Cromwell.	Kean, F. F., Waikaka.	Plumb, E. H., Maori Point.
Briggans, Thomas, Alexandra.	Kellett, C. H., Dunedin.	Poppelwell, William, Alexandra.
Briggans, William, Alexandra.	Kennedy, A., Ophir.	Rait, Hume, Albertown.
Broderick, T., Lyell.	Kitto, Henry, Alexandra South.	Ray, J. F., Bannockburn.
Bruce, J. A., Kawarau Gorge.	Kitto, John, Clyde.	Ray, Robert Marshall, Bannockburn.
Burley, J. P., Westport.	Linney, William, Island Block.	Reiderer, Edward, Cromwell.
Burnside, Walter, Alexandra.	Livingstone, D., Alexandra.	Reynolds, T., Greymouth.
Burton, A. P., Miller's Flat.	Lloyd, Arthur, Inangahua Junction.	Ritchie, William John, Cromwell.
Callaghan, E., Three channel Flat.	Lloyd, Hubert, Lyell.	Roberts, G., Three-channel Flat.
Campbell, G. W. T., Alexandra.	MacDonald, C. J., Cromwell.	Robertson, D. J., Alexandra.
Carnegy, A., Three-channel Flat.	MacGinnis, J. A., Cromwell.	Robertson, W. R., Alexandra.
Carr, W., Alexandra.	MacGinnis, M. P., Alexandra.	Rooney, J. B., Roxburgh.
Carter, W. W., Sandy Point.	MacLaren, John, Alexandra.	Rumble, Charles, Ngahere.
Chapman, Robert, Maori Point.	Marklund, C. O., Lowburn Ferry.	Rumble, Joseph, Miller's Flat.
Clark, D., Callaghan's Creek.	Mathews, James Halbert, Miller's Flat.	Sanders, W. J., Ahaura.
Clarke, R. S. B., Alexandra S.	Matthews, A. A., Three-channel Flat.	Saunders, C. E., Cromwell.
Coup, George, Albertown.	Mavne, W. C., Nelson Creek.	Sawle, J., Cromwell.
Cox, R. D., Alexandra.	McDonald, C. J., Waitere.	Sawyer, J. F., Alexandra.
Craig, D. A., Shag Point.	McDonald, G., Alexandra.	Sherwood, T. W., Greymouth.
Crowell, James, Three channel Flat.	McCallum, W. S., Alexandra.	Simpson, Edward Robert, Cromwell.
Curno, C. B., Alexandra.	McGregor, Dougald S., Alexandra.	Sparrow, J. A., Upper Nevis.
Dalton, J. R., Three-channel Flat.	McKenzie, John, Roxburgh.	Spooner, A. E., Alexandra.
Donaldson, John, Lawrence.	McKinnon, John, Alexandra.	Steele, Thomas, Alexandra.
Downie, Henry, Totara Flat.	McLean, John, Roxburgh.	Steele, W. H., Miller's Flat.
Eaton, Edgar W., Alexandra.	Melvin, J. R., Roxburgh.	Taylor, Alexander, Alexandra.
Elder, D. D., Roxburgh.	Merchant, Isaiah, Clyde.	Taylor, J. T., Dunedin.
Fache, S. C., Gore.	Milne, John A., Roxburgh.	Theyers, C., Alexandra.
Faithful, Alfred, Bannockburn.	Moffitt, R. W., Miller's Flat.	Theyers, J. W., Alexandra.
Farmer, Nathan C., Miller's Flat.	Mollison, William, Stillwater.	Vickerman, E. M., Cromwell.
Farquharson, George, Alexandra.	Moncrieff, Henry, Miller's Flat.	Walker, J. J., Alexandra South.
Findley, David, Dunedin.	Monson, C. H., Miller's Flat.	Wasserbrenner, M., Alexandra.
Fisher, Hurtle, Miller's Flat.	Morel, A. E., Noble's.	Wathen, James, Miller's Flat.
Filippi, S. de, Westport.	Morel, L. H., Inangahua Junction.	Watson, E. H., Collingwood.
Forno, D., Inangahua Junction.	Morgan, Harold, Roxburgh.	Weaver, P., Alexandra.
Fraser, W. J., Roxburgh.	Morgan, John, Alexandra.	Weir, R., Gore.
French, T. E. K., Three-channel Flat.	Morris, V., Cromwell.	Weir, T. R., Cromwell.
Gibson, William H., Cromwell.	Mouat, W. G., Greymouth.	Weir, W., Nevis.
Graham, Thomas Arthur, Gore.	Munro, C. T., Waitiri.	Wescombe, Alfred L., Island Block.
Gunion, R. A., Alexandra.	Munro, Hugh, Alexandra South.	Westcott, P. A., Miller's Flat.
Gunn, W. E., Beaumont.	Munro, R. F., Ross.	Williams, Frederick, Alexandra.
Guy, Donald, Cobden.	Murray, H. B., Cromwell.	Wilson, George, Marsden.
Guyton, James, Dunedin.	Murray, Robert John, Canvastown.	Wilson, Stephen L., Inangahua Junction.
Hanning, C. J., Clyde.	Nelson, Edgar, Brunner-ton.	Wood, W. W., Cromwell.
Hansen, H. C., Three-channel Flat.	Nelson, George L., Brunner-ton.	Woodhouse, F., Bannockburn.
Harden, J., Stafford.	Newick, Albion Edgar Charles, Bannockburn.	Woodhouse, G. G., Waitiri.
Harliwick, Matthew, Roxburgh.		Wylde, G. R., Inangahua Junction.
Hewatson, Sydney, Nelson Creek.		
Hogg, J., Nevis.		

APPENDIX B.

INSPECTION OF COAL-MINES.

Mr. FRANK REED, M.Inst.M.M., Inspecting Engineer, to the UNDER-SECRETARY FOR MINES.

SIR,—

Mines Department, Wellington, 3rd May, 1912.

I have the honour to present the annual reports of inspection, together with statistical information in regard to the coal-mines of the Dominion, for the year ended 31st December, 1911.

The reports are divided into the following sections:—

- I. Output of Mineral.
- II. Persons employed.
- III. Accidents.
- IV. General Remarks.

Annexures—

- (a.) Inspectors' Reports.
- (b.) Mine Officials' Examinations, and List of Certificate-holders.
- (c.) Miners' Baths.
- (d.) Statistics of Working Collieries.

SECTION I.—OUTPUT OF MINERAL.

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

Class of Coal, &c.	Northern District.	West Coast District.	Southern District.	Total.
	Tons.	Tons.	Tons.	Tons.
Bituminous and semi-bituminous coal ...	139,159	1,218,693	505	1,358,357
Pitch-coal	...	...	4,411	4,411
Brown coal... ..	258,713	...	342,380	601,093
Lignite	...	...	102,212	102,212
Totals for 1911...	397,872	1,218,693	449,508	2,066,073
Totals for 1910 ...	400,664	1,341,032	455,666	2,197,362

From the foregoing it will be seen that there has been a decrease of 131,289 tons in the output as compared with the previous year. The output during 1910 was unduly high, owing to the Newcastle (New South Wales) strike, which caused orders to be diverted to New Zealand, so that the decline for 1911 should not be regarded as serious, for the year's production was considerably greater than the output during any year prior to 1910.

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 1911.	Total Output to 31st December, 1911.	Total Number of Persons ordinarily employed.
<i>Northern District.</i>					
Hikurangi	Hikurangi...	Semi-bituminous	Tons. 64,657	Tons. 767,449	82
Taupiri	Huntly ...	Brown ...	252,262	2,574,413	495
Northern	Hikurangi...	Semi-bituminous	40,503	408,676	75
Kiripaka	Kiripaka ...	Ditto ...	32,554	278,007	45
<i>West Coast District.</i>					
Coalbrookdale	Millerton ...	Bituminous	299,642	3,431,993	565
Westport-Stockton	Denniston	"	323,368	6,045,799	608
State Coal-mines ..	Mangatani	"	87,236	332,129	180
	Seddonville	"	60,045	400,104	106
	Point Elizabeth	"	188,892	1,413,463	519
Blackball	Blackball ...	"	156,821	1,469,946	240
<i>Southern District.</i>					
Kaitangata	Kaitangata	Brown ...	134,829	2,714,181	322
Nightcaps	Nightcaps...	" ...	64,250	788,575	100
Other collieries, in all districts	...	Various ...	361,014	12,672,886	953
Totals	...	...	2,066,073	33,297,621	4,290

SECTION II.—PERSONS EMPLOYED.

Inspection District.					Average Number of Persons employed during 1911.		
					Above Ground.	Below Ground.	Total.
Northern	...	...	...	...	137	595	732
West Coast	...	...	...	...	951	1,659	2,610
Southern	...	...	...	...	277	671	948
Totals, 1911	...	...	...	...	1,365	2,925	4,290
Totals, 1910	...	...	...	...	1,136	3,463	4,599

SECTION III.—ACCIDENTS.

The following is a summary of coal-mining accidents during 1911, with their causes.

	Fatal Accidents.		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 firedamp ...	1	1	1	1
Falls in mine	11	11	8	8
Miscellaneous—Underground...	1	1	11	11
On surface	1	1	...	...
Totals	14	14	20	20

I regret to report that the number of accidents at coal-mines has again been high, owing, as in previous years, to falls in the mines, principally during pillar-extraction. Notwithstanding the precautions taken, accidents from this cause continue to occur, and their prevention is a difficult problem to deal with.

A Royal Commission was appointed during the year to inquire into and report on the conditions relating to the health and safety of the miners of New Zealand and the administration of mining laws; also to make recommendations for any amendment of these laws which might be considered necessary. One of the subjects which this Commission was ordered to inquire more particularly into was, What steps could be taken for the better prevention of accidents, particularly those from the use and firing of explosives, falls from roof and side, also accidents in shafts and from machinery. In the report presented by the Commission certain recommendations were made, the most important of which are, in brief, as follows:—

(1.) That the lifts in pillar-workings be restricted to 10 ft. in height, and that the Inspector of Mines have power to determine the height at which the remaining coal shall be taken out, subject to the right of appeal.

(2.) That systematic timbering in its modern sense be adopted—viz., that distances should be fixed for the regular setting of props, sets, and chocks, and that such distances should not be exceeded.

(3.) That the maximum widths of bords and cut-throughs, where the bord-and-pillar system is followed, should be 12 ft. and 9 ft. respectively for a distance of 2 yards when opening out or breaking away; thereafter that the maximum widths be 18 ft. and 12 ft. respectively.

(4.) That no timber should be withdrawn except by lever and chain or blasting.

(5.) That the use of chains be prohibited on all but face-jigs, and that wire ropes be substituted therefor.

(6.) That the use of water should be compulsory in all ways in a dry and dusty mine where the dust cannot otherwise be conveniently removed.

(7.) That the provisions of section 6 of the British Statutory Rules and Orders of the Explosives in Coal-mines Order, dated 17th December, 1906, be incorporated in the New Zealand mining statutes.

(8.) That the Inspector of Mines should have power to prohibit the use of electricity in any mine or part of a mine where, on account of the risk of explosion of gas or coal-dust, such use would be dangerous.

(9.) That workmen should be withdrawn from any place where the proportion of inflammable gas exceeds $2\frac{1}{2}$ per cent.

(10.) That all winding-engine drivers should be medically examined annually for heart weakness, liability to fits, and defective hearing and vision.

(11.) That every winding-rope should be recapped at intervals of not more than six months, and that the section of the rope last cut should be held available for inspection or for testing purposes by the Inspector of Mines or Machinery.

(12.) That a coal-miner should have had experience in coal-hewing and timbering for two years and a half before he has charge of a place.

(13.) That all deputies or firemen who examine the mine before the first shift starts should remain at a convenient station near the entrance of the mine, in order that each man entering might have an opportunity of obtaining a verbal report as to the condition of his place.

(14.) That a committee should be set up at each mine with power to make, alter, and from time to time amend additional special rules, such committee to consist of the mine-manager, the Inspector of Mines for the district, and a representative appointed by a majority of the workers in the mine.

The above and other recommendations it is proposed to incorporate in a Bill to amend the Coal mines Act, 1908, and if this becomes law, and is conscientiously observed, there should be a material reduction in the number of mining accidents.

The following statement shows the tons of mineral raised (coal and shale), persons employed, lives lost, &c., from 1878 to 1911 :—

Year.	Output of Mineral.	Persons employed.			Tons of Mineral raised per each Person employed Underground.	Tons of Mineral raised per Life lost.	Persons employed per each Life lost.	Lives lost per Thousand Persons employed.	Number of Deaths.
		Above.	Below.	Total.					
Prior ...	709,931	...	...	...	...	...	...	...	...
1878 ...	162,218	147	366	513	443	4,771	15	66.27	34†
1879 ...	231,218	...	...	802	...	115,609	401	2.49	2
1880 ...	299,923	...	...	1,038	...	149,961	519	1.92	2
1881 ...	337,262	...	...	963	...	337,262	963	1.04	1
1882 ...	378,272	...	...	1,043	...	189,136	521	1.91	2
1883 ...	421,764	361	888	1,249	475	210,882	624	1.60	2
1884 ...	480,831	393	890	1,283	540	160,277	421	2.34	3
1885 ...	511,063	338	1,145	1,483	456	170,354	494	2.01	3
1886 ...	534,353	392	1,213	1,605	440	*	*	*	0
1887 ...	558,620	388	1,111	1,499	503	139,655	375	2.66	4
1888 ...	613,895	414	1,275	1,689	481	153,474	422	2.36	4
1889 ...	586,445	466	1,251	1,717	261	146,611	313	2.37	4
1890 ...	637,397	512	1,334	1,846	477	79,674	231	4.33	8
1891 ...	668,794	416	1,277	1,693	523	167,198	423	2.36	4
1892 ...	673,315	485	1,196	1,681	563	673,315	1,681	0.66	1
1893 ...	691,548	590	1,298	1,888	533	138,309	377	2.64	5
1894 ...	719,546	506	1,393	1,899	516	119,924	316	3.16	6
1895 ...	726,654	525	1,274	1,799	618	145,331	360	3.33	5
1896 ...	792,851	590	1,347	1,937	588	12,013	29	34.07	66‡
1897 ...	840,713	531	1,381	1,912	609	210,178	478	2.09	4
1898 ...	907,033	556	1,447	2,003	627	907,033	2,003	0.49	1
1899 ...	975,234	554	1,599	2,153	609	325,078	717	1.39	3
1900 ...	1,093,990	617	1,843	2,460	593	273,497	615	1.62	4
1901 ...	1,239,686	688	2,066	2,754	600	413,228	918	1.09	3
1902 ...	1,365,040	803	2,082	2,885	655	682,520	1,443	0.69	2
1903 ...	1,420,229	717	2,135	2,852	665	355,057	713	1.40	4
1904 ...	1,537,838	763	2,525	3,288	609	384,459	822	1.21	4
1905 ...	1,585,756	833	2,436	3,269	651	264,293	546	1.83	6
1906 ...	1,729,536	1,174	2,518	3,692	687	288,256	615	1.62	6
1907 ...	1,831,009	1,143	2,767	3,910	662	152,584	326	3.07	12
1908 ...	1,860,975	992	2,902	3,894	641	372,195	778	1.28	5
1909 ...	1,911,247	1,159	3,032	4,191	633	273,035	599	1.79	7
1910 ...	2,197,362	1,136	3,163	4,599	634	137,335	283	3.55	16
1911 ...	2,066,073	1,365	2,925	4,290	706	147,577	306	3.26	14
Totals...	33,297,621	...	...	...	...	...	...	...	247

* No life lost.

† Year of Kaitangata explosion.

‡ Year of Brunner explosion.

SECTION IV.—GENERAL REMARKS.

MINING OPERATIONS.

At the Hikurangi Colliery the old sections—Nos. 1 and 2—have been closed owing to the exhaustion of the coal. Mining during the year has been concentrated on section No. 3, of limited area, being the new dip underlying the limestone rocks at Waro. This company, having imported a Sullivan diamond drill, are boring for coal in the vicinity of Grahamstown Wharf, Whangarei Harbour. The output for the year slightly exceeded that for 1910.

At the Northern Coal Company's mine operations have been principally confined to the extraction of pillars, which are being exhausted rapidly. The life of the mine has been estimated at about two years.

At the Kiripaka Colliery pillar-extraction alone has been carried out. This mine also is approaching exhaustion. The company have located a valuable seam of coal distant about two miles from the present mine, and it is proposed to lay a tramway thereto from the Government railway, and to develop the property.

The Taupiri Coal-mines (Limited): The long drive connecting the Taupiri West with Ralph's Mine has been converted into a haulage-road, from which it is proposed to work the coal from the Lake Rotoiti district. The output should be materially increased thereby. The company have recently installed a powerful Tangye winding-engine, together with other important additions to their plant. At this company's Extended Mine, haulage-roads have been constructed in a westerly direction. Preparations are being made to drain the mine by a Cameron pump, with which it is proposed to force the water to the surface through a borehole of 5 in. diameter and 500 ft. in depth.

Waipa Railway and Collieries (Limited): This company have acquired coal-mining rights over some 6,900 acres at Te Akatea, in the Raglan County, as shown in the plan accompanying my annual report for 1910. The coal is of similar quality to that at Taupiri, and the quantity available has been estimated at several million tons. In order to transport the coal to market the company are constructing a branch railway, five miles and three-quarters in length, built to Government standard, laid with 55 lb. rails, and connecting with sidings at the Ngaruawahia Railway-station. This branch line winds up the valley on the road to Waingaro Hot Springs, and is fairly difficult of construction. The present contract for the formation and bridges is being pushed ahead. The contractors are Messrs. Donald McLean and Co., and the amount of the contract is £27,200. From the railway terminus at Te Akatea the mine will be approached by an endless-rope incline 25 chains in length, with an average grade of 1 in 10, the screening and loading arrangements being at the foot. So far no work has been done in developing the mine beyond exposing the outcrops and driving a heading for about 100 ft. Mr. Ashley Hunter, M.Inst.C.E., is the engineer in charge of the works.

A neighbouring property, the Pukemiro Freehold, upon which several fine outcrops of coal are exposed, has been further prospected, under the direction of Mr. E. S. Wight, M.I.M.E., but mining operations are in abeyance pending the construction of a bridge across the Waikato River.

On the Buller Coalfield the Westport Coal Company have, from their Millerton and Denniston collieries, slightly increased their annual output. At the Millerton Mine the workings to the westward of the Mine Creek section have proved a large area of excellent bituminous coal. In the Mangatini section the south headings have developed favourably, and those to the westward expose hard coal of good quality. A powerful hydraulic brake has been installed for the purpose of operating the area at the rise side of the Lower section. At the Coalbrookdale section of the Denniston Colliery development to the dip continues satisfactory, and a large area of excellent coal has been proved. In the Glasgow section the output has been obtained from pillar-extraction; the Wareatea haulage drive has been extended to the westward, in connection with which a haulage-engine is in course of erection. At the Ironbridge section, headings in a southerly direction have developed an extensive area of coal of considerable thickness.

The Westport-Stockton Coal Company have been less successful, and a considerable decline in their annual output has to be recorded. The narrow but lengthy strip of coal situated to the eastward of the Westport Coal Company's Millerton lease, which constitutes the B, C, and D tunnels of the Stockton Mine, is rapidly approaching exhaustion. It is reported that this company have recently proved, by boring by diamond and other drills, a workable area of coal near their eastern boundary, and it is sincerely to be hoped that they will now be rewarded for their enterprise. At the present time the Geological Survey Branch of the Mines Department, under Mr. P. G. Morgan, Director, are making a geological survey of the locality in which the boring is being carried out.

The output of the Seddonville State Colliery shows a slight decline, due to the approaching exhaustion of marketable coal. The output was obtained almost entirely from pillar-extraction. In connection with this colliery, a considerable amount of attention has been devoted to the Charming Creek Valley, which is included within the State coal reserve, and is situated to the south-west of the present mine-workings. A borehole (No. 1), 2½ in. in diameter, was put down on the banks of Charming Creek, at a distance of 57 chains above its junction with Reed's Brook, and at a depth of 91 ft. a 20 ft. seam of hard bituminous coal was pierced. As a result of this discovery it was decided to systematically bore along the Charming Creek Valley from the Ngakawau River to near Chasm Creek, as coal-measure rocks, consisting of sandstone, grit, and mudstone, together with a thin overlying coal-seam, were found to outcrop over an area of approximately 10 square miles, and the prospects of the large seam underlaying a considerable portion of this area appeared reasonable. The diamond drill was therefore transported to Watson's Mill, near the junction of Charming Creek with the Ngakawau River, a distance of 2 miles 28 chains from the successful borehole No. 1, and a borehole was there put down through mudstone and grit; at a depth of 280 ft. the underlying conglomerate (the base of the coal-measures on the West Coast) was reached, and at 370 ft. gneiss was penetrated, the large seam being non-existent. The plant was then removed up the stream about 46 chains, and another hole was drilled, the results obtained being somewhat similar; at 475 ft. the conglomerate was penetrated, and at 525 ft. the gneiss. These two bores (Nos. 3 and 4) would, if successful, have saved a considerable amount of intermediate boring; but as the results were negative the plant was again moved further up stream, and a series of bores, as shown in the map accompanying this report, were put down between the successful No. 1 borehole and the Seddonville Mine. Altogether sixteen holes were drilled, aggregating in depth 3,120 ft., at an average total cost of about £1 per foot, including transport of plant through a rough and roadless bush. These operations were carried out systematically after preliminary geological survey, and the management thoroughly tested the locality, as, with the approaching exhaustion of the old Seddonville Mine and no other discoveries being made, the outlook for the Seddonville Mine was not bright. In four boreholes altogether—namely, Nos. 1, 5, 8, and 10—the 20 ft. seam was proved, but none of the remaining boreholes showed the seam to maintain that thickness, and the total area of workable coal—i.e., a seam exceeding 5 ft.—was proved not to exceed 190 acres, which at the present time would not be of sufficient extent to warrant the expenditure necessary to lay down a mine to work this area, either as an extension of the Seddonville Mine or as a separate concern to be connected with the railway system at Ngakawau. No doubt in the distant future, when coal becomes scarce, and commands a higher price, attention will be given to the lens-shaped coal-deposit proved by these operations, and it is for this reason that I have described what has been done by the Mines Department. For most of the geological data shown on the map I am indebted to Mr. P. G. Morgan, Director of

the Geological Survey of New Zealand, who personally made a geological survey of the locality. The limited area occupied by the thick lower seam in comparison with the extensive area of the thin and valueless upper seam appears to indicate that the former is a basin-shaped deposit of drift coal. The coal proved by the boreholes is generally harder than that worked at the Seddonville and Mokihinui Mines.

In the event of this deposit eventually being worked, a shaft sunk to a depth of 95 ft. near borehole No. 5, being the lowest part of the deposit, would be the most convenient point from which to open a small mine. Owing to the frequency of faults and soft coal areas in this portion of the Buller Coalfield, an estimate of the quantity of coal available must be approximate only, consequently I have not furnished any. From the fact that artesian water was tapped in borehole No. 2, it will be necessary to install pumps before this area may be worked.

The briquette manufactory at Westport, which for about three years was worked in conjunction with the Seddonville Colliery, was closed during the early part of the year, owing to the high cost of manufacture.

One of the subjects inquired into and reported upon by the Royal Commission on Mines of 1911 was the profitable utilization of the soft bituminous and lignite coals of the Westport district, and in connection with this briquette manufactory the Commission reported as follows: "The cost of manufacturing briquettes with a pitch bond precludes the briquettes from competing in the market with coal as a fuel. . . . The proportion of pitch used in the production of briquettes or eggettes at Westport was approximately 8 per cent. The average cost of pitch imported was £4 12s. per ton. This, on an 8-per-cent. basis of pitch, gives the cost of pitch per ton of briquettes or eggettes at 7s. 7·98d. The total cost of manufacture is 16s. 6·69d. To this must be added the cost of freight, handling, general trading-expenses, interest, and depreciation, amounting to 11s. 3·5d., making a total cost of £1 7s. 9·16d., leaving a loss of 6s. 1·3d. per ton. It does not appear to us that any material saving can be effected in the manufacture. . . . It has not been shown to us that any other bond is available which will allow briquettes to compete successfully against coal."

The above remarks appear to be conclusive, briquetting having been proved to be a failure in New Zealand as in Australia and other countries where the pitch necessary for a bond must be imported from foreign parts. The character of New Zealand coal is not suitable for briquetting without a bond or agglomerant, as are some of the lignites of Germany and America; therefore, there appears to be no other use to which the soft bituminous coal and slack may be put than its utilization for coke-manufacture, as bunker coal, or for firing in a new type of boiler which at present has not been introduced into the Dominion.

On the Grey Coalfield operations at the Point Elizabeth State Colliery No. 1, under the superintendence of Mr. James Bishop, M.I.M.E., have mostly consisted of pillar-extraction. This has been somewhat restricted by an influx of water which has been difficult to deal with, as the two dip sections are approached only by means of lengthy haulage-roads, and therefore pumps operated by compressed air conveyed for considerable distances have not proved efficient. It is proposed to install an electrically driven pump of Rees Return type to deal with the increased influx of water.

At the Point Elizabeth No. 2 State Colliery, situated towards the head of the Seven-mile Creek, the construction of the branch railway and haulage inclines is approaching completion, and by the end of the current year this mine should have reached the output stage. The property has been developed by a main haulage-road driven for a considerable distance into a coal-seam of about 11½ ft. in thickness, and although a fault or "roll" was encountered, the strata was not displaced, and this obstacle was passed through. The face of the heading on the occasion of my inspection exposed a hard seam of bright bituminous coal of high quality. Extensive storage-bins, hydraulic brakes, bath and change houses, and other necessary equipment and buildings are at present being erected or installed.

The Paparoa Colliery, during intermittent work, produced only a small output until the 21st October, when operations were discontinued. An endeavour has since been made to obtain more capital. The coal from this mine has hitherto been of a very soft and friable nature, although of high quality, owing to the proximity of faults, and for such coal there has been a limited market.

At the old Brunner Mine pillars have been extracted from the St. Kilda section. A considerable quantity of the small coal has been utilized for the production of coke from ovens erected upon the property.

At the Blackball Colliery there has been a slight decline in the annual output. This mine is worked in panels, owing to liability to spontaneous combustion. Development and exploration have proved this to be both a permanent and valuable property, and since the abolition of the aerial tramway and the extension of the Government railways past the mine, a considerable reduction in working-costs has been effected.

It has been proposed that the Government reopen the old Wallsend Mine at Brunnerton which was closed in 1890 owing to the unprofitable character of the coal then being produced. The workings are entirely enclosed by serious faults—namely, the Kimberley fault (downthrow to the south 180 ft.), the Taylorville fault (downthrow to the westward 250 ft.), and the Dobson fault (upthrow to the south-east of 400 ft.). The coal mined was of inferior quality, and mining operations were hazardous owing to the presence of firedamp. The whole of the plant, machinery, and head gear was dismantled and removed. It therefore appears inadvisable at the present time to hazard both capital and human life in the endeavour to work this limited and faulted area, especially at a time when the profits on coal-mining have been reduced to a negligible quantity. I personally surveyed this mine in 1888 prior to the suspension of operations. I can therefore report from actual observation regarding the underground conditions.

In Otago the Kaitangata Colliery has about maintained its output. Development to the south and eastward has proved the continuity of the coal for a considerable distance, and the reserves in sight appear to be larger than formerly. The ventilation and safety precautions at this mine are satisfactory. It is proposed to further improve the ventilation by the installation of an electrically driven Sirocco fan. A new main haulage-road is now being driven, which, when completed, will materially shorten the distance by which the coal is delivered at the railway.

There has been an increase in the output at the Nightcaps Colliery (Southland). At No. 1 mine all underground work has been concentrated on the upper, or 18 ft. seam, the two lower seams being reserved for the future. At No. 2 mine work has been confined to the middle and upper seams.

The numerous lignite-pits in Otago and Southland have slightly increased their aggregate output, but in brown coal there has been a small decline. As this coal is used only for local consumption, it is reasonable to suppose the output will increase slowly as the districts become more settled and local industries are established.

VENTILATION AND SANITATION.

In the report of the Royal Commission on Mines the Commissioners stated that they were pleased to find that the majority of the collieries of the Dominion were well ventilated, which conclusion was, in their opinion, substantiated by the fact that during the previous fifteen years only one life had been lost as the result of an explosion of firedamp. They, however, reported that they had in a few instances observed inadequate distribution of air by splitting, insufficient use of air-stoppings and brattice. At all collieries but those of insignificant proportions they found that ventilation was produced by fans of modern type, thirty of such being then installed.

The above complimentary remarks must be very gratifying to the Inspectors of Mines and colliery-managers of the Dominion. One of the most important subjects which the Commission were instructed to consider was the ventilation and underground sanitation of mines. In their recommendations the Commission propose that the existing sections as regards ventilation in the Coal-mines Act be amended by substituting, with slight alterations, the provisions contained in the British Coal-mines Act of 1911, as follows:—

Proposed Standard of Ventilation for New Zealand Coal-mines.

“An adequate amount of ventilation shall be constantly produced in every mine to dilute and render harmless inflammable and noxious gases to such an extent that all shafts, roads, levels, stables, and workings of the mine shall be in a fit state for working and passing therein, and in particular that the intake airways, up to within 100 yards of the first working-place which the air enters, shall be kept normally free from inflammable gas: Provided always that an abandoned road or level not used in connection with the working of the mine shall, if properly fenced off, not be deemed to be a road or level within the meaning of this section.

“In the case of mines required to be under the control of a manager the quantity of air in the main current and in every split, and at such other points as may be determined by the regulations of the mine, shall at least once in every month be measured and entered in a book to be kept for the purpose at the mine, and the ordinary number of persons and horses in each split at one time shall be entered in such book.

“For the purpose of this section a place shall not be deemed to be in a fit state for working or passing therein if the air contains either less than 19 per cent. of oxygen or more than 1 per cent of carbon-dioxide: Provided that the Minister of Mines may, by order, exempt any mine or mines from the foregoing provision on the ground that they are liable to spontaneous combustion of the coal, but subject to any conditions specified in the order.

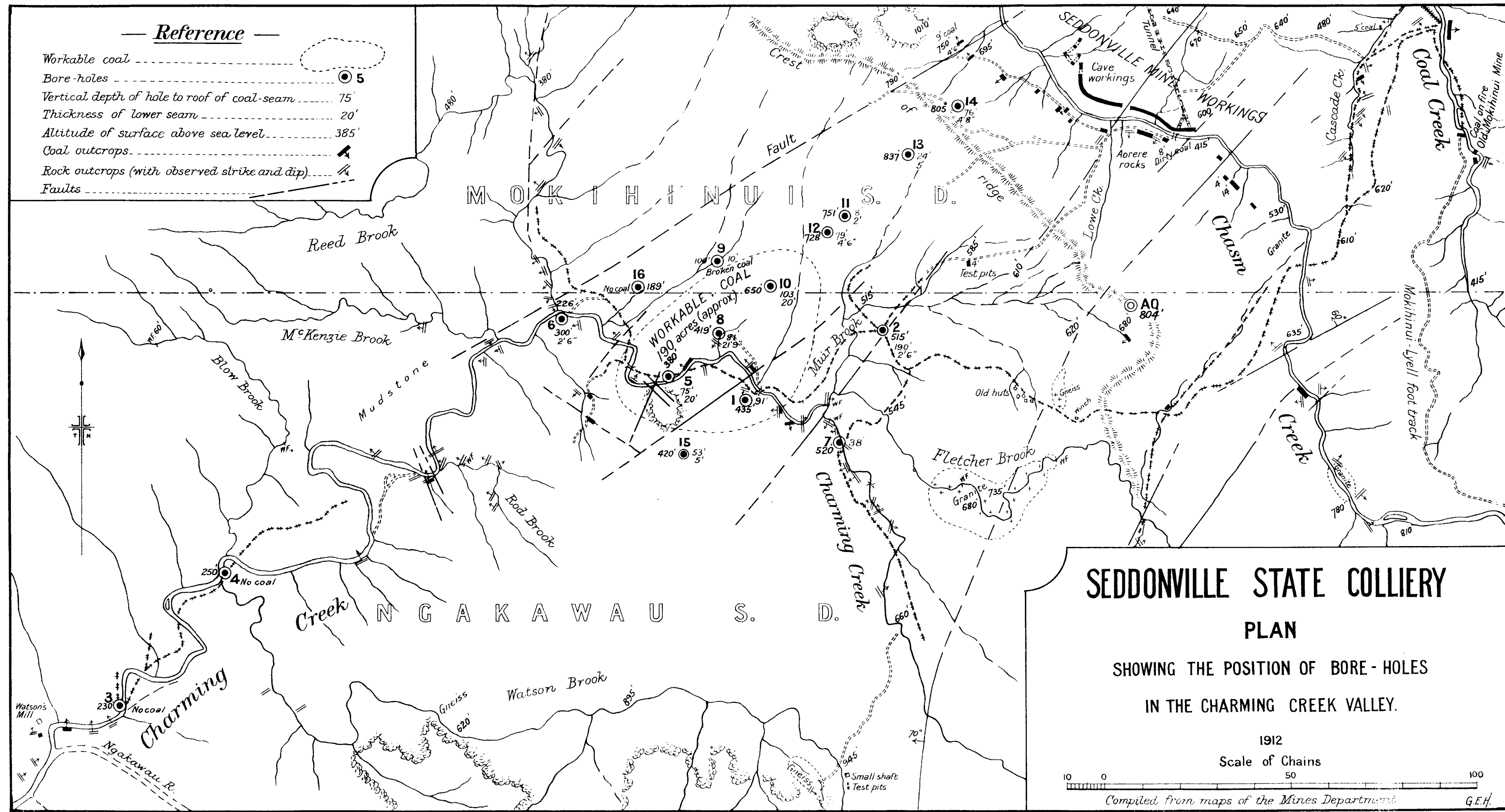
“Special rules under the Act shall provide for the classification of mines according to the amount of inflammable and noxious gases in the main return airway, and the amount of air passing into the mine shall be such amount, proportionate to the number of men and animals employed underground in the mine, as may be prescribed by the special rules with regard to mines of the class to which the mine belongs, but in no case shall less than 150 cubic feet of air per minute be provided for every person, and 600 cubic feet of air per minute for every horse, while employed underground.

“All air-measurements shall be taken at the entrance to each ventilation-section, and shall there be not less in volume than the minimum statutory allowance per man and horse per minute. The total number of men employed ordinarily in any ventilation-section shall not exceed fifty at one time.

“The obligation imposed by this section shall be in addition to, and not in substitution for, the obligation to provide an adequate amount of ventilation imposed by the foregoing section.”

The Commissioners also recommended as follows: That a ventilation plan be kept at all mines. That dumb drifts be constructed at all existing underground furnaces, but that no fire or furnace shall be placed underground at any new mine in future. That the principal mechanical ventilators be not placed underground, and that means be provided for reversing the air-current at fans.

As regards sanitation, recommendations were made for necessary hygienic improvements, and the establishment of change and bath houses for miners is recommended, such houses to be built to a specified design in the manner followed on the Continent of Europe and being established in Great Britain.



COAL-SHIPPING PORTS.

The following is a summary of the principal items of interest in connection with the coal-shipping ports of Westport and Greymouth during 1911:—

	Westport.	Greymouth.
Receipts (ordinary)	£91,190	£35,597
Expenditure (ordinary)	£71,946	£21,094
Coal exported (tons)	770,410	379,004
Coke exported (tons)	...	2,397
Steamers visiting	1,116	739
Sailing-vessels visiting	9	18
Aggregate tonnage	711,881	382,427
Average depth of water on bar at high tide during the whole year	24 ft. 3 in.	20 ft. 3 in.
Average depth of water in river at high tide during the whole year	25 ft. 1 in.	...
Total rainfall in inches	71.36	94.77

I have, &c.,
FRANK REED,
Inspecting Engineer and Inspector of Mines.

ANNEXURE A.

REPORTS OF INSPECTORS OF MINES.

The INSPECTOR OF MINES, Northern District, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Inspector of Mines' Office, Thames, 12th March, 1912.

In compliance with section 78 of the Coal-mines Act, 1908, I have the honour to present my report on the coal-mines in the Northern District for the year ended 31st December, 1911.

Hikurangi Coal Company (Limited), (W. R. Dunn, mine-manager).—No. 1 section (old mine): This section has been exhausted of coal, and the rails have been removed for use elsewhere.

No. 2 section (Crown lease): This section was also exhausted during the year, and the plant has been removed.

No. 3 section (new dip): This is a small section situated between Nos. 1 and 2 sections, and underlying the limestone rocks at Waro. The main levels have been driven to the boundary, and the pillars are being drawn, also the top coal is being cut down. The work is being carefully carried on, and there is a plentiful supply of timber on hand. The water having been drained off in the No. 1 section of the dip workings to No. 3 mine section, there is no danger of flooding. Natural ventilation having proved at times inadequate, the company are installing a Waddell fan of 27,000 cubic feet per minute capacity. If the distribution of the air is properly attended to there should be no cause for complaint about the ventilation. During the year two air-shafts were sunk, one being used as the return airway, and the other as a travelling-way or second outlet from the mine.

No. 4 section (Crown lease): Very little work was done during the year. The section being some distance from the loading station, the coal is conveyed thereto by horse tram. The coal-seam is thin in places, and consequently the section is not profitable. I am informed that the company is boring for coal on the shores of the Whangarei Harbour, in the vicinity of Grahams-town wharf. The mine was visited by me periodically, and everything except the ventilation (which is now being remedied) was found satisfactory. The output of coal for the year was 64,657 tons, being an increase of 1,817 tons over that for the previous year. An average of eighty-two men were employed.

Northern Coal Company (Limited), (Mr. William Morgan, mine-manager).—Drainage section: The section is still in the early stages of development. The timbering is satisfactory, and the ventilation has been adequate. Nos. 5 and 6 districts: The pillars are fast being exhausted, and the life of the mine may be estimated at about two years. Ventilation has been adequate, but owing to the nature of the work it was often most difficult to distribute the air into every place as adequately as might be desired. The company has acquired other areas of coal in the district, and has bored with satisfactory results. One of the new sections adjoins the old Phoenix Mine. The output of coal for the year was 40,503 tons, a decrease of 4,121 tons as compared with the previous year's. An average of seventy-five men were employed.

Kiripaka Colliery (Mr. E. W. Tattley, mine-manager).—Work during the year consisted chiefly of pillar-extraction, and every reasonable precaution was taken by the manager and men. A high percentage of pillar coal has been extracted, and the company has also done some useful prospecting, a valuable seam of coal being located about two miles from the present mine. It is the company's intention to lay a tram-line connecting the new section with the railway, and to develop the property. This discovery may encourage more extensive prospecting than has hitherto been carried out. The mine-ventilation has been satisfactory, and a good supply of timber has been maintained. The output of coal for the year was 32,554 tons. An average of forty-five men were employed.

Whangarei Colliery (Mr. A. H. Taylor, mine-manager).—As the main dip was driven it was found that seams Nos. 1 and 2 junctioned, having a thickness of 6 ft. A little work has been done off the main dip at levels Nos. 1 and 2, but owing to the coal being thin and much faulted it was decided to continue the main dip for some distance, where it is expected that the coal will widen to 10 ft. and improve in quality. The output for the year was 1,404 tons. An average of eighteen men were employed.

Taupiri Coal-mines (Limited).—Ralph's Mine (Mr. J. Fletcher, mine-manager): The drive connecting the Taupiri West shaft with Ralph's Mine has been converted into a subsidiary haulage-road, in order to deal with the coal won from under Lake Rotoiti. During the latter three months of the year coal has been obtained from this area. Preparations are now in progress to considerably increase the output. The haulage is by the main and tail rope system, and when the section is fully opened out it is expected to act as a great feeder to the main endless-rope haulage by which the whole of the output is transported underground. The main rope road dip heading has been advanced 6 chains, 2 chains of which is through coal. A connection has been made between the little dip and No. 7 north sections, the result being improved ventilation. Several additions were made to the plant during the year; a new winding-engine (Tangye) has been erected, having direct motion, 14½ in. cylinders, with 28 in. stroke, and having steam reversing gear. The displaced winding-engine was utilized for a main and tail rope haulage for the Taupiri West Mine. The pumps and all the haulage engines below ground are driven by compressed air, and have pressure-gauges attached. The damaged pillar area has been further strengthened, and the pillars are not showing any signs of crushing. The mine officials examine the sections from time to time, and record their reports as required. The ventilation has been adequate, averaging about 300 cubic feet per minute per man. The travelling-roads and working-places are generally in good order. The output for the year was 108,740 tons, being an increase of 11,401 tons.

Extended Mine (Mr. W. Wood, mine-manager): Headings have been vigorously pushed ahead to develop the various sections. The principal work of the year consisted of the completion of the west heading stone drive, 12 chains in length, driven to specified grade to intercept the coal-seam proved by surface boreholes. The north-west heading was driven 7 chains in highly inclined coal, but operations were suspended during the latter half of the year until the back ventilating heading, parallel to the dip, was completed. A water-lodgment has been constructed having a capacity of 5,000,000 gallons, to be drained by a Cameron pump, which will force the water to the surface through a 500 ft. borehole of 5 in. diameter. A well-equipped engineer's shop has been erected at the mine. During the year I made several inspections, and found that the air was well distributed in the mine in the proportion of 300 cubic feet per minute per man. The roads and working-places were well timbered, and generally in good order. No fatal accidents occurred during the year, although there were several of a minor character. The mine-cages, ropes, chains, &c., were examined during the year. The output for the year was 143,522 tons, being an increase of 13,710 tons. An average of 252 men were employed.

Union Collieries (Mr. F. J. Tattley, mine-manager).—The mine having proved unprofitable to the then-owners, it was closed down in the early part of the year, but subsequently was acquired by a new company, who intend to reopen it at an early date.

Kawakawa Colliery (Mr. W. H. Culley, mine-manager).—An adit has been driven, and several pillars of coal left in by the old company were located, but the extent of pillar coal available is unknown. The mine was examined, and the timbering and ventilation found satisfactory.

Waipa Colliery.—No work has been done during the year. A contract for the construction of the railway-line from Ngaruawahia to the mine has been let, and is being proceeded with.

Pukemiro Collieries (Mr. E. S. Wight, mine-manager).—No work has yet been done at the mine. Plant and material are being sent out from England; and when the railway and traffic bridge over the Waikato River is available the plant will be conveyed to the ground.

Mangapapa Colliery (Mr. William Lennox, mine-manager).—Since the installation of the small exhaust fan, of local design, the ventilation of the mine has been satisfactory. In October I found that 12,000 cubic feet of air was supplied for eight men and one horse. The mine was inspected, and found to be in good order. The output of coal was 3,811 tons, being a decrease as compared with that of the previous year.

I have, &c.,

B. BENNIE.

Inspector of Mines.

The INSPECTOR OF MINES, West Coast District, to the UNDER-SECRETARY, Mines Department, Wellington.

SIR,—

Inspector of Mines' Office, Westport, 1st February, 1912.

I have the honour, in compliance with section 78 of the Coal-mines Act, 1908, to present my report on the coal-mines in the West Coast Inspection District for the year ended 31st December, 1911.

Point Elizabeth State Colliery No. 1 (James Bishop, M.I.M.E., mining engineer and certificated manager).—During 1911 the output amounted to 188,892 tons, being 23,997 tons less than that obtained during the previous year. This decrease was probably due to slackness of trade during the earlier part of the year and to the delay in shipping owing to the unsatisfactory state of the Greymouth bar towards the close of the year.

No. 1 section (J. Coulthard, manager): With the exception of a very small quantity obtained during the development of the area on the inside of the fault lying to the east of the main dip, the output from this section has been obtained from pillar-extraction. The prospecting dip heading is a continuation of the crosscut, and is running south-east, and up to the present a good deal of faulted ground has been encountered, while the pitch of the seam is abnormal, lying about 1 in 1½. An east level has been turned away, and the possibility exists that a fair block of coal may be won therefrom. No. 2 level: This section has also contributed a small amount from solid workings. These workings, however, are thinning, and before long it is anticipated that the remainder will be won by longwall method. No. 3 level: The output from this section was from pillar-extraction, and practically all the coal is extracted with the exception of a strip left to support the edge of the fault. No. 1 level east: Workings in this level are also confined to pillar-extraction, and are fast becoming exhausted to a point where it will be necessary to stop in order to protect the main crosscut and return airways. The percentage of coal won from this level has been very high, almost the whole of the coal in the pillars being won. No. 1 level west: The whole of the available coal has been won from this section; sufficient, however, has been left for the stability of the main haulage-road. No. 3 level west: The pillars on the inside of No. 1 bank are being worked, and a good percentage of the coal has been extracted. During the year the water has risen to within half a chain of the third level, but it is anticipated that this portion will again be unwatered when the preparations that are in hand are completed. These consist of installing a beam pump, to be driven by steam, to unwater No. 2 section. The surplus of compressed air will then be available for the extra pumping in No. 1 section, when the few available pillars in the section known as the flat will in all probability be won. The ventilation I have found to be satisfactory, the quantity of air circulating on my last visit being 50,700 cubic feet per minute, which is split into two currents and well directed round the working-places. The mine is well timbered throughout, a large number of substantial chocks being built along the roadways, in addition to systematic propping of the roof. Safety-lamps are exclusively used for lighting in the workings, whilst all shot-firing is strictly in accordance with special rule 25 (d).

No. 2 section (W. Muncaster, deputy manager).—Two seams of coal are being worked in this section. The top seam, which varies in thickness from 10 ft. to 13 ft., is separated from the bottom seam by strata consisting of strong sandstone varying in thickness from 20 ft. to 30 ft. The whole of the output from the top seam is being obtained by pillar-extraction, a large proportion of the coal being successfully won. The bottom sections of the seam from the extended dip upwards to the second level are rapidly becoming exhausted, and by the end of the incoming year all the available coal will probably be extracted; while the pillars in the top level east will have reached a point where it will be necessary to suspend operations until the second level and the section of coal lying to the westward of the main haulage-road have been worked out. The bottom seam in the second level has been standing for some time, it being considered advisable to stop operations until the pillars overlying in the top seam were extracted. When this is done the bottom seam will be worked again. A large quantity of coal is being got from the bottom seam in the rise; a fault running east and west was encountered in the heading lying to the east of this section. The coal shows signs of thinning to such an extent on the western side of the main heading that in all probability it will prevent the profitable working of this portion. On striking the fault pillar-extraction was commenced, and still continues. The coal on the west side thinning to such an extent, it was considered advisable to alter the method of work from bord and pillar, and win the remaining coal by a long wall. Advancing midway between these two portions of this section the coal is still being worked in the solid, and from the appearance of the above-mentioned fault it is possible that one of the headings now being driven in the solid will miss it altogether. The fault shows indications as the workings expose it to the westward that it is rapidly becoming less formidable.

Heating was found to have commenced during the year in the goaf between the second and third levels east, a smell indicative of fire being easily detected in the air along the second level. This has compelled the management to erect brick stoppings across the two innermost openings along the low side. Towards the end of the year the aforementioned evidence became palpably stronger, compelling a series of stoppings to be built from the extended dip upwards, with the object of sealing this portion off altogether. Sufficient coal will be left to protect these stoppings, and pillar-extraction will be again commenced. The ventilation has been well maintained, a current of 49,750 cubic feet per minute entering the mine on the above date, while the working-places were adequately supplied. Timbering consists of substantial chocks, combined with a plentiful supply of props to support the roof.

Point Elizabeth State Colliery No. 2 (James Bishop, mining manager).—Operations here consist solely of development-work, consisting of connecting the mine with endless-haulage system to the bins which are in course of erection at the terminus of the railway-line. The whole of the tunnelling in connection with this haulage system has been holed and thoroughly secured with substantial timber, and a matter of a few months ought to see the remaining viaduct, which is in course of erection at the upper end of the work, finished, as well as the permanent line of rails laid. The main level, which is situated on the right hand of Tarara Creek, has been driven a distance of 12 chains in good hard bituminous coal 14 ft. thick, while the rise heading has been extended to the outcrop a distance of approximately 6 chains. At the extreme end of the

main level faulting occurs, so that a great deal of coal is not expected to be won from this small section. A stone drive has been set away off this level in a south-east direction in order to win the coal lying to the eastward of Coal Creek, where it is estimated a large field of coal exists. This drive will be approximately 20 chains in length, and is being driven 11 ft. by 7 ft. in the clear. A drive 4 chains from the outcrop has been driven in this section, and shows the coal to be of a very superior quality. In all probability these drives will be pushed ahead, so that when the outside developments are completed the mine will be ready at once to supply a good output. The prospects for dealing with a large output are very promising, owing to the fact that coal can be won from various sections on either side of the main haulage-road. A good deal of delay in the completion of the bins, &c., has been caused by not being able to get the material required when wanted, on account of the railway-line under the Public Works Department not being completed. However, this difficulty will soon be overcome, and completion of the necessary surface arrangements will be pushed on with expedition.

Paparoa Colliery (J. Hayes, mining engineer; D. S. A. Patterson, mine-manager).—The output from this mine was 21,218 tons, a decrease of 15,378 tons as compared with the previous year's output. This is accounted for by the fact that the mine ceased operations on the 21st October for an indefinite period, and previous to that date it was worked very intermittently on account of want of trade. The operations during the year were principally confined to development and the establishment of a permanent system of ventilation for the mine. This consists of splitting and supplying each seam with a fresh current of air, the splits again uniting in one main current before reaching the fan. The result is effected by connecting the various seams by stone drifts. The ventilating-current is produced by a Sirocco fan running at moderate speed, the quantity of air circulating varying from 55,000 to 65,000 cubic feet per minute. During the year coal of very good quality and hardness, with a thickness of 16 ft. and upwards, has been reached across a fault in No. 2 seam, and this may be expected to thicken as the workings proceed towards the rise, as the seam is known to attain to 20 ft. in thickness at some of the outcrops. Surface prospecting in the Mount Davy section has also proved this seam of great thickness, over 30 ft. being exposed in one place without bottom being reached. The prospects, so far as this seam is concerned, are promising. Very little work has been done in Nos. 1 and 3 seams, and the coal there has the appearance of having undergone severe crushing. Safety-lamps are used in seams 1 and 2, whilst naked lights are used in No. 3. An appreciable amount of methane is given off in these seams, and every precaution is taken to thoroughly dilute it with fresh air, so as to render it harmless. All shots in Nos. 1 and 2 seams are exploded electrically. The mine is being kept in good working order, an underviewer and deputy being employed for the purpose, while an engine-wright is engaged on the surface. The fan is run at intervals to prevent any accumulation of noxious gases.

Brunner Mine, St. Kilda Section (R. Alison, mining manager; J. Armstrong, mine-manager).—(19/12/11): A considerable proportion of the output has been won from the north heading, where, owing to a large fault, it has become necessary to begin pillar-extraction. This part of the mine is nearing exhaustion, the remaining coal being in a long narrow strip between two faults. The lower level has been driven a distance of 22 chains, and is still in coal, which continues to be of a very friable and soft nature. From the old Brunner Mine about 5,000 or 6,000 tons of excellent coal has been won, this being obtained by driving adits into the side of the hill and extracting the few stumps of pillars that were left in order to support the face of the cliff above. A large amount of excellent fireclay has also been won from this section. During the period under review the oil-engine used for driving the fan has been discarded and a Pelton wheel erected and connected direct to the fan-shaft, thereby producing improved ventilation. On my first visit to the mine the ventilation was sluggish, owing to the unsatisfactory running of the oil-engine, but since the installation of the Pelton wheel the ventilation has been entirely satisfactory. Future developments must necessarily be directed to the dip where a block of coal, extending probably a distance of about 10 chains, is expected to be opened up. Already a dip haulage-road has been completed as far as the lower level, and it is proposed to prospect this block of coal very shortly. The output for 1911 was 31,406 tons, a decrease of 8,284 tons compared with 1910. A large amount of small coal from this mine is used in the production of coke. No serious accidents have been reported during the year.

Blackball Colliery (W. Leitch, mining manager; J. Hamilton, mine-manager).—The output for the year was 156,821 tons, being a decrease on the previous year's operations to the extent of 9,684 tons. Two shifts of workmen are employed. The output from this mine has been won from banks Nos. 14 to 17 inclusive, and 19 and 20, with the addition of a little from the dip. The method of mining is to extract the pillars as soon as the ordinary bord has been driven. The bords are driven to meet from the pair of banks. When the pillar has been brought back to within 7 yards of the bank a tight stopping is erected and the goaf effectually sealed off. This process is continued until the whole of the bords in the bank have been driven and the pillars extracted. This is an excellent method to work a seam of coal like the Blackball, which is exceedingly liable to spontaneous combustion. Not only does this method allow of the winning of the coal in a minimum time, but the pillar is extracted while the first timber is yet strong, and the coal itself and the roof-rock are less liable to become crushed and broken. Development-work to the east and west of No. 17 incline has proved the coal to be of very good quality throughout. The incline itself has been standing owing to its being so far in advance of the present workings. There is still 20 chains of coal ahead before it reaches the outcrop, and this probably will be developed during the coming year.

Dip section: This section has not been opened out to the extent that was anticipated at the beginning of the year, owing to the large quantity of water which found its way into the work-

ings through fissures in the roof. Horse-haulage only has been employed to cope with the output. An Evans three-throw electric pump has been installed, capable of dealing with 200 gallons of water per minute. When first set to work it required to be operated continuously for fifteen hours per day, but the water has now decreased to such an extent that the pump can deal with it in twelve hours. The dip heading is driven approximately 11 chains, and is showing good coal 14 ft. thick at the face. A pair of levels will be turned away on either side of the dip, running east and west, as soon as the present preparations, consisting of installation of electric haulage, are completed. This will doubtless be a very important section as regards output in the very near future. For this reason it is absolutely necessary that the dip headings should be kept well in advance of the general workings, so that some idea can be formed of the extent of coal ahead to cope with future demands. During the year a contract was let to enlarge the main heading through the fault. The distance driven is $4\frac{1}{2}$ chains. At this point it was expected to win the full height of the seam, but expectations were not realized, and further driving will have to be done.

Workshops; surface works: During the year new workshops, consisting of blacksmiths', carpenters', and engineers' shops, have been erected, and all necessary machinery installed. These will obviously prove of economic value, as previous to the installation all repair-work had to be sent to Greymouth. Near the end of the year a 100-horse-power electric generating plant was installed to provide power for haulage and surplus power for pumping in the dip section. Heating has been a source of considerable annoyance, several fires having broken out. These have not been confined to any particular part of the mine, but have occurred throughout the whole of the workings. The probable explanation of these outbreaks is that the roof overlying the bottom seam is of a very soft clayey nature, and when this is dropped to enable the top seam of coal to be won, it carries with it a quantity of coal which has been left to form the roof in the first workings. So completely does this clay form, as it were, a blanket over the coal, that the heat generated cannot escape, and with an increasing temperature a more rapid absorption of oxygen is induced, and the heating soon develops into a fire. The workings are carefully examined in order to detect this heating, and every precaution taken to cope with a fire if it should break out. Ventilation has been maintained, and the Act generally well observed.

North Brunner Colliery (George Smith, mine-manager).—(14/12/11): The output from this mine for the period under review totalled 12,784 tons, being an increase over the previous year's output of 1,862 tons. The output was obtained in the first eight months; during the remainder of the year the mine was closed down. Seventy chains of levels and bords were driven during the year, and it was hoped that as development proceeded a better class of marketable coal would be opened up, but up to the time of closing down the operations proved disappointing. The seam proved to be of a varying thickness, averaging about 5 ft., and of a very soft and friable nature, quite unsuitable for handling in shipments. In August the main level, which has been driven some 6 chains, came against a fault, the same faulting being met with in No. 3 road, while it is thought that No. 4 is through it; but the coal at this point is lying at an abnormal pitch—viz., 1 in 2—and from this it would appear that the disturbance is not yet penetrated. Owing to the market for the North Brunner coal being so dull, it was decided to close down until the return of the general manager from England, the only work that has been done since being the loading of coal for local sale from stock kept in the bins. When operations are again commenced in the mine in all probability they will chiefly be confined to the pushing-forward of the main headings through the faulted ground to prove the extent and quality of the coal on the other side. Ventilation and general safety of the mine are satisfactory.

Loughlan's Mine (owner, R. L. Kearns; R. L. Kearns, manager, by permit).—The main level is continuing in a north-east direction skirting the hill, drivages being holed to the surface for the purpose of ventilation. The coal is in thickness 5 ft., and is lying very steep. This property has been purchased from Mr. Bierworth during the year, and has produced 2,760 tons of coal. The ventilation and general safety of the mine have been well maintained. Preparations are being made during slack times to work the coal lying to the dip of the present workings level, which is driven as low as possible to ensure free drainage. Rules posted and reports up to date. Four men are employed.

Golden Point Mine (R. L. Kearns, owner; R. L. Kearns, permit).—Very little coal has been won from this mine during the year, on account of slackness of trade, the output being only 540 tons. This has been produced almost exclusively from the level, which is running in a north-easterly direction.

Lankey's Creek Mine (Progress Goldfields of New Zealand (Limited), owners; F. Knight, permit).—This mine has produced 2,011½ tons of coal during the year, almost the whole of which was won within the first eight months. A good deal of small coal was filled from the old workings that had been left during previous operations, this being mixed with the round coal. The mine has been practically closed for the latter four months of the year, the owners having decided to construct a tramway about 97 chains along the sideling, so as to more economically supply the Progress and Energetic Mines. The tramway is nearing completion, and operations in the mine will soon be in full swing again. The seam is 8 ft. thick, and of excellent quality, producing a large percentage of round coal.

Watson and Moyle's Coal-mine, Murray Creek (W. Watson, permit).—Operations consist in driving a pair of headings going south, and separated by about 60 ft. with stentons connected for the purpose of ventilation. No. 1 heading has been driven 24 ft. for the year, while No. 2 has been driven approximately 100 ft. A patch of faulted ground was met with, and when driven through the coal was found on the other side. The roof in the mine is very strong and well protected. Natural ventilation is well maintained.

Phoenix and Venus Coal-mine, Murray Creek (owners, J. Knight and Co.; W. Knight, permit).—During 1911 a new drive going west from the surface was put in for a considerable distance. The coal proved to be very soft, producing very little round coal, and the small has been stacked on the sideling for sale, providing a market for this class of coal can be obtained. On my last visit the coal showed a decided improvement. Operations have been intermittent, owing to no demand for the coal. The fire-area on the south side of the workings is still burning, smoke issuing freely from several places. The ventilation and timbering have been maintained satisfactorily. Two men are employed underground.

Golden Treasure Coal-mine, Murray Creek (J. Billet, permit).—This mine has practically been abandoned, the only output being a few tons of coal won by the open-cast method at the beginning of the year.

Lockington's Freehold, Deep Creek (E. Lockington, owner; E. Lockington, permit).—Nearly the whole of the output from this mine has been obtained by open-cast work. For a considerable distance along the sideling very little cover exists over the coal. This has been stripped, and the coal afterwards mined, until a face 15 ft. in height has been bared. From this point a drive has been started in the coal to connect with the inside workings. The coal in the drive is clean and hard, producing a fair percentage of round. When this connection is made it will improve the ventilation and shorten the trucking distance. Four men are employed.

Burke's Creek Coal-mine (Gibson and Harris, owners; J. Thompson, manager).—Operations have been chiefly confined to No. 1 North area, where the level has been extended over 6 chains. For a distance of 40 ft. the coal was very thin, and of a very soft nature; subsequently it pinched out. After driving approximately 80 ft. further the coal made again, and continued to open out until a good seam of hard bright coal, varying from 12 ft. upwards, was exposed. These faults have been a source of trouble, causing the ventilation at times to be rather dull until connections could be made; however, this will shortly be remedied by increasing the size of the return airway through the faults until a rise heading can be driven to the surface which will ensure a good circulation of air. The output was 2,928 tons.

Waitahu Coal-mine (James Jude, permit).—(6/12/11): The output for 1911 was 540 tons 15 cwt., a considerable proportion being derived from pillar-extraction. The pillars skirting No. 2 level have been extracted for a considerable distance. Ventilation has been well maintained. A good deal of coal is still standing on pillars to the rise, but, being of a soft nature, it makes a good deal of small.

Archer's Freehold, Caplestone (F. W. Archer, permit).—This property contains two seams of coal, varying in thickness from 10 ft. to 12 ft., and separated by about 60 ft. of sandstone. At the beginning of the year a holing was made into the rise heading, and the old drive cleaned of falls, ensuring a good ventilation. The main level in the bottom seam has been continued for some distance, and has met with faulted ground, which will necessitate some prospecting. This will be done when opportunity offers. The condition of the mine is satisfactory.

Coghlan's Freehold, Caplestone (J. Coghlan, owner; permit).—During the year operations have been almost exclusively confined to No. 2 level, there being very little sale for coal during the first few months. This enabled the level which was being driven in sandstone to be continued until the coal was reached. The coal in this level is proving to be of superior quality, and the prospects are promising. The output for the year was 364 tons. Ventilation is obtained by holings into the rise.

Rocklands Coal-mine, Buller Road (G. Walker, owner; J. Burley, permit).—The output was 257 tons. The main south heading has been standing, and another heading in the same direction has been opened on the rise side of the former workings. This has proved of great advantage, by rendering the transport of the coal for carting much easier and the distance shorter. The demand for this coal depends upon the dredge working in the Buller River. The ventilation and general safety conditions are excellent.

Whitecliffs Coal-mine, Buller Road (Job Lines, owner; permit).—At the commencement of the year a new tunnel lying to the west of the old tunnel had been started, but on driving a distance of about three-quarters of a chain it was found impossible to keep clear of the creek and maintain a free drainage. This tunnel was therefore abandoned, and preparations are being made to exploit the coal on the rise side of the old tunnel. The output from this mine for the year was 189 tons.

Seddonville State Colliery (I. A. James, mine-manager).—The output for 1911 was 60,045 tons, showing a decrease on the previous year's operations of 2,669 tons. This output was entirely from pillar-extraction in the cave area, combined with dropping of top coal. The pillars in the extreme west of the cave section have produced a fair proportion of hard coal, but are rapidly becoming exhausted. The soft coal that overlies the main seam, being unsaleable, was left in the old workings, and as a result heating rendered it imperative to stop these workings off, to prevent the gases reaching the present workings. Another portion on the eastern side of the same section was similarly dealt with. In both places the stoppings have proved effectual.

West section: Operations in this section consist of the satisfactory development of a block of coal known to exist to the north-west, where coal of excellent quality and thickness has been proved, and the prospects in this part of the colliery are promising. A holing has been effected at the outcrop, which has secured the ventilation of the workings to the northward.

The ventilation and general safety conditions of the mine have been well maintained, timber being plentifully used to support the sides and roof. No fatal or serious accidents have been reported during the year. A considerable amount of boring by diamond drill has been done in the Charming Creek area. The operations have been confined to the area between Chasla and Charming Creeks. The results so far have only been moderately satisfactory.

Denniston Collieries (Westport Coal Company, Limited, owners; J. C. Brown, local mining manager).—During the year the output for the Denniston Collieries was 323,368 tons, which was obtained from the mines working single shift. The development in both collieries has been kept well in advance of requirements.

Coalbrookdale Colliery (Nicholas Milligan, mine-manager).—The development in the dip area continues to produce excellent results, and the winning headings have been pushed forward in a north-east direction, proving a large area of coal of excellent quality. In some parts of this area the superincumbent rocks are of a very treacherous nature, while water freely finds its way into the workings, causing no small amount of anxiety to the officials. Timber is, however, freely used.

Glasgow section: For some considerable time the output from this section has been produced from the extraction of pillars, and, taking into consideration the serious amount of crushing the pillars have undergone, the percentage is very satisfactory. Pillar-extraction has been continued during the year in the following sections: No. 9 bank and the right-hand side of No. 8 bank, also Wallace section on the left-hand side of the main haulage-road. To open a fairly large area of virgin coal to the south of the present terminus of the Cascade haulage-road, a drift is being carried. The coal in this area is from 10 ft. to 12 ft. in thickness, and of excellent quality. This drive, however, has been standing for some considerable time. Development has been adequate in other parts of the mine. The Wareatea haulage-drive to the westward has been driven to reopen Bradley's section, which had been standing pending the completion of the haulage way. A haulage-engine is in course of erection for this section. Further developments connected therewith will necessitate a drive for a considerable distance to open up a new area. Heating occurred in Bradley's and the Glasgow sections, but this appears to have been overcome.

The outlook for this mine is encouraging, and, should trade be forthcoming, a substantial increase in the output will in all probability occur.

Ironbridge Colliery (A. G. Marshall, mine-manager).—Operations in this mine have been carried on in a satisfactory manner. The headings going south and south-east in Kruger's section are opening up a large area of excellent hard coal of considerable thickness. During the year a narrow heading was driven towards the old shaft section, from which water was drawn by a borehole in the roof of the drift. The shaft section is being worked to connect with the Kruger section, for the improvement of haulage and ventilation. Pillars are being extracted from the in-by end homeward.

No. 2 section, Dundee dip (being the bottom seam and the headings going north-east): These are being pushed forward, and are proving a seam of excellent hard coal, varying from 10 ft. to 12 ft. in thickness. A series of boreholes have proved a large area of workable coal, and the prospects of this part of the mine are encouraging.

During the year the big pillar sections have been extracted to a point necessary to maintain the stability of the roadways. A stone drive is being carried towards the compressors to form a main return airway for a new ventilating-fan to replace the existing fan, situated some little distance from the power-house.

Kiwi section: Most of the output from this section is from pillars.

Deep Creek section: The average thickness of the coal is about 15 ft. or 16 ft., of good quality. During the year a small Schiele fan has been erected.

Old shaft section: Pillar-extraction has been continued, and a high percentage of round coal obtained.

The Port Arthur section, which has been standing on pillars some considerable time, is showing signs of severe crushing. Preparations are being made to remove these pillars. Good ventilation has been maintained in the various districts, while the general safety has been satisfactory.

Millerton Mine (Westport Coal Company (Limited), owners; W. Dunn, local mine-manager; Wm. McCormack, mine-manager).—The output during 1911 was 299,642 tons, an increase of 30,826 tons on that of the previous year. In five cases legal proceedings have been taken by the company against persons for breaches of special rules.

Mine Creek section: The workings to the westward have been considerably developed during the year, and have proved a large area of hard coal of excellent quality. On the eastern side of the main haulage-road, known as No. 10 and No. 4 pillars, a large amount of coal has been won by pillar-extraction exclusively. The prospects of this section are encouraging.

Mangatini section: During 1911 the south headings have been driven forward, and a good deal of prospecting has been done from these headings, with reasonable prospects of a good seam of coal being proved. The headings going to the westward are showing hard coal of good quality. A few pillars have been extracted on the north side of the west heading in the dip section.

Lower section: Preparations are being made to obtain an output from the rise side of this section. A new brake-house has been completed, and a powerful hydraulic brake installed to control the lead on the new tunnel haulage-road.

Ventilation has, generally speaking, been well maintained. The stoppings controlling the fire area are daily inspected, and are showing no signs of extra heating. Smoke is, however, discernable issuing through the broken ground on the surface. Wherever practicable the fractures in the rock are filled in to prevent the air from feeding the fire.

Westport-Stockton Coal Company's Mine (Westport-Stockton Coal Company (Limited), owners; F. H. Chamberlain, managing engineer; H. McAvoy, mine-manager).—The output for 1911 was 87,236 tons, being a decrease of 64,715 tons below that of the previous year. The bulk of the coal won has come from B and C tunnels, only a small percentage having been derived from D tunnel. In B tunnel operations have been confined to solid workings. Development on the eastern side of the main lay-by was discontinued owing to the coal proving soft, and thinning to 4 ft. Coal of good quality was found further to the south on the same side of the

haulage-road, while on the west side good coal is opening all along the barrier pillar which separates the above property from the Millerton Colliery, but it will not be long before pillar-extraction will have to be commenced, as the solid workings are nearly all completed in this section. A water drive has been constructed for use during pillar-extraction.

C tunnel: The whole of the workings in this section are in the solid, but pillar-extraction will begin shortly. The seam varies from 12 ft. to 16 ft. in thickness.

D tunnel: Operations in this tunnel were discontinued during July. The heading going south is standing in faulted ground. The workings on the west side are in soft coal 10 ft. thick.

Prospecting with a diamond drill and three hand-boring plants has been carried out on the eastern sections known as "E" and "F," comprising some 1,600 acres. It is reported that a large area of hard coal of workable thickness has been proved. Boring is still in progress. Surveys are being made to ascertain the best route for haulage from the newly developed area.

The ventilation of the various sections I have found to be satisfactory.

Puponga Colliery (Puponga Coal Company, Limited, owners; R. McEwan, mine-manager).—During the year four inspections were made, the last being on the 7th November. The output for the year shows a decrease of about 8,000 tons. This is accounted for by the very poor trade during the first four months, combined with a stoppage of eight days during the coastal shipping dispute, and seven days for repairs to boilers. With the exception of the above stoppages the mine has worked full time since the property changed hands on the 8th May. The main dip has been extended for a distance of 3 chains, and converted into a water-lodgment. The main haulage dip was deviated about 45 degrees to the eastward, on account of the faulty ground that gradually encroached from the westward. This deviation has developed good coal, and present indications point to the possibility of a valuable field being proved by further development, but no advance boring has been done. No fatal accident occurred during the year; minor accidents only numbered seven, compared with seventeen for previous year. The ventilation has been excellent, 39,550 cubic feet of air per minute being circulated on my last visit. The timbering of the roadways and working-places has been generally found satisfactory. Considerable alterations are proposed, the intention being to work the pumps electrically, so that the compressed air will be available for the coal-cutting machines. A new boiler is being installed. The last two levels, No. 14 and No. 14½, are both in excellent coal, and should the dip continue as at present the outlook is good for an increased output. There are four coal-cutting machines in operation, producing a good percentage of round coal. The machines are solely confined to the solid working. A few pillars are being extracted to the eastward of the main haulage dip.

North Cape Coal-mine, Taupata Estates (A. Forbes, permit).—This property has opened out very well, and is still showing a satisfactory face of hard coal, in thickness about 4 ft. The main heading has advanced about 12 chains. The output for 1911 was 1,700 tons. A staging has been erected on the mud-flat, so that small vessels can load when the tide is in. Good ventilation has been maintained by keeping a parallel heading well up to the main heading, and connecting them by stentons. The timbering in this mine is excellent. The output should considerably increase, as it is intended to put more men on as soon as there are better facilities for shipment.

Marble Creek Coal-mine, Collingwood (James Young, manager).—This property is under development. The seam of coal which is being opened out varies from 3 ft. to 4 ft. in thickness, and dips about 1 in 1½. Drives are set away about 30 ft. apart, and connections made to ensure ventilation. The coal at present is being stacked on the surface, awaiting completion of surface developments, when it will be refilled and sent to market. The coal is of bituminous class, and, as far as developed, is of good hard quality.

GENERAL REMARKS.

The total output from mines in the West Coast Inspection District shows a decrease of 122,339 tons compared with the output for 1910. The principal cause of this decrease was the small demand for coal during the first few months of the year. Three small mines—viz., Merrijigs, Kearns, and Enner Glen—have been closed down the whole of the year, and of the larger mines North Brunner and Paparoa have temporarily ceased operations, the former in August and the latter in October. The North Cape Coal-mine, Puponga, has been added to the productive mines, and should show a substantial increase in the output next year. No. 2 Point Elizabeth State Mine and Marble Creek Coal-mine, both under development, will possibly be winning coal before the close of 1912.

Of the larger mines, Millerton shows an increase of 30,826 tons, and North Brunner 1,862 tons. The following mines show decreases: Point Elizabeth, 23,996 tons; Blackball, 9,684 tons; Paparoa, 15,378 tons; Brunner, 8,284 tons; Denniston, 24,351 tons; Westport-Stockton, 64,715 tons; Seddonville, 2,669 tons; Puponga, 6,975 tons: total, 156,052 tons.

The returns from the smaller mines worked under permit show that about half of them slightly increased their output, whilst the others show a decrease.

Ventilation: At all the collieries under the management of a first-class certificated mine-manager the ventilation of the workings is produced by exhaust fans, which are giving satisfactory results. In the smaller mines circulation of the current of air by natural ventilation is produced by holing to the surface.

ACCIDENTS.

Thirteen accidents were reported, nine of which were fatal and four non-fatal, as follows:—

Fatal.

Point Elizabeth State Mine No. 1.—(3/3/11): T. Whyte, miner, killed by a fall of coal from roof. (3/8/11): T. McGahan, miner, killed by a fall of coal from roof. (2/9/11): G. Fullick, deputy, killed by a fall of stone when drawing timber.

Point Elizabeth State Mine No. 2.—(9/1/11): J. Dunn, miner, killed by an explosion of fire-damp.

Millerton Mine.—(7/3/11): J. H. Campbell, trucker, killed by a runaway tub on jig. (17/3/11): W. Young, miner, fall of stone from roof.

Westport-Stockton Mine.—(13/3/11): Julius Marx, rope-boy, died from effects of getting leg crushed between tubs.

Denniston Mine.—(2/5/11): M. Brosnic, miner, fall of coal from roof.

Blackball Mine.—(15/6/11): T. Auld, miner, fall of coal from roof.

Non-fatal.

Point Elizabeth State Mine No. 2—(9/1/11): P. Rodden, miner, explosion of firedamp (severe burns).

Westport-Stockton Mine.—(28/7/11): J. Auld, trucker, jammed between trucks; left wrist broken. (7/6/11): D. Livingston, miner, jammed between trucks; wrist crushed.

Blackball Mine.—(15/6/11): J. Duggan, miner, collapse of timber at face causing shock.

The total number of persons employed in and about mines under the Coal-mines Act, 1908, was 2,610, and shows a decrease compared with the year 1910 of 199. Of the total number, 1,659 were employed below ground and 951 above ground. The actual decrease in persons employed below ground is 438, while the number employed above ground shows an increase of 239. Omitting the number of persons employed in development of new mines, the coal raised per person employed underground was 755·4 tons, and the coal raised per person employed above and below ground 485·9 tons.

I have, &c.,

JAMES NEWTON,
Inspector of Mines.

The INSPECTOR OF MINES, Southern District, to the UNDER-SECRETARY, Mines Department,
Wellington.

SIR,—

Office of Inspector of Mines (Southern District), Dunedin, 14th March, 1912.

In accordance with the requirements of section 78 of the Coal-mines Act, 1908, I have the honour to present my report on the coal-mines in the Southern Mining District for the year ended 31st December, 1911.

CANTERBURY.

Broken River Coal Lease, Broken River (Crown lease; W. J. Cloudesley).—(8/7/11): It has been reported to me by the owner that operations at this mine will be vigorously prosecuted at an early date.

Springfield Colliery, Springfield (Christchurch Brick Company, owners; J. Taylor, permit, manager).—This pit is chiefly worked for production of fireclay, of which 1,563 tons were mined during the year for manufacture at the pottery works in Christchurch.

Springfield Fireclay Mine, Springfield (Christchurch Gas, Coal, and Coke Company, Limited, owners).—Some 235 tons of fireclay were produced. The mine is temporarily closed down.

Sheffield Fireclay Mine, Sheffield (J. Austin, owner).—During the year 867 tons of fireclay were mined and railed to Christchurch for manufacture at the pottery works there.

Acheron Anthracite Coal-mine, Lake Coleridge (K. Murchison).—After being discontinued for a number of years a few tons of coal were recently produced from the seam in the river-bed.

Homebush Colliery, Glentunnel (J. C. Campbell, mine-manager).—(8/11/11): Powder-magazine kept in good order; change-rooms and sanitary and bath arrangements attended to. Old main workings, No. 1 level, pillars now quite exhausted. Main seam: The old dip workings are almost closed. The crosscut put down will enable the last of the pillar ribs to be drawn. Engine seam south: The seams are found close together, there being only a small clay parting between, and making 11 ft. of coal at this place. Keep-it-Dark, or No. 3 Mine, pillars are being withdrawn. A new outlet is being laid off for the engine seam, which will furnish the bulk of output in the near future. Ventilation is good, and the requirements of the Act generally well observed. The Keystone boring-drill in the gully having proved the seam to be split, it has been removed to a solid-looking ridge, where prospecting operations are now being conducted. The pottery works for the manufacture of sanitary pipes and ware from fireclay and clays obtained on the property is an important adjunct to this colliery. Thomas Patterson, forty-eight, miner, died on the 8th September from injuries sustained by a fall of stone from the low roof to which he was setting a prop. The Coroner brought in a verdict of "Accidentally killed."

St. Helens Colliery, Whitecliffs (Crown lease; Levick and Thin; W. Thin, permit, manager).—(10/7/11): This mine is temporarily closed on account of noxious gases being given off from spontaneous fire in the dip workings, where the few remaining pillars have been abandoned. A new mine is being opened, but has not yet reached the output stage.

Woolshed Creek Colliery, Mount Somers (Crown lease; Mount Somers Coal Company; Wm. Hutchison, sub-lessee).—(13/7/11): Not being worked at present. Coal to rise in this mine being practically exhausted, will necessitate development to dip if output to be maintained. Subsequently a few tons of coal were produced towards the end of the year.

Mount Somers Colliery, Mount Somers (Mount Somers Coal Company; W. Dixon, mine-manager).—(13/7/11): Spontaneous heating in the waste of rise pillar workings necessitated a line of stoppings, which, while cutting off half the mine area and limiting the production of

pillar and head coal, has the effect of confining the heated area, and being well constructed leakage of gases is not reported or discernable. Development to dip has become imperative, and a small steam boiler and winch are being erected for that purpose. One effect of the fire is that workings are perforce withdrawn from the area held under a Crown lease.

Albury Colliery, Albury (Crown lease; Robert Riddle; G. C. Kidd, sub-lessee; permit).—Seam, 12 ft.; 8 ft. worked bord and pillar; air-shaft not secured by timber, and sludge lying at bottom. It is proposed to drive $1\frac{1}{2}$ chains, and sink a new air-shaft on the other side of the hill. Air good.

Dalgety Coal-pit, Hakataramea (New Zealand and Australian Land Company, owners).—Coal mined for station requirements.

NORTH OTAGO.

Wharekuri Coal-pit, Wharekuri (Crown license, A. Shanks).—Only a small quantity of coal produced during the year. Some prospecting is being carried on.

Awakino Coal-pit, Kurow (D. Scott).—(24/6/11): A small output only now being won.

St. Andrew's Colliery, Papakaio (Thomas Nimmo, permit, manager and owner).—(5/12/11). Mine-workings in excellent order. Places are driven to the boundary for future pillar-drawing. To the south-west a fault was found, and the stone-band thickens. A substantial ladderway is placed in third-outlet shaft. Seam, 7 ft. On the fault line the brown coal for a short distance is altered to a light coking class by natural drainage of water from the seam.

Prince Alfred Colliery, Papakaio (A. Beardmore, permit, lessee and manager).—(5/12/11): The incipient fire burning on my last visit is effectually stopped off. Mine is in good order, and the ventilation good. The fault to dip interferes considerably with proper developments.

Ngapara Colliery, Ngapara (William Nimmo, permit, owner and manager).—(5/12/11): In good working-order; ventilation good. Powder-magazine approved.

Broadleaf Coal-mine, Shag Point (George Brooke, permit, lessee, and manager).—(6/12/11): Seam 5 ft., work on a form of longwall. A band of stone in the seam provides convenient stowing. Instructed permit-holder that the brattice required extension to provide efficient ventilation where men were working.

Shag Point Colliery, Shag Point (Shag Point Coal-mining Company, lessees; C. Clasen, permit, manager).—(6/12/11): New second outlet and air-course are now connected. Seam, 3 ft., being worked on a modified long-wall system. A band of dirt affords convenient holing. Ventilation fair, and working-places fairly well timbered. A band of stone provides convenient packing. An effort is being made by the owners to reopen the branch line of railway formerly in use by the old Shag Point Coal Company.

Allandale Colliery, Shag Point (Allan McIntosh, lessee and mine-manager).—(6/12/11): Extraction of pillars from old workings continues. Ventilation good, except the low level, where men were temporarily withdrawn on account of an exudation of black-damp, due to unfavourable atmospheric conditions, and the stenton not being through. I traversed intake and return air-courses to upcast air-shaft. Timbering well attended to.

Some prospecting was carried on at Double Hill, near Waitati, during the year, and a small seam of brown coal was located, but is not yet being worked.

SOUTH OTAGO.

Fernhill Colliery, Abbotsford (James Gray, owner and manager).—(27/11/11): Air good. Mine-manager's report-book kept. The Dunedin City Corporation's Silverstream water-race, originally an open ditch, which traverses the coalfield above the coal-workings, is now being piped for some distance with 30 in. riveted steel flange pipes. Several settlements to the surface have occurred in the vicinity of the race, where coal had been previously mined. Some smell is discernible from stoppings built to old workings on account of underground spontaneous heating in the waste.

Freeman's Colliery, Abbotsford (Freeman's Coal Company, owners; A. S. Gillanders, mine-manager).—(27/11/11): I entered this mine by workmen's travelling-way, thence proceeded to all working-faces and other places underground. Places are mainly driven narrow for future pillar-workings. Nos. 7 and 8 dip sections provide output, No. 6 dip is stopped temporarily, and No. 5 dip section is closed altogether, the coal being withdrawn. No. 7 dip, lower lift, is now practically worked out; a creep is crushing pillars, and the floor is rising badly. The final extraction is taking place, and only easily got coal is being taken. The fan, at 380 revolutions, is circulating 22,500 cubic feet of air per minute. The brown-coal producer-gas plant for the fan-power is working satisfactorily, and requires a minimum of attention. Rules posted. Report-book and plan kept. James R. Walker, miner, was killed on the 20th July by a fall of coal and stone from the roof. The place was narrow, but a smooth back to a rough parting in the roof was subsequently visible. The roof had been previously examined; timber was also used. This was the first serious accident in this mine during a period exceeding forty years.

Green Island Colliery, Green Island (Green Island Minerals Company, owners; T. Barclay, jun., mine-manager).—(2/5/11): The roof in this mine is bad, and great difficulty is experienced in maintaining the places after they are driven a little distance. An inflow of water from a fault on the right-hand side of the dip has increased the hours of pumping. Every care seems to be taken for the safety of the employees.

Jubilee Colliery, Saddle Hill (Jubilee Coal Company, owners; T. Barclay, mine-manager).—(28/11/11): Still retreating on pillars and head coal. That part of the mine towards the dip south-eastward is now practically exhausted, and, owing to faulted nature of strata, and the

bad roof, it has fallen heavily to the edge of the workings. As the rise pillars are drawn in the line the roof breaks well, and the work continues to be safely conducted. Falls in which heat is detected are surrounded with substantial ash-stoppings. No. 3 air-shaft, being overtaken by the waste, is now abandoned, and No. 2 shaft is restored for ventilation satisfactorily. The air is well conducted around the working-faces by brattice. A new drive is being put in to reduce haulage to the main line of railway.

Saddle Hill No. 1 Colliery, Saddle Hill (Christie Bros., owners, W. W. Ogilvie, mine-manager).—(28/11/11): Extraction of pillar and head coal continues; work safely conducted, and ventilation fair. Brick and sand stoppings on the line of waste effectively close the heated area. A brick furnace is being built at the new upcast air-shaft.

Saddle Hill No. 2 Colliery, Saddle Hill (Christie Bros., owners; Robert Hill, mine-manager).—(28/11/11): The dip area is blocked off meanwhile on account of incipient spontaneous fires, and the creep is causing inconvenience, making frequent brushing of roads and airways necessary. Brattice is carried close to working-faces. I traversed the air-courses, which were low in places, but there exists a good current of air. Fan ventilation is satisfactory, without which the mine would have been practically unworkable owing to the large quantities of black-damp given off from the waste, which is conducted direct to the upcast air-shaft.

Lauriston Colliery, Brighton (Crown lands; James R. Walker, permit, lessee and manager).—(27/4/11): Mine in good working-order.

Brighton Colliery, Brighton (D. J. McColl; A. McColl, permit, manager).—Old mine finished, and a new drive has proved coal at a point to the northward of old workings. Communication with the latter will effect free water drainage. Warned manager against an accumulation of water or damp which might be present in the older workings.

Ferndale Coal-pit, Taieri Beach (S. H. Fairbairn).—A small quantity of coal was mined for local use.

Waronui Colliery, Milton (Bruce Railway and Coal Company, owners; James Carruthers, mine-manager).—(19/10/11): The new dip seam having turned out well, systematic development is now being carried out. Intake air-ventilation is conducted to the foot of the dip, and from thence it is split, being returned around the working-faces direct, and from thence to the fan-drift. Places are driven narrow in the first sections opened, the intention being to work out comparatively small blocks on a panel system and a maximum extraction in the first working, then to seal off. The mine is in good working-order. Tail-rope system of haulage is acting satisfactorily.

McGill's Coal-mine, Milton (J. J. Cooper, permit, lessee and manager).—(19/10/11): On the occasion of my visit of inspection I found the gate to the mine locked, and no person on the premises. Alexander McLuckie, miner, was killed on the 4th March by a fall of coal from roof, where a diagonal greasy back was subsequently seen on the side, with a rough parting on the top. The roof had been previously examined. There was no other fall from roof in the mine, which was in good order, and timber was available for use if considered necessary.

Good's Coal-mine, Johnston, Waitakuna (James Brown, owner; William Good, permit, lessee).—A small opening at Johnston for the supply of local requirements.

Lakeside Coal-pit, Lakeside, Lovell's Flat (G. E. Royds).—A small quantity of coal is here mined for private use.

Taratu Colliery, Taratu (Sargood and Cheeseman, owners; Thomas Shore, mine-manager).—(20/10/11): The shaft-working is discontinued, and the water has risen to within 100 ft. of surface. The coal-output is now obtained from pillar and head coal in earlier surface-workings. Ventilation is good, and explosives are carefully handled; one place in which a missfire shot had occurred was properly fenced. Two prospecting boreholes are being put down to test other parts of the field for coal of better quality.

Hawthorn Den Coal-mine, Kaitangata (T. Cunningham, permit, lessee).—(20/12/11): A small mine, worked for the supply of local farming requirements.

Longridge Coal-mine, Kaitangata (Nesbit Mackie, permit).—(22/11/11): Driving parallel levels in an upper seam (4 ft.) of the Kaitangata series. Ventilation good, and workings in fair order.

Kaitangata Colliery, Kaitangata (New Zealand Coal and Oil Company (Limited), owners; W. Carson, manager).—During the year Nos. 1 and 2, the winch heading sections, north side district, have been cut off, consequently the general air-circulation is much relieved. Owing to the roof and side pressure, the air-course areas became unduly constricted. Development in the solid to the south and eastward continues. No. 21 dip is driven several hundred feet in the solid in a westerly direction, and tends to prove continuity of the coal-deposits now exposed in the faces. There is probably a larger tonnage of coal undisturbed by faulting now in sight than at any former period in the history of the colliery. The low dip angles at which the seam now occurs are advantageous, requiring only a minimum supply of compressed air for dip haulage and pumping, an important factor considering that compressed-air transmission is now conducted up to fully one mile from its base at the mine-mouth. The method adopted for pillar and head coal extraction by the panel or sectional system continues, by which means the highest tonnage output per acre is maintained with a minimum accident rate, while workmen receive improved ventilation at lower temperature than formerly during any pillaring system hitherto practised. The sections are likewise opened and worked in a manner favouring almost complete closure by ash fire-stoppings, so that drawbacks from spontaneous ignition (to which this mine is peculiarly liable) are reduced to a minimum. The register of daily air-measurements shows that an average of 30,000 cubic feet per minute is maintained at the intake. Equal quantities of fresh air are conducted from the main split at the cabin underground for distribution around either side of the mine-workings, to meet again at the return airway to the upcast fan-shaft. The fan is

run continuously; three shifts of workmen are constantly engaged—two shifts for output and night shift on repairs—as owing to liability to spontaneous ignition the mine is not considered safe left unattended. A number of samples of mine-air were collected as occasion required in different parts of the mine for determination of mine-gases by the Dominion Analyst, and a series of hygrometer readings were also taken, results of both of which were utilised for the betterment of working conditions. Lamp-station notices are posted near underground cabin No. 1, beyond which point only safety-lamps are allowed, and the provisions of General Rule 46 are applied so far as practicable. Systematic searches of persons for breaches of the latter part of the rule are not in vogue, but workmen and others are warned by notices posted not to have prohibited combustible and other articles in their possession, and are also warned by the question being asked from time to time by the mine officials. Permanent fire-stoppings on main roadways continue in good condition. Water-supply pipes are laid for suppression of incipient spontaneous fires in any part of the workings. The telephone system is in use underground, but electricity for power or lighting purposes has not been introduced below. Fan and second outlet air-shaft alterations and repairs have been carried out, rendering the winding plant effective, which, being used bi-weekly, is kept in good order for cases of emergency if required. The explosives magazine on the surface has been approved, the surface and loading-bank arrangements are in working order, and the mine-manager's and other mine officials' report-books are duly kept. The rules are posted, and copies of the mine-plans are returned quarterly. On the 21st August a slight dull explosion of firedamp occurred, presumably ignited at an underground fire produced in a level driven off No. 5 dip, and which had been stopped at a "roll" giving off gas. When the explosion happened stoppings were being put in at the intake and outlet. No one was injured and very slight damage was done. The mine-manager, assistant manager, underviewer, and two other officials were engaged at the work. By the extension of Mundy's dip, No. 5 dip, the air-circulation became direct, and symptoms of firedamp disappeared. Two fatalities occurred during the year, in each case, unfortunately, within a minute or two of work being suspended. John McGhie, miner, was killed on the 15th May by a fall of coal from the side and roof, and Joseph Carson met his death by a fall of stone from roof while repairing timber in the main roadway. Mr. Carson was the holder of a mine-manager's certificate of the second class. The prospecting drive, referred to in last annual report, dipping at 1 in 3, met the main seam south at 1,023 ft. from surface. A main haulage-way, to be known as No. 2 mine, is being driven, 10 ft. 6 in. by 6 ft. 6 in. in the clear, and is now down 650 ft., or half-way, at a dip of 1 in 5. The former drive will be utilized for a travelling-way and return airway. A Sirocco fan to be electrically driven is being obtained, and endless-rope haulage will be installed for delivery of output to the surface screens and loading-bank at the No. 1 mine.

Castle Hill Colliery, Kaitangata (New Zealand Coal and Oil Company (Limited), owners; W. Carson, mine-manager).—(23/11/11): No. 7 dip section and return airways and working-places in good order. Ventilation good. Inside pillar waste now being stopped off. Jordan's seam working-places in good order. A pair of levels are driven northward, and stentons being driven at intervals. Ventilation good. I traversed the intake and return airways to furnace-shaft; ventilation, 15,000 cubic feet per minute; thermometer—return air 70½° dry, 68½° wet bulb. The man-hoisting apparatus at the second outlet shaft appeared to be in working-order, as reported by the engineer, who makes periodical examinations and tests of the lift.

Benhar Colliery, Stirling (P. McSkimming and Sons, owners; James Walls, permit, manager).—(22/11/11): The present workings are on the western side of the dip towards the outcrop. The air is good; blasting-powder is carefully handled. An air-shaft to the rise is now required, and will receive attention on receipt of plan, a survey having recently been made. Seam, 25 ft.; places worked, 12 ft. wide by 8 ft. high.

Mount Wallace Coal-mine, Stirling (William Coulter, jun., lessee).—Mine reopened towards the end of the year, and a few tons taken out.

Mainholm Coal-mine, Waipahi (D. Dickison, owner; W. Lischner, permit, manager).—Open-cast pit, from which 2,270 tons of lignite were produced during the year.

Acton Adams Coal-mine, Clydevale (A. Acton Adams, owner).—A few tons taken out for station requirements.

CENTRAL OTAGO.

Coal Creek Collieries, Coal Creek Flat (Crown lease; Barber and Shaw; J. Barber, mine-manager).—(15/4/11): The water introduced for flooding purposes has been drained off, and heavy clay stoppings erected against the fire area. Opencast work is still being carried out, but the quantity of heavy stripping renders work very laborious. A prospecting-shaft further down the gully proved a coal-seam of average quality, but owing to water in the shaft the thickness of coal was not ascertained.

McPherson's Coal-mine, Coal Creek Flat (Crown lease; McPherson Bros.; R. McPherson, permit, manager).—(15/4/11): The level drives are still being made, the dip working not yet being undertaken. Several soft patches occur in the seam, but as yet there are no falls, and as all dross is removed there is no present indication of that heating to which this seam appears to be particularly liable. The seam is generally strong, and a minimum of timber is required. (14/12/11): Coal is being won mostly from the opencast; most underground places are driven across the coal-seam to clay; the coal apparently dips underfoot. Indications of spontaneous heating in bottom level section were observed, and immediately dealt with.

Perseverance Coal-mine, Coal Creek Flat (Crown lease; James Craig; S. E. P. Vernon, permit, manager).—(15/4/11): The dip drift is extended, and a new low level has been turned westerly. Ventilation is obtained by driving stentons to the footwall, thereby connecting with the level above. Working-places are in good order. (14/12/11): Solid work in bottom level; ventilation good; mine in good order.

Alexandra Colliery, Alexandra South (Crown lease; Mathias Bros. and Co.; D. Mathias, permit, manager).—(13/12/11): Six men underground. Ventilation good. The output is obtained from pillar-extraction. An error having been discovered in the relative positions of the mine-workings and surface on the plan, a chain or so more ground can be taken out at the bottom of the dip without endangering the mine and the overhead water-race.

New Alexandra Coal Company's Colliery, Alexandra South (Crown lease; New Alexandra Coal Company; James Pollock, mine-manager).—(13/12/11): The old workings are standing firmly, the water being up to the sump-level. The brick dams are apparently doing their duty, owing to which, and by a rearrangement of the pumping plant, the hours of pumping are reduced by forty-two weekly, thus effecting a good saving in fuel and charges. Working-places are being extended in the easterly part of the lease in solid coal of good average quality and thickness, as proved by the boreholes in the roof, which are regularly put up at intervals of 20 ft. in headings and 30 ft. in all levels or working-bords. The necessary bars required at the stage-landing at pit-bottom should be kept in place. The second outlet for airway and ladderway is in excellent condition. Rules posted; report-books and plan kept. A new roof break occurred on the 29th December near the bottom of the upcast air-shaft. The break cannot be reached or seen, but a quantity of clean gravel has come therefrom, and is giving 20,000 gallons of extra water per hour. Five cement dams are being put in, with the object of holding the water back. Coal sides, roof, and floor being fairly solid, success is anticipated. A satisfactory feature is that the first proper break in the roof in the history of the pit—some twelve years—has occurred, and the result shows that a sudden flooding of the workings from overhead strata is unlikely to happen.

Welshman's Gully Coal-pit, Cambrian (Crown lease; Mrs McGuckin; J. McGuckin, manager).—An opencast pit. Output considerably reduced during later years.

Laudervale Coal-pit, Cambrian (Robert Jones).—Opencast pit, from which an ordinary output is maintained.

St. Bathans's Coal-pit, St. Bathans (James Enright).—An opencast pit, from which a small output is being obtained.

Beck's Idaburn Coal-pit, Oturehua (Crown lease; Mrs. M. Beck; W. Beck, permit, manager).—Opencast pit. Usually kept in good working-order.

White's Idaburn Coal-pit, Oturehua (Crown lease; J. White, permit, lessee and manager).—Opencast. Water drainage rather troublesome.

Oturehua Coal-pit, Oturehua (R. Thomas).—Opencast pit. Shallow working.

Gimmerburn Coal-pit, Gimmerburn (C. Dougherty).—Opencast pit, worked in a small way for local use.

Dillon's Coal-pit, Blackstone Hill (J. Dillon).—Small quantity mined for private use.

The Gold and Scheelite Proprietary Coal-mine, Macraes Flat (Gold and Scheelite Proprietary Company, owners).—(19/5/11): An opencast pit, worked for supply of steaming-coal to the scheelite-mine.

Clyde Collieries, Clyde (Crown lease; Vercoe and Co.; G. F. Turner, mine-manager).—(18/8/11): When I visited the mine a recent thunderstorm had caused considerable inconvenience by filling the lower levels with silt and water, which poured down an old drive in the dry creek-bed; otherwise the few working-places were in good order. All fire-stoppings in against the old pillared area except one were in good order, and no leakage of escaping damp could be detected from any of them; but I found one of the stoppings leaking, and directed the manager's attention to the necessity of keeping them in good order.

Cromwell and Bannockburn Collieries, Bannockburn (Crown lease; Cromwell and Bannockburn Collieries Company (Limited); John Hodson, mine-manager).—(22/8/11): The new Shepherd's Creek Mine, between Thom's and Parcell's Gullies, is turning out well. The coal is of fair thickness, and clean. Drives are being taken narrow at first working. This system, it is believed, will result in a higher percentage of pillar coal being won eventually. Until the dip is driven to the boundary, and a lodgment made, a few hours' pumping on Sundays will be necessary to prevent the water rising and damaging the mine. Ventilation good. The second outlet was in a good state of repair. In December a fresh inflow of sand and water had occurred in the lower level. A temporary stopping drawn across easily stopped the influx.

Cairnmuir Colliery, Bannockburn (Crown lease; Cairnmuir Coal Company; A. W. Whittleston, mine-manager).—(22/8/11): The old mine is nearly finished. Pillars under Bannockburn Creek are being left in to prevent flooding. The seam in the new drive across the fault is very steep, but the coal is strong and of good quality. Levels are being broken away off the dip at the usual intervals.

Cardrona Colliery, Cardrona (Crown lease; R. McDougall, permit, lessee and manager).—(7/11/11): Opencast; four men. Rules require posting. Removing a large amount of overburden fallen during the winter. The seam appears to be about 16 ft. thick, including numerous bands of stone aggregating about 9 ft. The coal-output will be small for some time.

Gibbston Colliery, Gibbston (Crown lease; J. Duncan, mine-manager).—A fair output continues to be maintained from this mine, which is situated at an altitude of 3,350 ft. above sea-level. The coal is lowered down the mountain-face on a single line of tramway.

Nevis Colliery, Lower Nevis (Crown lands; R. Toms, permit).—(11/5/11): Drive extends 30 ft. in length. A working mate to the one man employed is necessary, and the provisions of the Coal-mines Act should be carried out regarding examination with a safety-lamp before starting work.

Ryder's Colliery, Lower Nevis (Crown lands; R. Toms, permit).—(11/5/11): Pillaring and dropping head coal. Report-book not up to date. Safety-lamp out of repair, and requires replacing.

Nevis Crossing Colliery, Nevis (Crown lands; Robert Ritchie, permit).—(11/5/11): Face, 15 ft. high. Stripping top burden off by water, and afterwards lifting coal.

SOUTHLAND.

Pukerau Coal-mine, Pukerau (J. Hamilton, permit, manager).—(16/11/11): New crosscut drive to dip 1 in 4; seam, 10 ft. Worked 13 ft. by 9 ft. high. A stenton nearly through at dip face will allow direct air-circulation.

Nelson's Coal-mine, Pukerau (J. H. Nelson, permit).—(16/11/11): Work here not vigorous. The coal lies to the dip, and water is troublesome. The windmill pump is not effective.

Heffernan's Coal-mine, East Gore (G. B. Paterson and Co.; Joseph Hoffman, permit).—(13/10/11): Levels driven to right-hand side of dip. Seam, 20 ft. thick, of which about 15 ft. is worked by the bord-and-pillar system.

Green's Coal-mine, Gore (Thomas Green, owner; W. C. Johnston, permit).—(11/10/11): The fan ventilation is good. Dip drive is extended, and a new lift of east and west levels is being driven in the usual way. Daily report-book and plan kept.

Bushy Park Coal-pit, Croydon, Gore (J. and R. Tait, owners; George Flett, permit, manager).—(11/10/11): Stripping, 2 ft. to 6 ft., is kept well back. Report-book required to be kept; copy of general rules should be posted. The old mine is completely abandoned. The shale-seam is still smouldering, but no damage is being done.

Burnwell Coal-pit, Chatton (D. Cameron, permit).—(13/10/11): Not at work on the occasion of my visit, and apparently not much doing. In good working-order.

Chatton Coal-pit, Chatton (Ramsay Bros., lessees; G. Ramsay, permit).—(13/10/11): In good working-order. A connection having been made with Cameron's pit adjoining, ventilation is improved, a straight underground connection being advantageous to both mines.

Pacey's Freehold Coal-pit, Chatton (Ramsay Bros., lessees; Robert Burgess, permit).—(13/10/11): Seam, 20 ft. to 25 ft., of which 15 ft. is worked bord and pillar. Ventilation is good. Vertical clay backs, more or less open, occur in the seam, but are not dangerous in working. The powder-magazine is in good order.

Springfield Coal-pit, Waikaka Valley (R. Mee Chang, permit, lessee).—(16/11/11): Seam, 17 ft.; formerly worked opencast, but now driving underground. I condemned an iron tank used as a powder-magazine, it being perished and defective. A new 400-gallon iron tank is being obtained for storage of blasting-powder.

Willoubank Colliery, Waikaka Valley (G. B. Paterson, owner; E. Charles, mine-manager).—(12/10/11): The ventilation is good; the air is conducted around working-faces. The faults met with on either hand are now converging. A fresh dip drive is laid off to prove the field. Pillar-drawing on the northern fault boundary is well conducted, a good roof-break having been obtained.

Glenlee Coal-pit, Waikaka Valley (D. T. McGill, permit).—(12/10/11): A good area stripped in advance of working-face.

Edge's Coal-pit, Waikaka Valley (A. A. Edge, lessee; W. McIvor, permit, sublessee).—(12/10/11): In good working-order.

Landslip Coal-mine, Waikaia (William Kyle, permit, lessee).—(27/10/11): Workings are now conducted on the seam, where it assumes a high inclination. Levels are driven and bords taken out to the walls on either side. The ground is bad holding, and a large proportion of the seam has to be kept in for support.

Rossvale Coal-mine, Waikaia (Craig and Wilkes, lessees; T. Knuckey, permit).—(27/10/11): The ventilation is satisfactory, and the mine in good working-order.

Waikaia Coal-mine, Waikaia (Alexander Cain, lessee; J. McLelland, mine-manager).—(27/10/11): The heating on the north side of the dip had slightly increased, so that close attention to the stoppings was necessary where ashes and clay were tamped and where leakages of black-damp occurred. A general creep has affected the workings where the roof and floor are meeting rapidly. A new second outlet air and travelling way is now required, and was promised at an early date.

Muddy Terrace Coal-mine, Waikaia (Knuckey and Junker, lessees; F. A. Junker, permit).—(27/10/11): Withdrawing pillars; one man at work, underground. This property is being prospected by an Invercargill syndicate to prove the shale. Six bores have been put through the shale, and 35 acres proved. The deepest hole, 62 ft., contained 14 ft. of shale; other holes have proved seams of from 9 ft. to 19 ft. of shale.

Argyle Coal-pit, Glenary, Waikaia (C. H. Hutton, permit).—Opencast pit, worked for local requirements.

Anderson's Coal-pit, Wendon (P. Radford).—A small output was derived from the highly inclined seam during the early part of the year.

Waimea Coal-pit, Kingston Crossing (Johnstone and Shore, lessees; J. E. Johnstone, permit).—(27/11/11): Opencast work has been suspended at this mine, and underground driving is being carried out. The workings are in good order. Seam, 6 ft.

Lynch's Coal-pit, Kingston Crossing (Mason and Sons, lessees; E. A. Mason, permit).—(27/11/11): Seam, 6 ft. The workings are in good order.

Princhester Creek (late Beer's) Coal-pit, The Key (W. O. Kempthorne, lessee).—The present lessee is making a good effort to supply coal for local requirements.

Mataura Collieries, Mataura (Mataura Collieries (Limited): James Broome, mine-manager).—(14/10/11): The ventilation is good, and powder-smoke is removed thereby in reasonable time. The workings are in good order. New concrete powder-magazine has been erected.

Mataura Lignite Pits, Mataura (Beattie, Coster, and Co., owners; W. Coster, permit, manager).—(14/10/11): The workings are opencast. The stripping is kept well in advance of the working coal-face. Powder-magazine approved.

Boghead Coal-mine, Mataura (C. P. Sleeman and Co., lessees; C. P. Sleeman, jun., permit).—(14/10/11): Opencast work, stripping is kept well ahead. The working-face is in good order.

Waimumu Coal-mine, Waimumu (G. W. Williams, owner).—(11/10/11): Now worked as an opencast pit, only one man at work.

Clarke's Coal-mine, Wyndham (Samuel Clarke, owner; George W. Clarke, permit).—Opencast pit. Gravel stripping kept well ahead of working-face.

Ota Creek Coal-mine, Ota Creek (E. Genge, permit).—Shallow opencast working.

Robin Hood Coal-mine, Pine Bush (Mrs. Couser, owner; W. Couser, permit).—Opencast pit, worked for local sales.

Graham's Coal-mine, Fairfax (P. S. Graham).—Shallow underground working on a small scale.

Ardlowie Coal-mine, Fairfax (E. Poole).—Opencast working, for lignite used locally.

Nightcaps Colliery, Nightcaps (Nightcaps Coal Company (Limited), owners; W. Barclay, mine-manager).—(13/12/11): A substantial iron change-house has been erected near the mine-mouth with two baths in separate compartments, hot and cold water laid on. No. 1 mine: Fire-stoppings are constructed on the line of waste. The temperature of air has been lowered to 59° in the warmest place, due to substitution of compressed air for steam at the haulage-winch-pumps and fan-engine. No. 3 dip has been driven 14 chains in the solid. The working-places are not yet developed. No. 4 dip recently set away is 200 ft. to the face. All underground workings are driven in the upper (18 ft.) seam. Nos. 2 and 3 seams are reserved for future working. No. 2 mine: Pillaring and extraction are being carried out in the middle and upper seams. A prospecting-shaft has been sunk in the floor; at 60 ft. this penetrated a 6 ft. seam of coal. A little heat is noticeable in places on the fringe of the waste. Substantial stoppings are inserted, confining the noxious gases to the gob. A large supply of mining-timber is available in the mine. The requirements of the Act are generally well observed. No serious accidents occurred during the year.

Wairaki Coal-pit, Nightcaps (L. Dillon, permit).—The new drive is being carried to the dip, and levels are being opened up. The seam is 7 ft. thick. An upthrow fault was proved at the face of the level. Ventilation is good.

H.B. Coal-mine, Nightcaps (R. McDowell, permit).—(12/12/11): Work is suspended, the coal-seam being now practically exhausted.

Beattie and Tinker's Coal-mine, Nightcaps.—A lignite license recently granted. No output has yet been produced.

New Brighton Coal-mine, Nightcaps (McKenzie and Co., lessees; J. McKenzie, permit).—(13/12/11): A magazine has been approved for the storage of blasting-powder. Headings have been driven to the boundary preparatory to return on pillars and head coal. The seam is 12 ft. to 20 ft. in thickness; the ventilation is good.

Wairio Coal-mine, Nightcaps (Wairio Coal Company, owners; M. McKenzie, permit).—(13/12/11): Preparations are being made for increasing the output.

Beaumont Coal-mine, Nightcaps (Moss Bros., lessees; T. Moss, permit).—(13/12/11).—An opencast pit on Ohai Stream, which is fulfilling district requirements.

Mount Linton Coal-mine, Nightcaps (William Smith).—(13/12/11): Opencast pit sunk on a highly inclined seam 20 ft. in thickness. A steam-driven centrifugal pump keeps workings unwatered. Stripping is well ahead of the working-face.

Bush Siding Coal-pit, Seaward Bush (I. W. Raymond, owner; F. R. Bowden, permit).—A reduced output is now being obtained from this opencast pit.

Hogan's Lignite License, Orepuki (C. Hogan).—The license has been renewed.

Orepuki.—Contrary to expectations, work was not renewed here during the year. The old mine is filled with water, and the surface plant is kept in good order.

REMARKS.

The condition of all horses employed under and above ground can only be described as good, and they appear to receive proper treatment and consideration. At Kaitangata Mine about thirty-five horses and ponies are usually employed.

The substitution of compressed air in lieu of steam for pumping and dip haulage at Nightcaps Colliery has had a marked effect in reducing the temperature, 59° Fahr. being the highest record in the warmest working-places within the mine.

ACCIDENTS.

A total of 101 separate accidents, affecting as many persons, were reported and inquired into during the year. Of these, five resulted fatally, three of the victims being miners killed by falls of head coal from unseen smooth partings in roof; the two others were roadsmen, fatally injured by falls of stone while setting timber to roof in roadways. Of the remainder, two might be termed serious accidents, and the balance were mainly reported in connection with claims on the Coal-miners' Relief Fund, four of which were subsequently disallowed. Full reports on the several serious accidents were subsequently submitted to you.

Fatal.

4th March, 1911.—McGillp's Coal-mine, Milton: Alexander McLuckie, thirty-nine, miner.—Killed by fall of coal from roof while dropping head coal.

15th May, 1911.—Kaitangata Colliery: John McGhie, twenty-nine, miner.—Killed by a fall of coal from side and low roof in pillar-workings.

20th July, 1911.—Freeman's Colliery: James R. Walker, thirty-two, miner.—Killed by a fall of coal and roof in his working-place. In connection with this fatal accident, Mr. A. S. Gillanders, mine-manager, was proceeded against, and pleaded guilty, and was fined £2 and

costs £3 10s. for non-compliance with special rule No. 17 under the Coal-mines Act of 1908, in that he did not see that the underviewer or his deputy remained underground while two men were on shift during the evening of 20th July, being the occasion when James R. Walker was killed by a fall of roof.

17th August, 1911.—Kaitangata Colliery: Joseph Carson, twenty-five, roadsman.—Fatally injured by a fall of stone from roof while timbering roadway.

7th September, 1911.—Homebush Colliery: Thomas Patterson, forty-eight, miner.—Fatally injured by a fall of stone from low roof on roadway while setting timber thereto.

Non-fatal.

Kaitangata Colliery (7/7/11): John Hale, roadsman, sustained a fractured leg by being caught between a box and prop owing to the sprag coming out on the heading.

Kaitangata Colliery (21/7/11): William Christian, roadsman, sustained a fractured rib and contusion of back owing to being struck by a piece of stone from roof while repairing timber.

COAL-MINERS' RELIEF FUND.

Contributions by coal-owners to the Coal-miners' Relief Fund amounted to £889 11s. 1d., while payments from the fund aggregating £604 1s. 3d. have been recommended on account of accidents which occurred during the year in and about coal-mines in the district.

I have, &c.,

E. R. GREEN,

Inspector of Mines.

ANNEXURE B.

QUESTIONS ASKED AT THE 1912 MINE-MANAGERS' EXAMINATION FOR FIRST-CLASS CERTIFICATES OF COMPETENCY.

SUBJECT 1.—*Prospecting, Boring, Shaft-sinking, and Opening out a Colliery.*

1. Describe how you would proceed to examine and test a coalfield prior to spending capital on development; also describe appliances for boring with which you may have had experience, and the conditions under which you would use same.
2. How would you secure a main trucking-road with heavy side pressure and soft roof, the road to be 8 ft. wide by 6 ft. high in the clear? Give sketch of sets and sizes of material you would use.
3. What are the chief points to be considered before deciding a system of working (bord-and-pillar, longwall, or any modifications of these) a seam of coal?
4. Describe fully the plant necessary for the sinking of shafts to considerable depths, and the special appliances and means usually adopted to ensure the safety of men employed at such work.

SUBJECT 2.—*Working Coal and Timbering underground.*

1. Give sketches of (a) bord-and-pillar on the panel system, (b) general arrangement of long-wall workings, with figured dimensions of size of pillars, width of bords and trucking-roads, also the distance between the gates in longwall (assume normal conditions).
2. Enumerate the conditions which govern the size of pillars.
3. Show by sketches how you would proceed in extracting pillars in a steeply inclined seam, and describe special means (if any) which you would adopt to avoid accidents.
4. What rules would you lay down with the object of preventing accidents from falls of roof and sides, also from shot-firing?

SUBJECT 3.—*Mine-gases, Spontaneous Combustion, and Ventilation.*

1. Prepare a chart for fire-damp, white-damp, and black-damp under the following headings: Proper name; Chemical formula; Specific gravity; Character; Effect upon man; Explosive proportions; Caused by; Test for; Where found.
2. In the general body of the air in a working-place what percentage of CH_4 would you consider sufficiently dangerous to warrant the withdrawal of the men (a) where safety-lamps are used? (b) where naked lights are used? Also state the minimum percentage of oxygen and the maximum percentage of CO_2 in which miners should be permitted to work.
3. How and where would you measure the quantity and take samples of the quality of air in mine-workings which were reported to be inadequately ventilated? What is the minimum velocity which an anemometer will correctly register?
4. A current of 25,000 cubic feet of air is split into three airways, A, B, and C, having the following dimensions: A—Area 6 ft. by 9 ft., length 700 yards; B—Area 6 ft. by 10 ft., length 800 yards; C—Area 4 ft. by 10 ft., length 300 yards. How will the quantity divide itself amongst these splits if no regulators are used and all splits are subject to a common pressure?
5. If 2 horse-power produces 10,000 cubic feet of air per minute in an airway 10 ft. by 10 ft., what horse-power will be required to produce the same volume of air in an airway 10 ft. by 7·5 ft.? (Assume both airways to have the same length.)

6. Ventilate the accompanying plan, having due regard to the requirements of haulage. Use the conventional reference signs to indicate your method.

SUBJECT 4.—Dealing with Old Workings and other Sources of Danger.

1. Describe how you would build a dam in a drive against a possible static head of 1,000 ft. It is found that the only place in the drive where it is possible to build the dam is in faulted and broken ground near a dyke: what special precautions would you use in such case, and how would you provide for the safety of your men during the building of the dam and after its completion? Give sketches.

2. In approaching old and extensive coal-workings containing 50 fathoms of water, for safety what should be—

- (a.) The maximum width of the drive;
- (b.) The minimum length and largest diameter of boreholes;
- (c.) The angle of and distance apart of flank-holes;
- (d.) The quantity discharged in gallons per minute from such borehole when the water is tapped, if—

$$\left. \begin{array}{l} h = \text{static head} \\ d = \text{diameter of hole} \\ l = \text{length of hole} \end{array} \right\} \text{in feet;}$$

$$v = \text{velocity of water at the point of issue (in feet per minute)}$$

$$= 2837.5 \sqrt{\frac{h d}{l}}$$

3. To prevent accidents from falls—

- (a.) To what height should the first lifts during high-pillar extraction be limited?
- (b.) What should be the maximum width of bords and cut-throughs respectively, both when breaking away and subsequently?

SUBJECT 5.—Steam Boilers and Engines used about Mines.

1. Give a sketch of the kind of steam-boiler you consider suitable for colliery-work. Show fittings in respective positions on boiler, and give the name of each. Also state the requirements of the Coal-mines Act regarding boilers.

2. The area of the piston of a steam-engine is 450 in.; the mean effective pressure is 45 lb. per square inch; length of stroke, 60 in.; speed, 40 strokes per minute: state the H.P.

3. Find the working-pressure of a steam-boiler 6 ft. diameter made of half-inch plate (steel), double-riveted.

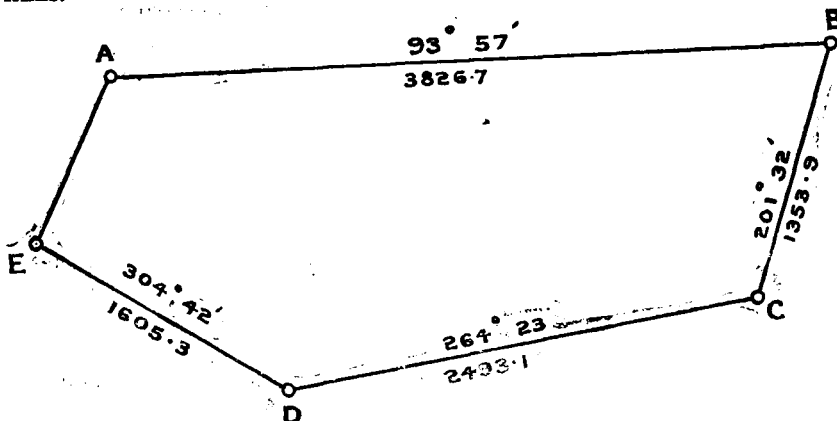
4. Assume the weight of cage and full tubs of coal, and find size of rope required to raise the load from a depth of 800 ft.

SUBJECT 7.—Geology, Surveying, and making Plans.

1. Describe the methods by which you would make a survey so as to ascertain the approximate amount of coal in a lease of 1,000 acres, situated in mountainous country (2,000 ft. to 3,500 ft. high), and showing numerous coal-outcrops.

2. In going up a gentle slope from east to west on a New Zealand coalfield the following data, among others, are obtained: At 1 chain, 6 ft. of coal dipping 10° to the west outcrops; at 3 chains is a strong, well-marked fault dipping at 75° to the east; at $3\frac{1}{2}$ chains is $6\frac{1}{2}$ ft. of coal dipping 9° to the west; at 12 chains is 7 ft. of coal dipping 25° to the east; at 21 chains is $7\frac{1}{4}$ ft. of coal dipping 8° to the west. In each case the rocks above and below the various coal-outcrops are much alike; the roof being coarse sandstone or grit, and the floor shale. Make a rough sketch embodying these data, and state how many coal-seams are probably present.

3. The underground workings of a mine are given in the figure below: compute and tabulate the co-ordinates of the stations, giving the total distances on the meridian and perpendicular from Station A; and give the bearing and distance between Stations E and A. The distances are given in links.



4. Compute the area in acres, &c., of the above figure.

5. The angles of elevation from Station D, allowing for height of instrument and signals, are $30^\circ 43'$ to Station C and $20^\circ 15'$ to Station E: give the difference of height between Stations C and E in feet.

6. How would you ascertain if there are any local variations affecting the needle of your compass?

7. Required the contents in cubic yards of a shaft 8 ft. in diameter and 15 ft. deep.

SUBJECT 6.—Mine Drainage and Haulage, and Appliances for same.

1. What arrangements are necessary for renewing the wearing parts of mine-pumps and generally for keeping the shaft-work in order?

2. Give sketches showing—(a) A lifting-set or bucket pump; (b) forcing or plunger pump, and give sizes of either kind you would adopt to pump 500 gallons a minute from a depth of 600 ft.

3. Having to haul 600 tons a day of eight hours from a depth of 500 ft. up an incline plane dipping at the rate of 1 in 3, show by sketches the arrangements you would adopt, and state power of engines.

4. Having to wind 800 tons per shift of eight hours from a depth of 1,000 ft., give weight of cage-tubs, coal, and rope, and show by calculation size of engine you would use, with size of drum and pulleys.

SUBJECT 8.—Practical Elementary Electricity.

1. Having a plant producing 500 electrical horse-power at a pressure of 260 volts, what is its resistance, and what is the current in amperes?

2. What are the dangers to be guarded against in connection with the application of electricity to mining? State why such precautions are necessary.

3. Having to erect electrical machinery to raise 500 gallons a minute to a height of 600 ft., show by calculation the horse-power required to do the work; and, with the electrical pressure at 220 volts, give the amperes and electrical horse-power, allowing 85 per cent. efficiency.

4. What pressure must a machine have in order that 20 horse-power may just maintain a current of 100 amperes?

5. State what experience you have had in connection with electrical shot-firing, what dangers may arise in connection with it, and what you would do in the event of a missfire under this system.

SUBJECT 9.—Arithmetic, and a Knowledge of the Coal-mines Act, 1908, and Amendments; also First Aid to the Injured.

1. A coal-bearing area of 400 acres contains an average thickness of 13 ft. 6 in. of coal, with a specific gravity of 1.26: calculate the tonnage of coal in the area. Supposing 25 per cent. to be lost in mining, what tonnage will be extracted?

2. A coal-mine employing 220 hewers and 130 other employees was worked for 265 days in the year; the total output of coal for the year was 344,500 tons: what was the average daily output (a) for each hewer, (b) for each employee?

3. Explain as fully as you can how you would keep the mine accounts so as readily to ascertain the cost of production per ton of coal, and be able to check undue expenditure in any direction.

4. The head of water above the centre point of a dam is 350 ft.: what will the pressure-gauge indicate as the pressure in pounds per square inch? If the dam is 8 ft. by 9 ft., calculate the total pressure upon it. (The candidate may assume that a cubic foot of water weighs 62½ lb.)

5. What is the weight in pounds of a log 14 ft. long and 16 in. in diameter if the wood of which it is composed has a specific gravity of 0.81?

First Aid to the Injured.

1. State your practical experience in connection with first-aid work.

2. How would you render first aid in the case of a fractured thigh?

3. How would you deal with a person who has been rendered insensible by venturing into an atmosphere containing carbon-monoxide (CO)?

4. Give a brief description of the circulation of the blood, and of the organs connected therewith. Explain how a knowledge of blood-circulation is of use in rendering first aid where a blood-vessel has been severed.

5. Describe a form of ambulance stretcher suitable for mine use. How would you improvise a stretcher from materials commonly found in a coal-mine?

QUESTIONS ASKED AT THE 1912 EXAMINATION FOR SECOND-CLASS CERTIFICATES OF COMPETENCY.

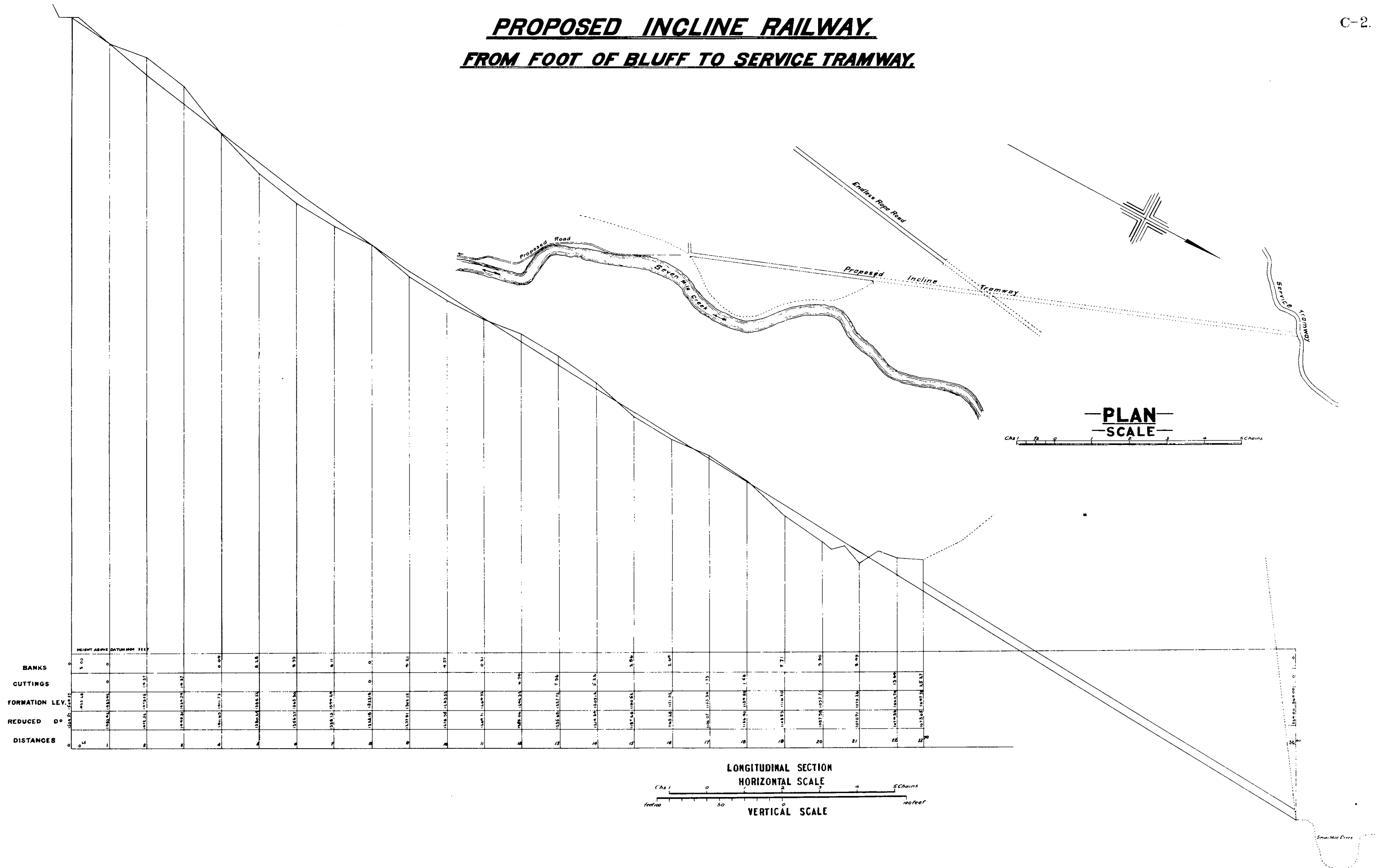
SUBJECT 1.—Prospecting, Boring, Shaft-sinking, and Opening out a Colliery.

1. Describe the necessary fittings required for the starting of a new shaft, and explain the operation of sinking to the stonehead, and give the kind of timbering you would use in supporting the sides of the shaft until the walling is put in.

2. What do you consider a good method of lighting shots in a sinking shaft, and what precautions are necessary to prevent accidents in connection with shot-firing? Give particulars of any improved method of firing of which you have had experience.

3. What means are generally adopted to make certain of getting solid beds for walling-rings in sinking a shaft?

PROPOSED INCLINE RAILWAY.
FROM FOOT OF BLUFF TO SERVICE TRAMWAY.



SUBJECT 2.—*Working Coal and Timbering underground.*

1. Describe the mode of working any seam of coal with which you are acquainted, and show by sketches the position of the main levels and branch headings.
2. The greater number of accidents in coal-mines are due to falls of roof and sides: state what in your opinion is the cause of such accidents, and the steps you would take to prevent them.
3. What precautions should be adopted to prevent miss-shots?
4. In what system of working coal are chocks used in preference to props, and what are the advantages of using timber in this form?

SUBJECT 3.—*Mine-gases, Spontaneous Combustion, and Ventilation.*

1. What do you understand by the term "diffusion of gases," and what instances do you know that appear contrary to that principle?
2. A mine "damp" is composed of 5 per cent. of CO_2 and 95 per cent. of N: what damp is this, and where would it lodge in the mine?
3. A mixture of air and CH_4 , in the most explosive proportions (no dust being present), passes along an airway 8 ft. by 6 ft. at a velocity of 3 ft. per second: what quantity of fresh air should be added so as to render it impossible to detect the gas by the flame of an ordinary safety-lamp burning mixed colza and mineral oil?
4. A given mass of air occupies 2 cubic feet at 60° Fahr.: what volume will it occupy at 90° Fahr., and what is the weight of the above mass of air if the barometer stands at 30 in.?
5. State what is the general efficiency of fans. If the horse-power of an engine is 52.84 and the water-gauge 4.7 in., what quantity of air would you expect to obtain?
6. Describe, with sketches, how you would erect a regulator in an airway. Under what conditions would you require it, and where should it be placed?
7. An underground fire has broken out, the result of a fall in your bord-and-pillar workings; the fire is situated near the intake; in the mine is a full shift of men, several of whom have been "gassed": state what precautions you would take during your examination of the fire. What would be your method of procedure to overcome it, and how would you treat those men who were affected by the gas?
8. Ventilate the accompanying plan, having due regard to the requirements of haulage. Use the conventional reference signs to indicate your method.

SUBJECT 4.—*Dealing with Old Workings and other Sources of Danger.*

1. Describe how you would build a dam in a drive against a possible static head of 1,000 ft. It is found that the only place in a drive where it is possible to build the dam is in faulted and broken ground near a dyke: what special precautions would you use in such case, and how would you provide for the safety of your men during the building of the dam and after its completion? Give sketches.
2. In approaching old and extensive coal-workings, containing 50 fathoms of water, for safety what should be—
 - (a.) The maximum width of the drive;
 - (b.) The minimum length and largest diameter of boreholes;
 - (c.) The angle of and distance apart of flank-holes.
3. To prevent accidents from falls,—
 - (a.) To what height should the first lifts during high-pillar extraction be limited?
 - (b.) What should be the maximum of width of bords and cut-throughs respectively, both when breaking away and subsequently?

SUBJECT 5.—*Mine Drainage and Haulage, and Appliances for Same.*

1. What are the conditions which would cause you to decide to wind water from a shaft in preference to pumping?
2. What are the conditions rendering the fixing of a direct-acting pump at shaft-bottom preferable to putting a pumping-engine on the surface?
3. Give your experience of the haulage of coal by mechanical appliances, and describe the system which you consider the best under such conditions as are usual in mines.
4. Give sketches of the lay-out of a self-acting incline, and the appliances used in connection with such means of haulage.

SUBJECT 6.—*Practical Elementary Electricity.*

1. State the conditions under which you would consider the use of electrical machinery dangerous in a mine, and name the precautions which should be strictly observed by those employed in operating electrical plant.
2. Show by calculation the electrical horse-power required to drive a centrifugal pump raising 200 gallons a minute to a height of 250 ft.
3. Give your experience in connection with the firing of shots by electricity, and state what you would do in the event of a shot missing fire under this system.
4. How many units per hour and how many horse-power are developed in a circuit where 1,500 amperes are driven by 150 volts.

SUBJECT 7.—Arithmetic, and a Knowledge of the Coal-mines Act, 1908, and Amendments; also First Aid to the Injured.

1. If 1 ton of coal when burnt produces on the average 69 lb. of ash, clinker, &c., what weight of ash will be produced in a year of 365 days by the coal burnt under a set of boilers requiring 700 lb. of coal per hour? Give your answer in tons.
2. Extract the square root of 718567 correct to two places of decimals.
3. If 48 trucks require 6 pints of oil per day, how much oil will be needed for 256 trucks during a month of 26 working-days? Answer to be in gallons.
4. A rectangular field is 220 yards by 176 yards. What is its area in acres? If it is underlain by a coal-seam 7 ft. thick, calculate the tonnage of coal on the assumption that 1 cubic foot of coal weighs 80 lb.

First Aid to the Injured.

1. Why is a knowledge of first aid desirable in mine officials?
2. How would you render first aid in the case of a broken lower arm?
3. Carefully describe one of the approved methods of artificial respiration.
4. What is meant by the terms (a) simple fracture, (b) compound fracture?
5. Give a brief description of the circulation of the blood, and of the organs concerned therewith.

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

FIRST-CLASS MINE-MANAGERS' CERTIFICATES.

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

Aitken, T., Wendon.	Gray, J., Abbotsford.	*Redshaw, W., Whangarei.
Alexander, T., Brunnerton.	*Harrison, J., Brunnerton.	Reed, F., Westport.
Austin, J., Sheffield.	Irving, J., Kaitangata.	*Richardson, D., Abbotsford.
Binns, G. J., Dunedin.	Jemison, W., Waimangaroa.	Shore, J., Kaitangata.
Bishop, J., Brunnerton.	*Kenyon, J., Shag Point.	Shore, T., Orepuki.
*Brown, T., Westport.	Kerr, G., Kamo.	*Shore, W. M., Kaitangata.
Brown, T., Glentunnel.	*Lindsay, W., Otago.	*Smart, W., Christchurch.
Cameron, J., Denniston.	Lloyd, J., Invercargill.	Smith, A. E., Nelson.
Campbell, J. C., Fairfield.	*Louden, J., Green Island.	Smith, T. F., Nelson.
Cochrane, N. D., Dunedin.	Love, A., Whangarei.	Sneddon, J., Mosgiel.
Collins, W., Taupiri.	Mason, J., Nightcaps.	Swinbanks, J., Kawakawa.
Dando, M., Brunnerton.	May, J., Greymouth.	Taylor, E. B., Huntly.
*Elliott, R., Wallsend.	Moody, T. P., Kawakawa.	Thompson, A., White Cliffs.
*Ferguson, A., White Cliffs.	Moore, W. J., Springfield.	Walker, J., Collingwood.
*Freeman, J., Green Island.	*Nelson, J., Green Island.	Williams, W. H., Shag Point.
*Geary, J., Kamo.	Ord, J., Huntly.	

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

Armitage, F. W., Auckland.	Fletcher, James, Granity.	McCormack, W., Denniston.
Armstrong, J., Brunnerton.	Fox, R. A., Denniston.	McEwan, Robert, Coromandel.
Barclay, T., Kaitangata.	Fry, Sydney, Waimangaroa.	McGeachie, J., Mokau.
Barclay, W., Kaitangata.	Gibson, John, Westport.	Milligan, J., Denniston.
Bennie, Boyd, Waihi.	Gillanders, A., Shag Point.	Milligan, N., Westport.
Bishop, T. O., Reefton.	Gowans, W., Millerton.	Morgan, William, Waihi.
Brown, J. C., Denniston.	Green, E. R., Abbotsford.	Murray, T., Westport.
Campbell, Peter, Fairfield.	Green, J., Brunnerton.	*Newsome, F., Denniston.
Carruthers, J., Shag Point.	Hamilton, J. S., Burnett's Face.	Newton, James, Brunnerton.
Carson, W., Kaitangata.	Herd, J., Brunnerton.	Shore, Joseph, Kaitangata.
Coombe, J., Waihi.	Heycock, C. R., Nightcaps.	Smith, George, Fairfield.
Coulthard, J., Taylorville.	Hill, Robert, Abbotsford.	Sowerby, H., Denniston.
Dixon, C. W., Granity.	Hosking, G. F., Auckland.	Tattley, E. W., Huntly.
Dixon, W., jun., Kaitangata.	Hughes, D., Preservation Inlet.	Tattley, F. J., Mercer.
Duggan, George, Burnett's Face.	*Jebson, D., Canterbury.	Taylor, A. H., Waikato.
Dunn, Andrew, Denniston.	Johnson, W. P., Thames.	Thomson, Thomas, Denniston.
Dunn, W., Brunnerton.	Leitch, J., Blackball.	Turner, G. F., Shag Point.
Dunn, W. R., Thames.	Leitch, W., Blackball.	Westfield, C. H., Fairfield.
Elliott, R., jun., Denniston.	Marshall, A. G., Denniston.	Young, James H., Waimangaroa.
Fleming, J., Kaitangata.	McCaffrey, Patrick, Ferntown.	

* Deceased since issue of certificates.

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

Binns, G. J., Dunedin.	*Garrett, J. H., Auckland.	Macalister, J., Invercargill.
Black, T. H., Waipori.	Hayes, J., Kaitangata.	*Nimmo, J., Oamaru.
Broome, G. H., Ngakawau.	Hodgson, J. W., Ross.	*Straw, M., Westport.
Cater, T., Auckland.	*Lindop, A. B., Springfield.	Tattley, W., Auckland.
Cochrane, N. D., Dunedin.		

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

*Coutts, J., Thames.	*Gow, J., Dunedin.	*Wilson, G., Thames.
Gordon, H. A., Wellington.	McLaren, J. M., Thames.	

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Alison, R., Greymouth.	James, Isaac Angelo, Westport.	Pollock, James, Green Island, Otago.
Clark, W., Blackball.	*Jordan, R. S., Kaitangata.	*Proud, Joseph, Wanganui.
Davidson, Gavin, Blackball.	Kirkwood, D., Coromandel.	*Scott, Joseph, Ngahere.
*Dixon, J., Westport.	Lamont, J., Devonport.	Tennent, R., Brunnerton.
Fletcher, George, Westport.	Lewis, W., Blackball.	Twining, C. E., Dunedin.
Frame, Joseph, Kaitangata.	Mark, W. S., Kaitangata.	Watson, James, Greymouth.
Goold, A. L., Auckland.	McAvoy, H., Christchurch.	Wight, E. S., Auckland.
Irvine, James, Dunedin.	Paterson, D. S. A., Kawhia.	Wood, William, Mokihinui.

SECOND-CLASS MINE-MANAGERS' CERTIFICATES.

Issued under the Coal-mines Act, 1891.

Carson, M., Kaitangata.	*Love, Alexander, Orepuki.	*Ross, John, Kawakawa.
Collier, Levi, Kamo.	McIntosh, Allan, Shag Point.	Sara, James, Reefton.
Clarke, Edward, Shag Point.	McLaren, J. M., Thames.	Smith, Charles, Whangarei.
Elliot, Joseph, Coal Creek.	*Marshall, J., Ngakawau.	Thomas, James, Springfield.
Harris, John, Denniston.	Murray, Thomas, Denniston.	Wallace, William, Huntly.
Herd, Joseph, Brunnerton.	*Nimmo, George Stewart, Ngapara.	*Willets, John, Papakaio.
Howie, James, Kaitangata.	Radcliffe, William, Reefton.	Willets, John Morris, Papakaio.
*Leeming, William, White Cliffs.	*Roberts, John, Brunnerton.	Young, William, Waimangaroa.
Lobb, Joseph, Mokau		

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

Austin, W. B., Sheffield.	Duncan, J. E., Kaitangata.	Milligan, J., Denniston.
Barber, John, Shag Point.	Duncan, John, Lovell's Flat.	Mills, Walter, Huntly.
Barclay, T., Kaitangata.	Ferguson, G., Roa.	Neilson, J., Runanga.
Barclay, T., jun., Kaitangata.	Fox, R. A., Blackball.	Neilson, Moffat, Abbotsford.
Barclay, William, Kaitangata.	Harris, A., Saddle Hill.	Newburn, S., Kaitangata.
Barnes, A. E., Shag Point.	Heyes, T., Kaitangata.	Ogilvie, W. W., Saddle Hill.
Broome, J., jun., Gore.	Heycock, C. R., Nightcaps.	Orr, Hugh, Fairfield.
Brown, Robert, Kaitangata.	Hill, R., Abbotsford.	Parcell, W., jun., Bannockburn.
Cadman, J., Hikurangi.	Hodson, John, Kaitangata.	Penman, C. P., Kaitangata.
Campbell, Peter, Fairfield.	Holden, J., Nightcaps.	Price, F. J., Burnett's Face.
Carruthers, J., jun., Nightcaps.	Hughes, Job, Roa.	Scoble, E. J., Blackball.
*Carson, Joseph, Kaitangata.	Hunter, A., Southland.	Snow, T., Mercer.
Charles, E., Glentunnel.	Kells, F. H., Denniston.	Tattley, F. J., Mercer.
Cherrie, R. C., Mokau.	Kirkland, H. S. S., Nightcaps.	Taylor, Joseph, Collingwood.
Christie, James, Saddle Hill.	Lewis, David, Puponga.	Thompson, Joseph, Blackball.
Clemo, G., Whangarei.	Lewis, J., Nightcaps.	Todd, T., Nightcaps.
Craig, John, Coal Creek Flat.	Lindsay, J. B., Orepuki.	Waldie, A. B., Mokau.
Dale, E. G., Kaitangata.	McAllister, Neil, Kaitangata.	Watson, A., Soldier's Creek.
Dixon, W., jun., Kaitangata.	McLelland, J., Kaitangata.	Westfield, C., Fairfield, Otago.
Doel, G., Lovell's Flat.	McLelland, A. C., Kaitangata.	Whittleston, A. W., Shag Point.
Duncan, James, Kaitangata.	McNeill, D., Fairfield.	

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Brownlie, T., Huntly.	Grenall, S., Granity.	McGuire, P., Mount Somers.
Burt, A., Huntly.	Inglis, A., Huntly.	McGuire, William, Seddonville.
Burt, W., Huntly.	Jones, T., Kimihia.	Parsonage, W., Dunollie.
Clarkson, S., Kaitangata.	Lennox, W., Springfield.	Penman, A., Huntly.
Dickinson, W., Gore.	Little, W., Wellington.	Robertson, J., Granity.
Dodd, W., Granity.	Littlewood, G. G., Denniston.	Sneddon, J., Blackball.
Dowgray, R., Granity.	Longstaff, H. C., Kaitangata.	Strachan, J., Dunedin.
Eyeington, G., Huntly.	McCall, John, Wellington.	Tennant, D., Paparoa.
Greenwell, R., Huntly.	McGeachie, J., jun., Mokau.	Talbot, H., Huntly.

UNDERTAKERS' CERTIFICATES.

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Allan, James, Puponga.
 Attrill, Charles Waterford, Mercer.
 Bond, John, Waikaka.
 Boustrage, T. Hubert, Brunnerton.
 Broome, James, Gore.
 Clough, Henry, Millerton.
 Davidson, William, Mine Creek.
 Davis, William, Runanga.
 Donaldson, James, Kaitangata.
 Falconer, Andrew, Abbotsford.
 Flynn, John, Bannockburn.
 Green, Richard, Abbotsford.

Hawthorn, James, Puponga.
 Hunter, Peter, Ngakawau.
 Johnston, William Crowan, Gore.
 Johnstone, Thomas, Denniston.
 Levick, Harry, White Cliffs.
 Mann, William, Granity.
 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.

Brown, Charles Henry, Denniston.
 Dowgray, John, Millerton.
 Hunter, Peter, Stockton.

Johnston, C. M., Seddonville.
 McDonald, Thomas, Ngakawau.
 Peacock, Thomas, Denniston.

Pearson, William, Burnett's Face.
 Turner, Alfred, Kiripaka.

Issued under the Coal-mines Amendment Act, 1910.

Beardmore, E., Denniston.
 Cuthbertson, Robert, Fairfield.
 Evans, William, Abbotsford.
 Fisher, T., Westport.
 Gibson, M., Abbotsford.
 Greene, M., Kaitangata.
 Hadcroft, J., Runanga.

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.

FIREMEN AND DEPUTIES' CERTIFICATES.

Issued under the Coal-mines Amendment Act, 1909.

Aitken, George, Glentunnel.
 Allan, A. George, Abbotsford.
 Allan, Charles, Brunnerton.
 Beardmore, 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, Wel-
 lington.
 Connelly, Michael, Denniston.
 Connew, John, Puponga.
 Coppersmith, John, Denniston.
 Coulthard, Thomas, Brunnerton.
 Cowan, Robert Black, Gibbston.
 Cuthbertson, Robert, Fairfield.
 Darby, James, Huntly.
 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.
 Fullick, George, Runanga.
 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.
 Monoroff, Thomas, Nightcaps.
 Moore, Thomas, Mangatini.
 Morganti, Charles, Ngakawau.
 Murdoch, Colin McColl, Stirling.
 McCaffrey, James, Seddonville.
 McCoughern, John, Kaitangata.
 McDonald, John T., Millerton.
 McGarry, Isaac, Millerton.

McGhee, William, Kaitangata.
 McGill, Douglas Thomas, Waikaka.
 McGill, John, Huntly.
 McKenzie, James, Nightcaps.
 Newburn, Robert, jun., Kaitangata.
 Newburn, Samuel, Kaitangata.
 Nicholas, William, Kaitangata.
 Oliver, William, Kaitangata.
 Parcell, Henry Clyde, Bannockburn.
 Park, Francis, Stirling.
 Peckham, Henry William, Huntly.
 Penman, Robert, Kaitangata.
 Richards, James, Brunnerton.
 Rodgers, Edwin, Kaitangata.
 Sanderson, John, Kurow.
 Scott, Charles, Nevis.
 Scott, John, Runanga.
 Skellern, John, Huntly.
 Smith, Edwin, Springfield.
 Smith, William, Huntly.
 Smith, William, Seddonville.
 Sneddon, James, Blackball.
 Southward, John, Runanga.
 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.
 Whorsky, John, Huntly.
 Wilson, Walter William, Springfield.
 Young, Thomas Gardner, Waikaka.

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

Allan, James, Brunnerton.
 Anderson, Walter, Blackball.
 Berry, T., jun., Huntly.
 Birchall, J., Burnett's Face.
 Blair, Peter, Huntly.
 Boddy, Archibald John, Runanga.
 Broadbent, Samuel, Huntly.
 Brown, J., jun., Denniston.
 Buchanan, William, Millerton.
 Burdon, George, Denniston.
 Burt, T., Huntly.
 Burt, W., jun., Huntly.
 Carson, Frederick.
 Clark, W. S., Dunollie.
 Connolly, John, Runanga.
 Connolly, John Joseph, Runanga.
 Curran, James, Ngakawau.
 Cuthbertson, John, Glentunnel.
 Danks, Peter, Millerton.
 Darby, W., Huntly.
 Davidson, Thomas, Mine Creek.
 Davis, Oliver James, Runanga.
 Dowgray, John, Millerton.
 Downes, William Norbury, Cobden.
 Duggan, Francis, Runanga.
 Dutton, John, Granity.
 Fox, Henry John, Blackball.
 Griffen, James, Kaitangata.
 Hall, R. H., Huntly.

Hawkins, Joseph, Burnett's Face.
 Hendry, John, Millerton.
 Hicks, J. R., Kiripaka.
 Hilton, Thomas, Denniston.
 Honey, Archibald John, Denniston.
 Hopkinson, Joseph, Seddonville.
 Innes, Andrew, Runanga.
 Johnson, J. H., Hikurangi.
 Johnson, Thomas, Huntly.
 King, Thomas Henry, Granity.
 Lauder, Matt Currie, Runanga.
 McAvoy, William, Ngakawau.
 McDonald, Thomas, Burnett's Face.
 McKernan, John, Millerton.
 McMillan, John, Huntly.
 McMillan, John, Kaitangata.
 Maddison, W., Huntly.
 Makepeace, Henry, Runanga.
 Mitchell, A., Seddonville.
 Morganti, Louis, Millerton.
 Moreland, S., Hikurangi.
 Mosley, J. T., Denniston.
 Moye, John Patrick, Denniston.
 Myers, Richard, Millerton.
 Newton, Charles, Runanga.
 Nicholson, David, Huntly.
 Niven, Peter, Ngakawau.
 Nolan, John, Granity.
 O'Brien, Denis Quinlan, Millerton.

O'Brien, Martin, Millerton.
 Parker, Andrew, Greymouth.
 Parr, Joseph, Burnett's Face.
 Paul, James, Seddonville.
 Pearson, Samuel George, Burnett's Face.
 Pearson, William, Burnett's Face.
 Reed, W. H., Hikurangi.
 Ruston, Edwin Walter, Huntly.
 Seddon, William, Huntly.
 Smith, J. A., Seddonville.
 Smith, Thomas W., Millerton.
 Southward, William, Runanga.
 Strongman, Charles James, Cobden.
 Sweeney, John Lewis, Runanga.
 Tate, Anthony, Seddonville.
 Taylor, Christopher, Millerton.
 Thawley, William, Denniston.
 Thomson, Thomas, Mine Creek.
 Vurlov, Frederick Alexander, Denniston.
 Wallwork, Moses, Runanga.
 Wear, Daniel, Huntly.
 Webster, Oliver, Huntly.
 White, Edward, Granity.
 Wood, W., Huntly.
 Worthington, T., Millerton.
 Young, Thomas, Granity.

Issued under the Coal-mines Amendment Act, 1910.

Broadfoot, W., Millerton.
 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., Longridge.
 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.

ANNEXURE C.

MINERS' BATHS.

By H. F. BULMAN and W. B. WILSON.

[Read, 10th February, 1912, before the North of England Institute of Mining and Mechanical Engineers.]

OF all the changes made by the new Coal-mines Act none, perhaps, has attracted more general interest than the proposal to provide facilities for miners to wash themselves and to change and dry their clothes at the pit-head. This provision seems likely to be a benefit to the miner in promoting not only his own personal comfort and cleanliness, but also that of his home, and in relieving his womenfolk of much of their present household-work. There is no doubt that many of the miners at the present moment dislike the idea, but experience in other countries, where the system has been in force for a number of years, shows that when once the miner becomes accustomed to changing his clothes and washing at the pit he much prefers the innovation, and would strongly object to revert to the old custom.

In Belgium the practice is being increasingly introduced, and in a paper by Mr. Kuss, Inspector of Mines, it is stated that at 1st April, 1910, of 278 collieries at work, forty-two, employing 21,560 men underground, were provided with spray-baths of modern construction. The workmen quickly grasped the benefits which these baths procured for them, and of these 21,560 men 16,650, or 77·3 per cent., voluntarily made use of the baths in 1909.

In the north of France, where the use of baths is also voluntary, the experience is similar; and in Westphalia, where the measure was made compulsory at all collieries by a decree dated 12th March, 1900, it is carried out to the mutual satisfaction and approval of both employers and workmen.

The information embodied in the present paper was gathered by the authors during a visit in May, 1911, to some of the largest and newest installations of baths at collieries in Westphalia, Belgium, and the north of France.

Washing-apparatus.—The actual washing arrangement always takes the form of a fine shower or overhead spray of pleasantly heated water from a rose about 7 in. in diameter, placed 7 ft. or 8 ft. above the floor. Under such a shower the dirtiest man can easily and comfortably, with the aid of a piece of soap, make himself quite clean within ten minutes. The advantages of this form of bath in comparison with others are manifest. It affords a rapid, effective, and pleasant method of washing all over, and the water falling on the floor is at once conducted away by a simple system of drainage; as the pipes and rose are overhead they occupy no floor-space and comparatively little room. The bathing-place can also be cleaned up readily with a douche from a hose.

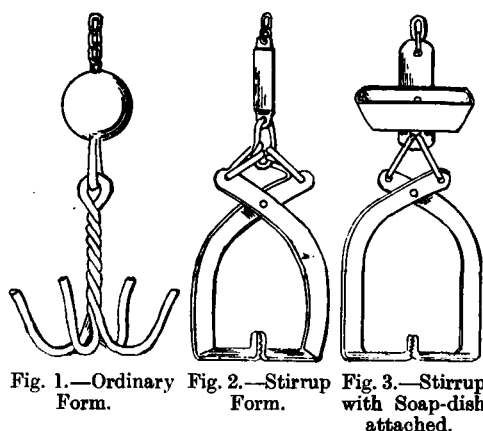
Consumption of Water.—The amount of water required for each bather is comparatively small. Mr. Kuss states that for collieries in Belgium it averages $6\frac{1}{2}$ gallons per man per bath. The figures given at some of the collieries visited were higher, a colliery in Belgium allowing 7.7 gallons, while one in the Pas de Calais allowed 8.8 gallons. The supply is regulated by an attendant, who stands on a raised platform at one end of the building, and has at hand a series of taps, each tap controlling the supply to perhaps eight or ten of the showers, according to the number attached to each branch pipe.

In Belgium and France each shower is installed in a separate little cabin, in order to insure privacy to the bather during the operation of washing; and, in addition to the main controlling taps, there is a separate tap in each cabin for the use of the bather. In Germany the men wash all together, and it is not unusual to see one man helping another by scrubbing his back. The orderly, quick, and rapid way in which a large shift of some hundreds of men got through the business of bathing is very remarkable. At some of the German collieries the boys are housed in a separate part of the building, but there are not separate cabins for each bather, and the water-supply is controlled entirely by the attendant. As eight and ten of the showers are controlled by one tap, they must all be running, or all stopped together, and this probably tends to a greater consumption of water than would be the case if each shower were separately controlled. The authors were informed that an average daily consumption of water at bathing-establishments in Westphalia, including the officials' baths and the water used in cleaning up the place, was 33 gallons per man.

Water-heating.—The water-heating apparatus is placed near the controlling taps at one end of the building, so that one attendant can manage everything. The water is generally heated by exhaust-steam from the colliery engines, though in some cases live steam is employed. For mixing the steam and water together injectors are sometimes employed, and in some instances this is effected by bringing together the steam and water in an old boiler or other similar receptacle, in the same way as boiler-feed water is often heated. The heated water is cooled down to the desired temperature, usually 98° to 100° Fahr., by an admixture of cold water from a separate tap.

Storing and drying Clothes.—The ordinary method of storing and drying the clothes is by suspending them in separate bundles from hooks fixed in the upper part of the building, where they are exposed to the drying effect of the heated air. For this purpose the building must be spacious and lofty; the side walls are usually 20 ft. to 30 ft. in height, the roof sloping upwards from them to a central ventilator running the whole length of the building. In cold weather they are heated artificially by steam-radiators to a temperature of about 70° Fahr.

Different forms of suspenders are in use, the most common consisting of three or four hooks projecting radially from a central vertical stem (Fig. 1), while another is in the form of a stirrup opening in the centre (Fig. 2). In Westphalia a little metal dish to hold a piece of soap is added, usually fixed above the hooks (Fig. 3). Each man provides his own soap and towel. Where there are separate bathing-cabins, as in Belgium, the soap-dish is placed in the cabin. To each



FORMS OF SUSPENDERS.

suspender is attached a metal plate bearing a number, and every man using the bathing-establishment appropriates one of them, and thus knows his suspender by its number. As many suspenders as there are men to bathe are provided. Each suspender is hung at the end of a cord or chain or wire. A small-linked chain, about $\frac{1}{4}$ in. across, which runs easily round small pulleys, appears to stand the test of experience best.

At the level of the top of the walls of the building there are fixed a series of light steel-joists, 3 in. or 4 in. wide, horizontally spaced at intervals of about 1 ft. 4 in. apart, and carrying small

pulleys (Fig. 4). From each suspender the chain rises to a pulley, around which it passes, thence travelling to a second overhead pulley, from which it descends, to be tethered to a metal pin projecting from a fixed stand on the floor of the building. Each pin has a metal plate bearing a number corresponding to the number of its suspender. The length of chain must be sufficient to extend from the pin around the two overhead pulleys down to the suspender when it is lowered to allow the man to get at his clothes. When the bundle of clothes is raised, which is effected by pulling in the chain at the pin, there is some length of loose chain to dispose of, and there must also be some means of fastening the chain when the suspenders have been raised. This is in some cases done by attaching to the chain at the right point, say, 8 ft. from its end, or at whatever height the suspender is to be raised, a ring (Fig. 4), which is put on to the pin, and this holds the chain with its suspender in the desired position. The loose chain is allowed to hang in folds from the pin, which is fixed at a height of 4 ft. or 5 ft. from the floor, while sometimes a lower row of pins is provided, and the loose chain looped round the two (Fig. 5).

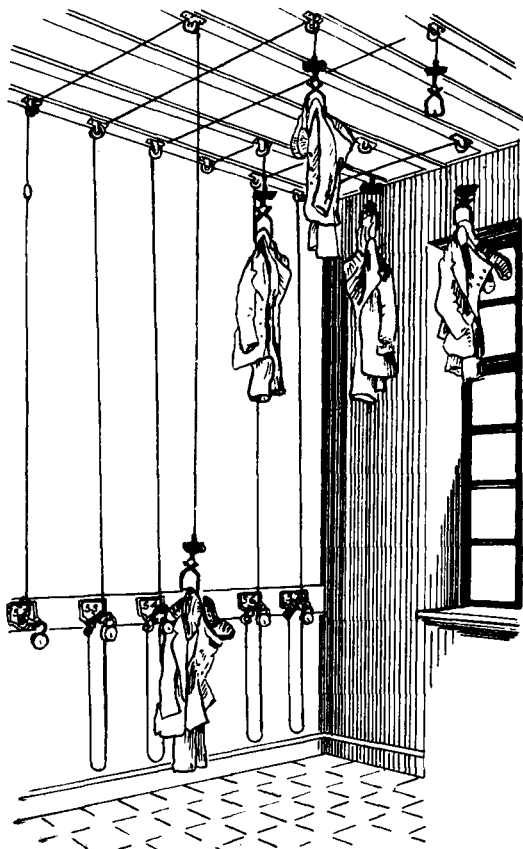


FIG. 4.—PULLEYS FOR RAISING AND LOWERING THE SUSPENDERS.

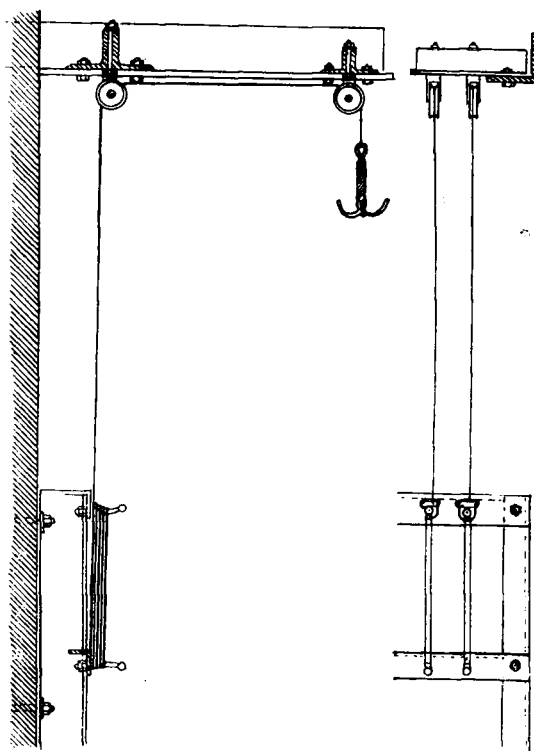


FIG. 5.—METHOD OF LOOPING UP THE LOOSE CHAIN OF THE PULLEY.

The newest and neatest arrangement consists of a metal box, about 10 in. high, 4 in. wide, and 2 in. in outside dimensions (Fig. 6). The loose chain is lowered into this box, and is held by a circular stud fixed to the chain at the required point, the stud being passed under a catch on the top of the box, which holds it safely. The pins may be made with eye-holes at their outer ends, so as to carry a padlock (Fig. 4), and the boxes just described are provided with a similar arrangement. Thus, by inserting a padlock, after pulling in and fastening his chain, a man may prevent others from interfering with his clothes. In most establishments very few padlocks were in use, and none in some of them, showing that they were not necessary, and that men may be trusted, as one would expect, not to meddle with each other's clothes.

The position of the suspenders is determined by the position of the pin-stands and of the overhead pulleys; where the stands are set again the sides of the building, with their backs, so to speak, to the wall, the pins and suspenders must be all on one side. It seems better to place them so that each stand has its set of suspenders extending from it on either side. Each adjacent chain is carried 16 in., or whatever is the distance between the overhead joists carrying the pulleys, further or shorter than its neighbour, so that the bundles of clothes are spaced evenly (Fig. 4). The amount of vacant space around each bundle depends upon the distances between the pulleys and the relative height to which they are raised.

In Westphalia a fair allowance of superficial space is considered to be 1 square metre (10½ sq. ft.) for every four suspenders—that is, a square measuring half a metre, or, say, 20 in., to each suspender—and it should also be observed that the suspenders are not all hanging at the same level. In addition, there are vacant spaces around each set of suspenders, according to the position of the pin-stands, so that there is plenty of room for currents of air to play about the clothes and to dry them. It is the rule that every man must take away his clothes at the

week-end. Anything that is left behind is sent to the boiler fires, and a thorough cleansing of the whole building is carried out during the week-end. It is, of course, open to any man to take away any of his clothes and bring others whenever he likes.

Buildings.—In the design of the buildings the chief points to be kept in mind are cleanliness, ventilation, light, and spaciousness. The floor and the inside walls, to a height of 7 ft. or so, should be of some material that can be easily washed clean by a douche from a hose-pipe, and nothing is better for this purpose than glazed bricks or tiles. Crannies and corners where dirt can accumulate should be avoided as much as possible, and in the upper parts of the walls there should be ample window space for light and ventilation. In the best designs the roof slopes upwards from the side walls to a central raised structure of glass, with ventilators running the whole length of the building, thus ensuring thorough ventilation and more light. For artificial lighting electricity is, of course, the best medium.

The finest buildings in Westphalia were those at Rhein-Preussen and New Ickern Colliery, not very far from Dortmund. The latter is a new colliery now being laid out on the most modern lines. A handsome building, just completed, providing for 2,500 men, is built mainly of concrete, and cost for the structure alone, without fittings, £3,000. The general design of this building is similar to the one at Rhein-Preussen (Fig. 7). The water-pipes and roses are placed in two side aisles, or wings, running upon either side and the full length of the building, each side aisle or wing being separated from the main central portion by a wall with numerous archways. The central portion is devoted to drying and pressing purposes, and contains the pin-stands and the suspenders for hanging the clothes.

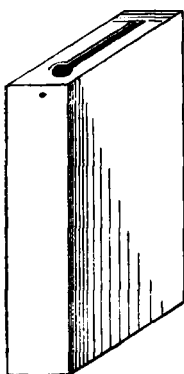


FIG. 6.—METAL BOX FOR HOLDING THE LOOSE CHAIN OF THE PULLEY.

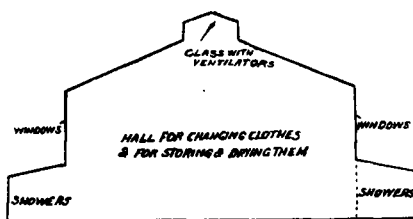


FIG. 7.—SKETCH SHOWING GENERAL DESIGN OF BATHING-HALL.

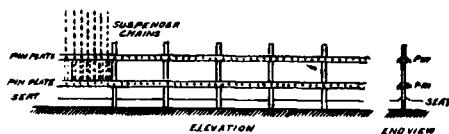


FIG. 8.—PIN-STAND FOR SUSPENSION CHAINS.

Rhein-Preussen Colliery.—The length of the building at this colliery is, roughly, 180 ft., whilst the width is about 84 ft., including the aisles, which are each about 12 ft. wide. In these wide aisles are fixed 144 showers, arranged mostly in sets of eight. To each set of eight showers a foot-rest is provided, about 1 ft. in height and 6 ft. long, to assist the men in washing. This foot-rest is made of wood at Rhein-Preussen; but at Ickern it is made of concrete. In the main building, which has an area of 1,200 square yards, there are twelve pin-stands (Fig. 8), placed parallel to the width of the building, six on each side, each stand occupying a length of 24 ft. They each consist of five stout metal posts, 5 ft. high, to which are fastened metal bars about 4 in. wide, one on either side, to hold the pins. There is a lower set of bars and pins, to allow the loose chain to be lapped around the upper and lower pins rather than to hang in folds. The posts also carry projecting brackets, on which are fastened wooden planks, forming a seat on either side.

The authors were informed that there was accommodation for 4,000 men, divided over three shifts. This allows for the future development of the colliery. The total number of underground workmen employed at present is 2,400, the greatest number coming out in one shift being 985, and the average daily output of coal was 2,000 tons. The actual time occupied in washing and dressing was about fifteen to twenty minutes per man, the time under the shower being not more than ten minutes.

The building is heated with live steam by steam-radiators to a temperature of about 75° Fahr. A covered way connects the building with the pit-head, so that the men are not exposed to the weather until they have washed and changed their clothes. Adjoining the bathing-hall is a waiting-room.

Deutscher-Kaiser Colliery.—At this colliery the total accommodation provided was for 5,000 men. These comprise 4,300 adult miners, 250 youths, 250 surfacemen, and 200 officials. Separate rooms are provided for the four different grades. At present the number employed underground is 2,400, and they are divided into three shifts—namely, 1,100 in the morning-shift, 900 in the afternoon-shift, and 400 in the night-shift. The showers at present provided are as follows: For adult miners, 130; for youths, 6; and for surfacemen, 12; making a total of 148. The arrangement is such that the number of showers and of suspenders can be increased to provide for a total of 5,000 men, as the development of the mine progresses. The length of the building for the underground workmen is about 294 ft., the width being about 60 ft., and the showers provided are all contained in one aisle at one side of the building, and arranged in pairs on either side of a pipe running the whole length of the building. To increase the accommodation for drying

and dressing, a second story, reached by a spiral staircase, has been built above the aisle where the showers are provided. The pin-stands are set lengthways down the building, and light and air are obtained through large windows in the wall opposite the washing side.

Other Installations.—At another colliery in Westphalia there are similar arrangements, accommodation being provided for 2,000 men in three shifts. The building measures about 132 ft. by 51 ft., and there are fifty-four showers, all placed on one side; the pin-stands are set lengthways down the building.

In Belgium an excellent installation of baths is to be seen at one of the pits of the Monceau Fontaine Company, near Charleroi.

At the Quesnoy Pit of the Bois du Luc Company, Belgium, the bathing installation comprises two separate buildings, one for washing and the other for dressing, communicating with each other by a short passage. About 500 men are at present using the establishment, and the bathing hall is 69 ft. long, 46 ft. wide, and 23 ft. high. There are eighty showers, arranged in sets of ten, from eight branch-pipes, each pipe being about 15 ft. in length, and carried out from the side walls in a direction parallel to the width of the building. From the branch-pipe five short

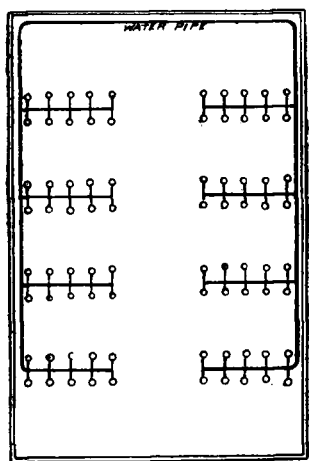


FIG. 9.—SKETCH-PLAN OF BATH-ROOM, SHOWING ARRANGEMENT FOR EIGHTY SHOWERS.

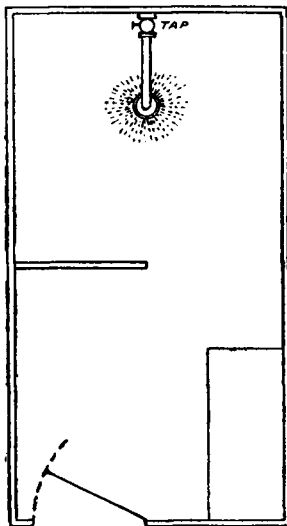


FIG. 10.—BATHING-CABIN WITH DOOR.

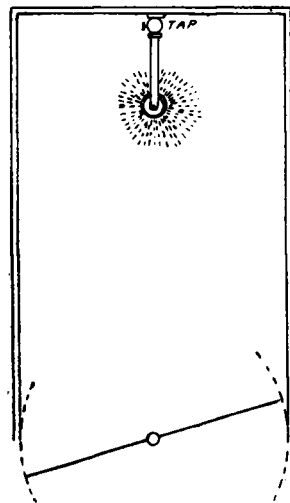


FIG. 11.—BATHING-CABIN WITH WOODEN SWING DOOR.

pipes, each about 2 ft. in length, project at right angles on either side, terminating in the roses for the showers. The eighty cabins (Fig. 10) are made of painted sheet iron, and are grouped in sets of ten, one to each shower. The dressing-hall is 75 ft. long, 46 ft. wide, and 41 ft. high. The suspender-pins are fixed along the side walls, and it is considered that there is room for 1,000. Twelve wooden benches are arranged about the hall.

Mr. Kuss gives the cost of this installation as follows:—

	Dressing-hall. Francs.	Washing-hall. Francs.	Total. Francs.
Ground	1,785	1,765	3,550
Buildings	26,000	25,600	51,600
Fittings	7,078	17,548	24,626
	34,863	44,913	79,776
	(£1,395)	(£1,796)	(£3,191)

This total sum of £3,191 is the first cost of this installation of eighty showers and 800 suspenders, equal to about £4 per suspender or per man using the baths. Mr. Kuss considers that £4 to £4 16s. (100 to 120 fcs.) per suspender is the average cost of a new installation of any importance in Belgium.

At one of the newest collieries (Fosse No. 13 of the Lens Company, Pas-de-Calais) an installation of baths has been recently carried out. A fine brick building, well lighted and ventilated by large glass windows running continuously along its two sides in the upper half of the walls, is provided. It is 78·7 ft. long, 36 ft. wide, and 21 ft. high to the top of the wall, the total height to the roof-ridge being 33 ft. The building provides for 650 men in two shifts, there being 650 suspenders and fifty-six showers; the latter are placed around the walls of the building, with a separate cabin for each shower.

The cabins of white glazed bricks (Fig. 11) are 39½ ft. wide, 5 ft. long, and 6½ ft. high, with no separate compartment. The entrance to each cabin is provided with a wooden door, arranged so as to turn easily around its central vertical axis on pivots fixed above and below. To one side of the door are fixed four hooks for hanging clothes, which can thus be turned outside to avoid getting them wet when the bather is washing, and inside when he wants them. The central portion of the building is used for changing the upper garments, and for keeping and drying the clothes that are left, in the manner already described. It is evident that the number of showers provided must depend upon the largest number of men coming out in one shift, and on the time which they take to come out, as a man cannot be expected to wait for his bath very long. The number of suspenders must equal the total number of men using the establishment.

DISCUSSION

Professor Louis said that the authors mentioned that the washing arrangement always took the form of a fine shower or spray. It might be interesting to point out that that was not the original form. At first, in Germany, plunge-baths were used, but it was found that contagious diseases, particularly of the eye, were communicated by this means, and therefore the law made the use of the shower-baths compulsory in Germany. In view of the possibility of baths being adopted in this country, it would be well to remember that the Germans had gone through that experience. In one or two collieries in Westphalia, where he had seen the arrangement, there were seats made of enamelled cast-iron or concrete in front of the sprays, so that the men could sit down when washing. Another point was in regard to very few padlocks being in use. That did not altogether agree with what he (Professor Louis) was told. He had been told that they had a great deal of trouble in Westphalia owing to thieving going on, so that they instituted a rule that every chain must be padlocked, but that each miner must provide his own padlock and key. Finally, he would like to draw attention to the fact that in all the metal mines in this country it had been the custom for a great number of years to have what was called a "dry." In all the Cornish mines, and in most of the lead-mines and ironstone-mines, and, indeed, he thought all the mines under the Metalliferous Mines Act, a "dry" was provided in which the man changed his clothing.

Mr. C. Herman Merivale said one of the difficulties was to ensure privacy for the men. They would not wash in a crowd, they would want privacy, and that meant partitions. Tiles were made now with locking joints, very narrow, not more than an inch wide, and there would be no difficulty in making partitions in tile slung from wire rods, which would not occupy much space, and that would overcome the difficulty of considerable extra expense in making partitions. He had tried to get the men at Middleton to adopt the bath system, and had offered them partitions, but they objected to the whole thing.

Mr. J. H. Merivale indorsed what Professor Louis had said. His experience of baths went back forty years. In Belgium they did not use the spray at all; each man had a little separate bath. The last time he had to speak on this subject was in a different atmosphere, where they were strictly commercial, and that might be his excuse for saying he was the only man who approved of compulsory baths. Looking in the direction in which things were trending, he was inclined to think that they would have to supply their men with baths; for many reasons, he thought, it would be an excellent thing if they did, and unless they made such arrangements as had been described they would have to put baths in the workmen's houses. His experience corresponded with what the paper said as regards the cost—£4 or £5 per man employed—but he did not think they could put baths into the existing houses at anything like that figure. There were two other reasons which inclined him to be favourable to baths; one was it made it much more comfortable and convenient for the women, and, again, they all knew the miner, with very few exceptions, had a longer expectation of life than any other working-man, the reason, he believed, being that he had plenty of work, plenty of food, and plenty of washing. But he suffered more than others from bronchial troubles, and he (Mr. Merivale) believed that that was very largely due to standing about after coming out of the mine in a heated condition.

The President (Mr. M. W. Parrington) said that one point which struck him was as to the nature of the water. One might get oneself fairly clean with 6½ gallons of Newcastle water, but he was doubtful if they could accomplish that with 6½ or even 8½ gallons of the limestone water in Durham.

ANNEXURE D.

STATISTICS OF WORKINGS IN COAL-MINES, 1911.

Name of Mine and Locality.	Name of Manager.	Number of Years worked.	Quality of Coal.	No. of Seams worked.	Thickness of Seams.	Thickness worked.	Dip of Seams.	System of Underground Working.	Number of Shafts.	Dimensions of Shafts.		Output delivered by	Output for 1911.			Approximate Total Output to 31st December, 1910.	Approximate Total Output to 31st December, 1911.	Number of Men ordinarily employed.		Power used for drawing Mineral.	Pumps.			Means of Ventilation.	Date of Inspector's Last Visit.	
										Size of Shaft or Adit.	Depth of Shaft or Length of Adit.		Coal.	Slack.	Total.			Above.	Below.		Total.	Stroke.	Size of Barrel.			Height of Column.
NORTHERN INSPECTION DISTRICT.																										
KAWAKAWA DISTRICT.																										
Kawakawa Mine ..	..	..	semi-bitum.	..	3' to 5'	..	1 in 3	..	1 5½' x 3½'	200'	200'	..	Tons. no work	Tons. done	Tons.	74,392	74,392	..	..	..	..	..	..	..	..	18/11/11
Kawakawa Colliery ..	Culley, W. H. ..	4	ditto	1	8'	8'	1 in 5	bord and pillar	6' x 4'	180'	180'	horse	41	..	41	..	41	2	2	horse	..	..	..	natura	..	
KAMO DISTRICT.																										
Whangarei Mine ..	Taylor, A. H. ..	3	"	2	6' and 4'	6' and 4'	1 in 4	ditto	2 13' x 6' 9' x 6'	106' 100'	106' 100'	shaft	1,404	..	1,404	1,644	3,048	4	14	18	steam	6"	4½"	100'	exhaust steam	22/11/11
HIKURANGI DISTRICT.																										
Hikurangi Mine ..	Dunn, W. R. ..	19	"	1	2' to 14'	2' to 12'	1 in 8	"	3 dip 6' x 6'	1,200'	1,200'	rail and vessels	64,657	..	64,657	702,792	767,449	12	70	82	"	..	..	55'	natural	27/11/11
Northern Colliery ..	Morgan, W. ..	14	"	1	3' to 9'	3' to 9'	varied	"	7 9' x 6' 6½' x 6'	1,850' 475'	1,850' 475'	adit	40,503	..	40,503	368,173	408,676	12	63	75	"	free	drainage	fan	21/11/11	
NAUNGWU DISTRICT.																										
Kinupaka Colliery ..	Tatley, E. W. ..	13	"	1	13' to 20'	13' to 20'	1 in 6	"	2 9' x 6' 8' x 6'	220' 200'	220' 200'	"	32,554	..	32,554	245,453	278,007	20	25	45	"	10"	6"	65'	"	20/11/11
WAIKATO DISTRICT.																										
Taipiri Extended ..	Wood, W. ..	24	brown	1	10' to 34'	20'	1 in 10	"	2 10' diam. 10' diam.	166' 209'	166' 209'	shaft	93,826	49,696	143,522	1,139,296	1,282,818	42	210	252	"	2-12"	5"	204'	"	1/12/11
Ralph's Taipiri ..	Fletcher, J. ..	22	"	1	10' to 60'	20'	1 in 10	"	3 9' x 5½' 8½' diam. 9' x 5½'	190' 230'	190' 230'	"	80,855	27,885	108,740	845,597	954,337	43	201	243	"	12"	2-5"	400'	"	1/12/11
MIRANDA DISTRICT.																										
Union Collieries ..	Tatley, T. J. ..	10	"	1	30' to 50'	20' to 30'	varied	"	2 6' x 6' 4' x 4' 9' diam.	700' 90'	700' 90'	adit	2,640	..	2,640	113,093	115,733	1	3	4	"	10"	6"	120'	exhaust steam	closed down in April.
DRURY DISTRICT.																										
Drury Colliery ..	..	..	"	..	14'	..	1 in 5	"	1 5' x 6'	700'	700'	"	no work	done	done	2,689	2,689	..	..	..	..	..	..	..	..	..
MOKAU DISTRICT.																										
Mokapu Mine ..	Lennox, W. ..	27	"	1	6' to 8'	6' to 8'	1 in 10	"	1 9' x 6'	1,752'	1,752'	"	3,811	..	3,811	69,775	73,586	3	8	11	horse	..	..	..	fan	19/9/11
O tpt of mines included in previous statements at which operations are suspended or abandoned .. 1,992,128 1,992,128																										

O tput of mines included in previous statements at which operations are suspended or abandoned .. 1,992,128 1,992,128

STATISTICS OF WORKINGS IN COAL-MINES, 1911—continued.

Name of Mine and Locality.	Name of Manager.	Number of Years worked.	Quality of Coal.	No. of Seams worked.	Thickness of Seams.	Thickness worked.	Dip of Seam.	System of Underground Working.	Number of Shafts.	Dimensions of Shafts.		Output delivered by	Output for 1911.			Approximate Total Output put to 31st December, 1910.	Approximate Total Output put to 31st December, 1911.	Number of Men ordinarily employed.		Power used for drawing Mineral.	Pumps.		Means of Ventilation.	Date of Inspector's Last Visit	
										Size of Shaft or Adit.	Depth of Shaft or Length of Adit.		Coal.	Slack.	Total.			Above.	Below.		Stroke.	Size of Barrel.			Height of Column.
WEST COAST INSPECTION DISTRICT.																									
COLLINGWOOD.																									
Puponga	McEwan, R. ..	8	bitum.	3	7' 6"	7' 6"	1 in 3½	bord and pillar	6' 6" x 9'	31 ch.	adit	Tons. 16,825	Tons. 4,800	Tons. 21,625	Tons. 114,071	Tons. 135,696	25	45	70	steam	14"	6" 179' 8" 4½" 7" 225"	fan	6/11/11	
North Cape Marble Creek ..	Forbes, A. .. Young, James ..	1 ..	" ..	1 ..	4' 6" (Under development)	4' 6"	1 in 3½	ditto ..	7' x 7' ..	13 ch. ..	" ..	1,700 ..	" ..	1,700 ..	" ..	1,700 ..	6 2	4 10	10 12	horse ..	" ..	" ..	natural ..	6/11/11 6/11/11	
WESTPORT.																									
Seddonville State Colliery ..	James, I. A. ..	8	bitum.	1	12	12'	variable	bord and pillar	6' x 12' (shaft) 7' x 10' (tunnel)	150' (shaft) 72 ch. (tunnel)	endless rope	25,225	34,820	60,045	340,059	400,104	23	83	106	steam	Free drain	Free drain	fan	27/11/11	
Westport-Stockton ..	McAvoy, H. ..	3	"	1	10' av.	6' to 14'	"	ditto	8' x 7' (tunnel) 13' x 8' (C) 13' x 7' (D)	65 ch. (tunnel) 26 ch. (C) 13 ch. (D)	endless rope and electric locomotives	42,100	45,136	87,236	244,893	392,129	50	130	180	electrical & gravit'n	Free drain	Free drain	"	20/12/11	
Millerton	McCormick, W. ...	20	"	1	4' to 40'	12' (approx.)	"	"	10' x 6' (shaft) 10' x 6' (tunnel) 11' x 7' (tunnel) 12' x 7' (tunnel) 12' x 7' (tunnel) 10' x 6' (tunnel)	33 ch. (shaft) 45 ch. (tunnel) 72 ch. (tunnel) 53 ch. (tunnel) 11 ch. (tunnel) 76 ch. (tunnel)	endless rope	245,144	54,498	299,642	3,182,351	3,431,993	111	454	565	gravit'n	Free drain	Free drain	"	22/11/11	
Ironbridge, Denniston ..	Marshall, A. G. ...	20	"	2	3' 6" to 20'	all	"	"	10' x 5'	(tunnel)	ditto	"	"	"	"	"	219	80	299	steam	Free drain	Free drain	"	22/11/11	
Coalbrookdale, Denniston ..	Milligan, N. ..	31	"	1	4' to 20'	"	"	"	10' x 5'	44 ch. (tunnel) 28 ch. (tunnels)	"	240,832	536	923,368	5,722,431	6,045,799	229	80	309	"	Free drain	Free drain	"	22/11/11	
BULLER ROAD.																									
White Cliffs ..	Burley, James H. ..	11	"	1	16' to 20'	10' to 14'	1 in 4	"	8' x 10'	250'	adit	189	"	189	6,661	6,850	"	2	2	horse	Free drain	Free drain	natural	18/11/11	
Rocklands ..	Burley, John P. (permit)	10	"	1	27'	8'	1 in 10	"	8' x 10'	6 ch.	"	257	"	257	6,147	6,404	"	2	2	"	Free drain	Free drain	"	18/11/11	
BOATMAN'S.																									
Archer's Freehold ..	Aroher, F. W. (permit)	16	"	2	10' each	all	1 in 6	"	7' x 5'	900'	"	1,400	"	1,400	13,881	15,281	1	1	2	manual	Free drain	Free drain	"	7/7/11	
Coghlan's Freehold ..	Coghlan, J. (permit)	15	"	1	12'	8'	1 in 3	"	6' x 4'	520'	"	304	60	364	3,769	4,133	1	1	2	"	Free drain	Free drain	"	7/7/11	
REEFTON.																									
Burke's Creek ..	Thomson, Andrew ..	10	"	1	10'	8'	1 in 4	"	12' x 8'	200'	"	2,853	75	2,928	8,800	11,728	1	6	7	horse	Free drain	Free drain	"	6/12/11	
Lockington's Freehold ..	Lockington, E. (permit)	10	"	1	10'	6'	1 in 4	"	6' x 5'	400'	"	209	"	209	1,851	2,060	2	2	4	manual	Free drain	Free drain	"	6/12/11	
Golden Treasure, Murray Creek ..	Billett, J. (permit)	32	"	1	12'	all	variable	open face	"	"	"	14	671	685	27,042	27,727	"	2	2	"	Free drain	Free drain	"	13/9/11	

Phonix and Venus, Murray Creek	Reefton Mine	Watson and Moyles	Golden Point	Waikahu	Lankey's Creek	Loughnan's Mine	GREYMOUTH.	Paparoa	Blackball	Brunner	North Brunner	Point Elizabeth No. 1 Section	Point Elizabeth No. 2 Section	Point Elizabeth No. 3 State	Colliery
Knight, W. (per- mit)	Billet, Jas. (per- mit)	Watson, W. (per- mit)	Kearns, R. L. (per- mit)	Judd, James (per- mit)	Knight, F.	Kearns, R. L. (per- mit)	Hayes, J.	Hamilton, J. S.	Armstrong, J.	Smith, George	Coulthard, J.	Muncaster, W.	Bishop, James		
30	9	2½	3	9	9	6	3	22	47	2	7½	7½	..	..	..
2	1	1	1	2	1	1	34'	2	1	1	1	1	1	1	1
10'	8'	9'	6'	12' and 6'	2' to 20'	6'	34' to 20'	19'	12'	6'	8'	8'	8'	8'	(Under development)
8'	6'	8'	all	8' to 6'	2' to 12'	all	variable	15'	12'	6'	8'	8'	8'	8'	
1 in 2	1 in 3	1 in 10	1 in 2	1 in 4	1 in 20	variable	1 in 3	1 in 6	1 in 4	1 in 3	1 in 4	1 in 5	1 in 5	1 in 5	
bord and pillar	ditto	"	open face	bord and pillar	ditto	"	"	"	"	"	"	"	"	"	"
300'	600'	300'	..	700'	350'	130'	3,000'	1,232'	600'	22 ch.	100'	726'	792'	..	..
5' 6" x 4' 6"	6' x 4'	6' x 4'	..	12' x 7' 10' x 6'	6' 6" x 5' 6"	6' x 5'	1 10' x 7' 6"	9' x 6'	10' x 7'	2 12' x 10' 22 ch.	9' 6" x 6' 6"	10' x 7'	10' x 7'	10' x 7'	..
adit	"	"	..	adit	"	"	endless rope	ditto	adit	"	"	"	"	"	"
683	..	28 1,331	540	540	2,012	2,730	10,139	119,863	13,364	8,296	28,352	66,095	829,694	..	..
27,295	3,915	1,375	208	2,376	15,195	5,689	43,795	1,313,125	2,265,465	10,922	642,793	581,778	145,364	157,551	153,495
27,978	3,915	2,734	748	3,516	17,207	8,419	65,013	1,463,946	2,296,931	23,706	699,496	713,967	157,551	153,495	153,495
2	2	1	2	1	2	1	60	45	15	45	127	52	951	2610	2610
4	2	3	2	3	6	4	90	195	40	55	110	164	1659	2610	2610
Free drain age	Free drain age	Free drain age	Free drain age	Free drain age	Free drain age	Free drain age	Free drain age	Free drain age	Free drain age	Free drain age	Free drain age	Free drain age	Free drain age	Free drain age	Free drain age
13/9/11	13/9/11	18/10/11	6/12/11	19/10/11	18/10/11	18/10/11	14/12/11	15/12/11	19/12/11	14/12/11	8/12/11	11/12/11	..	..	..

Output of mines included in previous statements at which operations are suspended or abandoned

SOUTHERN INSPECTION DISTRICT.

CANTERBURY.	Springfield, Springfield	Springfield Fireclay, Springfield	Sheffield Fireclay, Sheffield	Homebush, Glentunnel	St. Helen's, Whitecliffs	Mount Somers, Mount Somers	Woolshed Creek, Mount Somers	Albury, Albury	Elephant Hill, Waihao Downs
Taylor, James (per- mit)	Christchurch Gas, Coal, and Coke Co. (owners)	Austin, John	Campbell, J. C.	Thin, W. (permit)	Dixon, W.	McClintock, J. (per- mit)	Kidd, G. C. (per- mit)	Richards, E.	
35	11	..	39	30	10	45	20	43	
2	1	1	1	4	1	1	1	1	1
2'	5'	2'	8'	8'	20'	40'	12'	14'	
all	4' all	"	"	"	10'	15'	8'	8'	
1 in 6	1 in 6	1 in 10	1 in 3	1 in 3	south 1 in 4½	1 in 9	1 in 4	1 in 6	
bord and pillar	ditto	"	"	pillar, slope, and wall	bord and pillar	ditto	"	"	
80'	50'	200'	50' ch.	40 ch.	25'	10 ch.	jig 25 ch.	20 ch.	
6' x 4'	1 14' 6" x 3' 5'	6' x 5'	1 16' x 3' 6" 7' x 6' 6' x 6' 7 ch.	1 4' x 3' 80' 5 ch.	1 5' x 4' 7' x 6'	1 4' x 3' 6"	1 4' x 3' 6"	1 6' x 5'	
shaft	adit	"	tunnel	adit	"	"	"	"	
314	..	..	12,008	491	2,340	50	718	..	
91,098	472	472	254,420	19,668	39,866	57,826	11,626	668	
91,412	472	472	267,908	20,159	43,044	57,876	12,944	668	
1	..	..	11	1	2	..	1	..	
6' steam	horse	..	2 steam & horse	3 steam	8 steam & self-acting horse	2 horse	3	..	
direct-acting steam	steam pump	..	..	..	..	..	..	..	
exhaust from steam pump	ditto	..	..	exhaust from steam pump	..	..	..	..	
..	..	..	8/11/11	10/7/11	13/7/11	13/7/11	..	..	

STATISTICS OF WORKINGS IN COAL-MINES, 1911—continued.

Name of Mine and Locality.	Name of Manager.	Number of Years worked.	Quality of Coal.	No. of Seams worked.	Thickness of Seams.	Thickness worked.	Dip of Seam.	System of Underground Working.	Number of Shafts.	Dimensions of Shafts.		Output delivered by	Output for 1911.			Approximate Total Output to 31st December, 1910.	Approximate Total Output to 31st December, 1911.	Number of Men ordinarily employed.		Power used for drawing Mineral.	Pumps.			Means of Ventilation.	Date of Inspector's Last Visit
										Size of Shaft or Adit.	Depth of Shaft or Length of Adit.		Coal.	Slack.	Total.			Above.	Below.		Total.	Stroke.	Size of Barrel.		
SOUTHERN INSPECTION DISTRICT—continued.																									
CANTERBURY—continued.																									
Private Pits.																									
Acheron, Lake Coleridge	Murchison, K.	29	bitum.	1	4'	all	vertical	narrow	..	..	adit	Tons. 2	Tons. 91	Tons. 2	503	Tons. 505	..	1	1	horse	..	..	natural	..	
Dalgety, Hakataramea	Ensor, C. W.	30	brown	1	30'	..	vertical	bord and pillar	..	..	"	91	..	..	2,964	3,055	..	1	1	horse	..	..	"	..	
NORTH OTAGO.																									
Wharekuri, Wharekuri	Shanks, A.	..	"	1	40'	13'	vertical	levels	..	6' x 4'	dip drive	6	..	6	2,579	2,585	..	1	1	hand	..	..	"	24/6/11	
Kurow, Kurow	Sanderson, J.	..	"	1	30'	30'	"	stopping	1	8' x 6'	"	224	..	224	4,415	4,639	..	1	1	horse	..	..	"	..	
Awakino, Kurow	Scott, D.	26	"	1	15'	7'	1 in 8	bord and pillar	1	4' x 3'	adit	20	..	20	5,788	5,808	..	1	1	"	..	..	"	24/6/11	
St. Andrew's, Papakaio	Nimmo, T. (permit)	33	"	1	7'	6'	1 in 9	ditto	1	4' x 3'	"	1,432	..	1,432	44,829	46,261	1	4	5	"	..	..	furnace	5/12/11	
Prince Alfred, Papakaio	Beardsmore, A. (permit)	42	"	1	9'	7'	1 in 9	ditto	1	4' x 3'	"	873	..	873	55,166	56,089	1	2	3	"	..	..	natural	5/12/11	
Ngapara, Ngapara	Nimmo, W. (permit)	33	"	1	25'	8'	1 in 7	"	1	5' x 6' x 6'	"	682	..	682	27,077	27,759	1	2	3	"	..	..	"	5/12/11	
Broadleaf, Shag Point	Brooke, G. W. (permit)	3	pitch	1	5'	all	1 in 10	"	..	6' x 6'	"	854	..	854	1,182	2,036	1	2	3	hand	..	..	"	6/12/11	
Shag Point, Shag Point	Clasen, C. (permit)	3	"	1	3'	"	1 in 6	ongwall	..	6' x 5'	"	1,495	..	1,495	2,698	4,188	1	3	4	horse	..	..	"	6/12/11	
Allandale, Shag Point	McIntosh, A.	24	"	1	7'	"	1 in 4	bord and pillar & longwall	1	5' x 4'	incline tunnel	3,557	..	3,557	313,110	316,667	3	8	11	steam	..	..	furnace	6/12/11	
SOUTH OTAGO.																									
Fernhill, Abbotsford	Gray, James	34	brown	1	10'	"	1 in 10	bord and pillar	1	4 1/2' x 4 1/2' x 6'	level	27	1,218	1,245	149,554	150,799	6	4	10	self-acting steam & horse	..	..	natural	27/11/11	
Freeman's, Abbotsford	Gillanders, A. S.	31	"	2	7' to 14'	"	1 in 7	ditto	3	5' x 4'	dip	18,380	3,734	22,114	427,546	449,660	6	31	37	"	..	..	fan	27/11/11	
Green Island, Green Island	Barclay, T., jun.	24	"	1	10'	8'	1 in 10	"	..	6' x 5'	incline drive	1,775	..	1,775	115,004	116,779	2	3	5	ditto	..	Tan g'ye	exhaust steam from pump	2/5/11	
Jubilee, Saddle Hill	Barclay, T.	14	"	1	17'	all	1 in 10	"	2	4' x 3'	"	17,421	8,790	21,211	189,613	210,824	7	25	32	"	..	..	pump furnace	28/11/11	
Burnwell, Saddle Hill	Harris, A.	30	"	1	20'	10' to 15'	1 in 9	"	1	6' x 3'	tunnel	216	..	216	69,198	69,414	2	2	4	"	..	..	"	..	
Saddle Hill (No. 1), Saddle Hill	Ogilvie, W. W.	39	"	1	20'	all	1 in 10	"	4	5' 10" x 4' 6"	inclined drive	3,198	4,760	7,958	191,706	199,664	3	11	14	"	..	..	furnace	28/11/11	
Saddle Hill (No. 2), Saddle Hill	Hill, Robert	10	"	1	22'	10'	1 in 14	"	1	..	adit	5,476	12,030	17,506	137,582	155,088	10	19	29	"	..	..	fan	28/11/11	

Lauriston, Brighton	Walker, J. R. (permit)	25	1	6'	5' 6"	1 in 20	1	4' x 3'	48'	tunnel	181	..	181	7,752	7,933	1	1	2	horse	..	..	..	natural	27/4/11
Brighton, Brighton	McColl, A. (permit)	24	1	4'	all	1 in 20	1	30' x 4'	48'	"	174	..	174	2,986	3,160	1	1	2	hand	..	..	..	"	27/4/11
Ferndale, Taiari Beach	Fairbairn, S. H. (mit)	28	1	10'	8'	1 in 7	..	10' x 8'	100'	level	34	..	34	973	1,007	1	..	1	electric tail rope	..	..	..	fan	19/10/11
Waronui, Milton	Carruthers, J. (mit)	7	1	18'	7'	1 in 7	1	6' x 6'	12 ch.	"	10,518	3,593	14,111	68,171	82,282	15	21	36	..	..	..	..	fan	19/10/11
McGillip's, Milton	Cooper, J. J. (permit)	7	1	22'	15'	1 in 8	..	..	..	adit	3,251	409	3,660	5,768	9,428	1	2	3	horse	..	..	..	natural	19/10/11
Good's, Johnston, Waitahuna	Good, W. (permit)	1	1	..	..	..	..	6' x 4'	185'	open shaft	48	..	48	..	48	1	..	1	hand	..	..	..	fan	20/10/11
Taratū, Taratū, Lovell's Flat	Shore, Thomas (mit)	10	1	20'	12' to 20'	1 in 10	2	13' 6" x 5' 2"	200'	"	4,268	1,253	5,521	139,456	144,977	11	18	29	steam	..	..	..	fan	20/10/11
Port Arthur, Kaitangata	Penman, R. (permit)	7	1	10'	all	..	..	..	66'	level	219	..	219	672	891	..	1	1	hand	..	..	..	natural	20/12/11
Hawthorn Den, Kaitangata	Cunningham, T. (permit)	3	1	9'	..	..	..	..	..	open	82	..	82	211	293	..	1	1	..	..	..	..	..	20/12/11
Wangaloa, Wangaloa	Smith, J. (mit)	30	1	10' 6"	8'	1 in 6	..	..	..	adit	18	..	18	2,026	2,044	..	1	1	..	..	..	..	natural	20/12/11
Longridge, Kaitangata	Mackie, N. (permit)	3	1	4'	all	..	..	..	100'	"	748	..	748	781	1,529	..	3	3	..	..	..	..	..	22/11/11
Kaitangata, Kaitangata	Carson, W. (mit)	35	3	50' in aggregate	..	1 in 14 to 1 in 4	2	10' x 7' 8' x 4' 6"	51 ch.	incline	86,440	48,389	134,939	2,579	352,714	181	63	259	steam & compressed air	2' 6" three e-throw pumps	280' ditto	500' furnace	fan	19/12/11
Castle Hill, Kaitangata	Murdoch, C. (permit)	18	4	50' in aggregate	12'	1 in 4 to 1 in 4	..	11' x 6' 6" 9' diam.	45 ch.	"	4,685	913	5,598	130,499	136,097	1	6	7	steam	..	..	..	natural	23/11/11
Benhar, Stirling	Coulter, J. W. (mit)	48	1	25'	..	..	..	4' x 4' 6' x 12'	50'	incline	30	..	30	8,688	8,718	..	1	1	horse	..	..	..	..	..
Mount Wallace, Stirling	Adams, Clydevale	16	1	20'	12'	..	..	12' x 12'	5 ch.	adit	15	..	15	170	185	1	..	1	hand	..	..	..	..	..
Adams', Clydevale	Liechner, W. (permit)	3	1	4'	all	..	..	..	4 ch.	open	2,270	..	2,270	54,525	56,795	3	..	3	horse	..	..	..	..	..
Mainholme, Waipahi	Royds, G. E. (mit)	26	1	20'	..	..	..	..	..	"	10	..	10	1,163	1,173	..	..	..	..	..	..	..	..	..
Lakeside, Lovell's Flat	Barber, J. (permit)	11	1	..	..	..	..	..	..	..	2,279	..	2,279	53,837	56,116	3	2	5	horse	..	..	..	natural	14/12/11
McPherson's, Coal Creek Flat	McPherson, R. (mit)	41	1	50'	..	..	..	..	..	open adit	2,133	..	2,133	54,011	56,144	2	2	4	..	..	..	..	..	14/12/11
Perseverance, Coal Creek Flat	Vernon, S. E. P. (permit)	24	1	75'	70'	1 in 3	..	6' x 7'	500'	"	2,500	..	2,500	48,386	50,886	1	3	4	Pelton wheel	..	..	..	..	14/12/11
Alexandra, Alexandra	Mathias, D. (permit)	30	1	14'	7'	1 in 7	..	15' x 2' 6" 6' x 4'	60'	"	3,413	..	3,413	75,182	78,595	1	7	8	steam	..	..	..	exhaust steam from pump	13/12/11
Molyneux (New Alexandra Coal Company), Alexandra	Pollock, J. (mit)	13	1	28'	9'	1 in 20	..	2 6' x 4' 5' x 4'	60' 80'	shaft	6,240	798	7,038	100,705	107,743	3	13	16	..	..	..	..	..	13/12/11
Cambrian, Cambrian	McGuckin, J. (mit)	26	1	9'	all	..	..	..	..	open	..	..	..	14,488	14,488	..	..	..	horse	..	..	..	..	..
Welshman's Gully, Cambrian	McGuckin, J. (mit)	50	1	30'	..	..	..	..	..	"	95	..	95	33,189	33,284	1	..	1	..	..	..	..	..	..
Landervale, Cambrian	Jones, Robert (mit)	7	1	..	15'	..	..	..	..	"	216	..	216	434	650	1	..	1	..	..	..	..	..	..
St. Bathans, St. Bathans	Enright, J. (mit)	14	1	..	..	..	..	..	..	"	234	..	234	5,088	5,272	2	..	2	..	..	..	..	..	..
Rough Ridge, Otarehua	Beck, W. (permit)	25	1	35'	all	..	..	..	..	"	684	..	684	25,838	26,522	3	..	3	..	..	..	..	..	..
Idaburn, Otarehua	White, J. (permit)	41	1	20'	..	..	..	..	..	"	758	..	758	41,311	42,069	2	..	2	..	..	..	..	..	..
Otarehua, Otarehua	Thomas, R. (mit)	..	1	7'	..	..	..	..	..	"	480	..	480	825	1,305	2	..	2	..	..	..	..	..	..

CENTRAL OTAGO.

Private Pit.

STATISTICS OF WORKINGS IN COAL-MINES, 1911—continued.

Name of Mine and Locality.	Name of Manager.	Number of Years worked.	Quality of Coal.	No. of Seams worked.	Thickness of Seams.	Thickness worked.	Dip of Seam.	System of Underground Working.	Number of Shafts.	Dimensions of Shafts.		Output delivered by	Output for 1911.		Approximate Total Out-put to 31st December, 1910.	Approximate Total Out-put to 31st December, 1911.	Number of Men ordinarily employed.		Power used for drawing Mineral.	Pumps.			Means of Ventilation.	Date of Inspector's Last Visit
										Size of Shaft Adit.	Depth of Shaft or Length of Adit.		Coal.	Slack.			Total.	Above.		Below.	Total.	Stroke.		
SOUTHERN INSPECTION DISTRICT—continued.																								
CENTRAL OTAGO—contd.																								
Gimmerburn, Gimmerburn Clyde, Clyde	Dougherty, C. .. Turner, G. F. ..	55 39	lignite brown	1 2	12' 40'	all 14'	1 in 2	open levels	..	..	open dip incline	Tons. 48 1,702	Tons. 48 1,702	Tons. 3,109 57,625	1 1	.. 4	1 5	hand steam	..	..	natural	18/8/11		
Shepherd's Creek, Bannockburn	Hodson, J. (Crown well and Bannockburn Coal Works Co.; T. K. Harty, managing director)	34	"	1	8'	7'	1 in 4	bord and pillar	1	4' x 3' 6' x 6'	34' 897' 200'	5,642	5,642	71,301	4	11	15	"	steam	driven	exhaust steam from pump	22/8/11		
Excelsior, Bannockburn	Whittlestone, A. W.	16	"	1	6'	5' 10'	1 in 4 1 in 1 to 1 in 2	ditto levels & headings	2	16' x 5' 6"	20 ch.	adit	..	..	59,202	..	..	"	steam	driven	natural	22/8/11		
Ranfurly, Bannockburn	Hodson, J.	1	"	..	30'	all	vertical	open	..	..	open	208	208	24,647	3	..	3	horse	..	..	..	22/8/11		
Cardrona, Cardrona	McDougal, R. (permit)	27	"	1	30'	all	vertical	open	..	..	open	901	1,037	17,757	1	2	3	steam	..	..	natural	7/11/11		
Gibbston, Gibbston	Duncan, J.	25	"	1	15'	"	..	bord and pillar	..	..	22 ch.	adit	35	35	5,589	1	..	1	hand	..	..	..	22/8/11	
Nevis, Nevis	Toms, R.	15	"	1	20'	"	vertical	ditto	..	..	30'	"	792	792	6,078	1	2	3	"	..	..	"	11/5/11	
Ryder's, Nevis	Toms, R. (permit)	11	"	1	45'	"	semi-vertical	ditto	..	..	..	"	874	874	7,964	3	..	3	"	..	..	..	11/5/11	
Nevis Crossing, Nevis	Ritchie, R. (permit)	8	"	1	..	"	ditto	open	..	..	..	open	874	874	7,964	3	..	3	"	..	..	..	11/5/11	
Private Pits.																								
Gold and Scheelite Proprietary (late Donaldson's), Macrae's Flat	Gold and Scheelite Proprietary Co. (D. B. Waters, mine-manager)	5	"	1	10'	"	..	"	..	..	..	"	665	665	1,373	2,038	2	2	horse	water-box	..	..	19/5/11	
Dillon's (late McKnight's), Blackston Hill	Dillon, John ..	14	lignite	1	12'	"	..	"	..	..	..	"	14	14	201	215	..	..	hand	..	..	..	..	
SOUTHLAND.																								
Pukerau, Pukerau ..	Hamilton, J. (permit)	31	"	1	16'	9'	1 in 4	bord and pillar	1	8' x 8'	11 ch.	adit	911	911	36,260	37,171	..	3	horse	..	..	natural	16/11/11	
Nelson's, Pukerau ..	Nelson, J. H. (permit)	22	"	1	16'	10'	..	ditto	..	..	..	"	146	146	4,262	4,408	..	1	"	windmill	..	..	16/11/11	
Hoffman's, Gore ..	Hoffman, A. (permit)	33	"	1	20'	15'	..	"	1	6' x 5'	..	incline tunnel	1,157	1,157	49,037	50,794	1	1	2	Snow pump	..	..	13/10/11	
Green's, Gore ..	Johnson, W. C. (permit)	23	"	1	17'	12'	1 in 20	"	1	10' x 8'	5 ch.	ditto	11,573	11,573	103,017	114,590	1	6	7	Tangye	fan	..	11/10/11	
Bushy Park, Croydon	Flett, G. (permit)	6	"	1	20'	all	..	open	..	..	..	open	1,980	1,980	13,561	15,491	2	2	"	steam pump	..	..	11/10/11	
Burnwell, Chatton ..	Cameron, D. (permit)	12	"	1	20'	12'	1 in 10	bord and pillar	..	20' x 12'	100'	adit	4,072	4,072	23,480	27,552	1	2	3	steam pump	natural	..	13/10/11	
Pacey's freehold, Chatton ..	Burgess, R. (permit)	8	"	1	20'	15'	..	ditto	..	..	..	"	4,316	4,316	37,709	42,025	1	3	4	steam	..	..	13/10/11	

Chatton, Chatton ..	Ramsay, G. (per- mit)	9	1	20'	12'	1 in 5	1	..	..	1,307	..	1,307	10,987	12,294	1	1	2	horse	steam pump	..	13/10/11
Springfield, Waikaka Valley	Mee Chang, R. (permit)	18	1	17'	8'	..	..	..	..	2,708	..	2,708	22,116	24,824	1	2	3	..	steam-driven	..	16/11/11
Willow Bank, Waikaka Valley	Charles, E. (..)	15	1	15'	10'	..	..	..	..	6,610	..	6,610	52,044	58,654	1	5	6	steam	two steam pumps	..	12/10/11
Glenlee, Waikaka Valley	McGill, D. T. (per- mit)	18	1	14'	10'	..	..	open	..	522	..	522	11,697	12,219	1	..	1	horse	..	12/10/11	
Edge's, Waikaka Valley	McIvor, W. (per- mit)	12	1	16'	12'	..	..	bord and pillar	12' x 12'	3,681	..	3,681	25,935	29,616	1	3	4	steam	siphon	natural	12/10/11
Landship, Waikaka	Kyle, W. (permit)	20	1	17'	all	..	1	60'	..	1,200	..	1,200	34,828	36,028	..	2	2	..	steam-driven	..	27/10/11
Rossvale, Waikaka ..	Knuckey, T. (per- mit)	8	1	10'	8'	..	2	100'	..	1,966	..	1,966	21,141	23,107	1	2	3	horse	..	27/10/11	
Waikaka, Waikaka ..	Cain, A. (permit)	4	1	10'	all	1 in 4	..	6' x 5'	..	1,938	..	1,938	11,468	13,406	1	2	3	steam	steam-driven	..	27/10/11
Muddy Terrace, Waikaka	Junker, F. (per- mit)	8	1	14'	7'	..	..	6' x 4'	..	1,006	..	1,006	17,542	18,548	1	1	2	horse	steam	..	27/10/11
Argyle, Upper Waikaka	Hutton, C. H. (permit)	20	1	20'	all	..	..	open	..	113	..	113	3,712	3,825	1	..	1	hand	..	..	..
Anderson's, Wendon	Radford, E. (..)	3	1	18'	10'	vertical	..	lifts	..	292	..	292	5,435	5,727	2	..	2	..	..	natural	..
Waimea, Kingston Crossing	Johnstone, J. E. (permit)	3	1	6'	all	..	..	bord and pillar	..	897	..	897	1,252	2,149	..	2	2	..	drain	..	27/11/11
Lynch's, Kingston Crossing	Mason, E. (per- mit)	1	1	6'	..	..	..	ditto	..	900	..	900	..	900	1	2	3	..	..	..	27/11/11
Princetown Creek (late Beer's), The Key	Kempthorne, W.O. (..)	9	1	6'	..	irregular	..	open	..	139	..	139	835	974	1	..	1	..	..	..	..
Mataura Collieries (Limited), Mataura	Broome, James ..	15	1	17'	12'	..	..	bord and pillar	..	9,255	..	9,255	125,319	134,574	3	7	10	steam	steam-driven	natural	14/10/11
Mataura Lignite, Mataura	Coster, W. (permit)	35	1	18'	all	..	..	open	..	11,308	..	11,308	94,794	106,102	8	..	8	horse	centrifugal	..	14/10/11
Boghead, Mataura ..	Sleeman, C. P., jun. (permit)	13	1	16'	..	..	..	..	..	3,719	..	3,719	12,729	16,448	2	..	2	..	centrifugal	..	14/10/11
Waimumu, Mataura	Wallace, J. (per- mit)	12	1	9'	7'	..	..	..	..	258	..	258	29,714	29,972	1	..	1	..	steam-driven	..	11/10/11
Ota Creek, Wyndham	Genge, E. (permit)	31	1	6'	5'	..	..	..	..	550	..	550	15,174	15,724	1	..	1	..	..	..	..
Clarke's, Wyndham	Clarke, G. W. (permit)	5	1	12'	all	..	..	..	..	1,474	..	1,474	7,342	8,816	2	..	2	..	centrifugal	..	..
Robin Hood, Pine Bush	Couser, W. (per- mit)	30	1	14'	..	..	..	..	..	83	..	83	3,105	3,188	1	..	1	..	pump	..	..
Graham's, Fairfax ..	Graham, P. S. (..)	33	1	6'	..	1 in 20	..	bord and pillar	..	87	..	87	16,459	16,546	..	1	1	hand	..	natural	..
Ardlowie, Fairfax ..	Poole, E. (..)	9	1	..	..	..	..	open	..	14	..	14	887	901	1	..	1	..	..	..	..
Nightcaps, Nightcaps	Barclay, W. (..)	30	3	36' in aggre- gate	34' in aggre- gate	variable to 1 in 7	..	open and bord and pillar	3	64,250	..	64,250	724,325	788,575	28	72	100	com- pressed air and horse	compress- ed air driven pump	fans (2)	13/12/11
Wairaki, Nightcaps	Dillon, L. N. (per- mit)	11	1	7'	all	..	..	bord and pillar	..	1,005	..	1,005	9,901	10,906	1	2	3	horse	oil-engine and pump	natural	12/12/11
H.B., Nightcaps ..	McDowell, R. (per- mit)	13	1	7'	..	..	..	open	..	1,097	..	1,097	10,431	11,528	1	1	2	..	..	..	12/12/11
New Brighton, Nightcaps	McKenzie, J. (per- mit)	4	1	20'	..	..	..	bord and pillar	..	4,642	..	4,642	8,041	12,683	1	7	8	..	..	natural	13/12/11
The Willow, Nightcaps	Ross, D. (permit)	12	1	14'	..	..	..	open	..	96	..	96	2,405	2,501	2	..	2	..	siphon	..	13/12/11
Wairio, Nightcaps ..	McKenzie, M. (per- mit)	6	1	17'	9'	..	..	bord and pillar	..	352	..	352	3,580	3,932	..	2	2	steam	Fair Gould's pumps	natural	13/12/11

Name of Mine and Locality.	Name of Manager.	Number of Years worked.	Quality of Coal.	No. of Seams worked.	Thickness of Seams.	Thickness worked.	Dip of Seam.	System of Underground Working.	Number of Shafts.	Dimensions of Shafts.		Output delivered by			Output for 1911.			Approximate Total Output put to 31st December, 1910.	Approximate Total Output put to 31st December, 1911.	Number of Men ordinarily employed.			Power used for drawing Mineral.	Pumps.			Means of Ventilation.	Date of Inspector's Last Visit	
										Size of Shaft or Adit.	Depth of Shaft or Length of Adit.	Coal.	Slack.	Total.	Above.	Below.	Total.			Stroke.	Size of Barrel.	Height of Column.							
SOUTHERN INSPECTION DISTRICT—continued.																													
SOUTHLAND—continued.																													
Beaumont, Nightcaps	Moss, T. (permit)	3	brown	1	20'	15'	1 in 4	open	..	..	..	1,023	..	..	1,023	..	2,280	3	..	3	..	..	..	centrifugal pump	..	..	..	19/12/11	
Morley, Nightcaps	Beattie and Tinker	..	"	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mount Linton, Nightcaps	Smith, William ..	17	"	1	20'	8'	semi-vertical	open	..	..	..	804	..	..	804	..	1,505	2	..	2	..	..	..	centrifugal pump	..	..	..	19/12/11	
Wildbush, Riverton	Bailey and Rodrique (permit)	4	"	1	11'	all	..	"	..	..	..	20	..	..	20	..	586	1	..	1	..	..	..	..	..	..	..	..	..
Bush Siding, Seaward Bush	Bowden, F. R. (permit)	9	"	1	32'	"	..	"	..	..	..	178	..	..	178	..	6,435	1	..	1	..	..	..	..	..	..	..	..	..
Private Pits.																													
Wellwood Park, Pukerau	Mason, A. M. W.	10	lignite	1	7'	"	..	"	..	..	..	22	..	..	22	..	202	..	..	..	..	..	..	..	..	..	..	..	..
Mason's, Pukerau ..	Mason, A., jun. ..	4	"	1	7'	"	..	"	..	..	..	5	..	..	5	..	27	..	..	..	..	..	..	..	..	..	..	..	..
Otikerama Station, Pukerau	Voight, W. J., jun. ..	14	"	1	7'	"	..	"	..	..	..	15	..	..	15	..	285	..	..	..	..	..	..	..	..	..	..	..	..
Smith's, East Gore..	Smith, H. ..	7	"	1	7'	"	..	"	..	..	..	..	..	..	..	..	47	..	..	..	..	..	..	..	..	..	..	..	..
Riverview, Gore ..	Nicol, J. and J. ...	20	"	1	..	"	..	"	..	..	..	32	..	..	32	..	1,724	..	..	..	..	..	..	..	..	..	..	..	..
Ford's, Chaston ..	Ford, M. W. ..	31	"	1	..	"	..	"	..	..	..	..	..	..	..	..	1,284	..	..	..	..	..	..	..	..	..	..	..	..
Thorndale, Waikaka	Cunningham, T. ..	12	"	1	10'	"	..	"	..	..	..	6	..	..	6	..	8,162	..	..	..	..	..	..	..	..	..	..	..	..
Perkins's, Wendon Valley	Perkins, G. A. ..	10	"	1	7'	"	..	"	..	..	..	15	..	..	15	..	87	..	..	..	..	..	..	..	..	..	..	..	..
Tusach's, Waimumu	Tusach, J. ..	5	"	1	..	"	..	"	..	..	..	12	..	..	12	..	63	..	..	..	..	..	..	..	..	..	..	..	..
McBride's, Nightcaps	McBride, A. ..	2	brown	1	10'	"	..	"	..	..	..	..	..	..	..	..	13	..	..	..	..	..	..	..	..	..	..	..	..
Linwood, Te Anau ..	Roberts, T. (N.Z. Tourist Dept.)	11	lignite	1	7'	"	..	"	..	..	..	120	..	..	120	..	1,520	..	..	..	..	..	..	..	..	..	..	..	..
Output of mines included in previous statements at which operations are suspended or abandoned	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,779,019	..	..	..	..	..	..	..	..	..	..	..	..
Totals, Southern District, Middle Island	..	..	..	..	..	..	..	..	..	..	..	365,687	88,821	449,508	929,821	974,279	277	671	948	..	..	..	..	..	..	..	..	..	..
Totals, West Coast District, Middle Island	..	..	..	..	..	..	..	..	..	..	..	829,694	388,999	1,218,693	1,607,146	1,729,013	951	1,659	2,610	..	..	..	..	..	..	..	..	..	..
Totals, North Island	..	..	..	..	..	..	..	..	..	..	..	320,291	77,581	397,872	555,508	595,290	137	595	732	..	..	..	..	..	..	..	..	..	..
Grand Totals	..	..	..	..	..	..	..	..	..	..	..	151,567	550,401	2,066,073	3,091,976	3,298,584	1,365	2,925	4,290	..	..	..	..	..	..	..	..	..	..

Output of mines included in statement for 1890, but whose operations were suspended prior to 1890 (less three, which are again included in body of statement—namely, Hill's Creek, 779 tons; Lovell's Flat, 323 tons; Wyndham, 1,988 tons: total, 3,090 tons)

Output of mines included in former statements, but whose operations were suspended prior to 1889

Output of Waikaka, Adam's Flat, and Waimea Mines, inserted twice in statement for 1891

132,732

172,529

6,518

33,297,621

Approximate Cost of Paper.—Preparation, not given; printing (1,800 copies), including plans, diagrams, and illustrations, £142.

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